

## Undergraduate Catalog 2016–2017



**Undergraduate Catalog**  
2016–2017





**His Highness Sheikh Dr. Sultan bin Muhammad Al Qasimi**

Member of the Supreme Council, Ruler of Sharjah  
President of American University of Sharjah



# Chancellor's Message

American University of Sharjah (AUS) is a premier highly ranked institution of higher education in the Middle East. It offers a distinctive blend of liberal arts and professional education at both the undergraduate and graduate levels. This catalog will inform you of the university's programs, policies, people and ethos, and will act as your guide to explore the multifaceted academic and extracurricular activities that comprise campus life.

Following the vision of our founder, His Highness Sheikh Dr. Sultan Bin Muhammad Al Qasimi, Member of the Supreme Council of the United Arab Emirates and Ruler of Sharjah, the university has grown from strength to strength over the past 19 years, garnering international acclaim for its rigorous academic programs and its multicultural campus environment. We are proud of our highly qualified and experienced faculty members who are committed to providing the best education and mentoring to our students. Hailing from 48 nations across the globe and with terminal degrees earned at some of the best universities in the world, they are experts in their respective disciplines and are committed to teach and mentor students as well as actively engage in research and scholarship. This, coupled with our commitment to enhancing research output and construction of a Research Technology and Innovation Park just west of campus, are key factors for our renown throughout the GCC region and the Arab world.

Our goal is to make the AUS experience unique and distinct, one that enriches the students as they make their way through their years at the university. We do this by providing our students with a well-balanced education, one that empowers them, and helps them to broaden their thinking, open their minds to new ways of seeing and understanding, and becoming global citizens. Our students are encouraged to debate and discuss issues and take practical steps to put theory into practice; to become problem solvers, creative thinkers and leaders as they engage in issues both in and outside of the classroom.

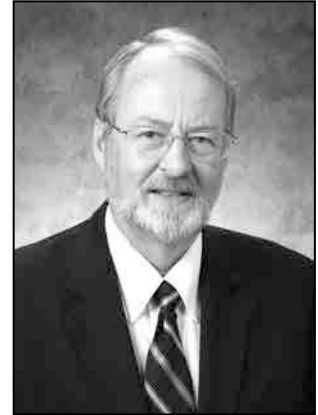
AUS provides its campus community with a multinational environment in which to study, learn, live and grow. We are very proud of our multicultural campus and student body comprising some 6,000 students from 99 countries. As an institution that is closely linked to its Sharjah and UAE surroundings, AUS continues to add to its program offerings, reflecting the needs and requirements of the students and the regional marketplace.

As you go through these pages, you will find answers to questions pertaining to a wide range of issues, including information on the many programs we offer and their requirements, our regulations and policies, and student life, as well as information about campus facilities and resources. This will help you to navigate your way to understand better what constitutes a rich and beneficial university education and experience.

Embarking on this journey, you will witness first-hand the dynamics and excellence for which AUS has become renowned throughout the region. You will experience a colorful, energetic, and multifaceted campus life and forge your own relationships as a student at AUS.

It gives me great pleasure to welcome you to our unique world and to wish you every success in your discipline of choice.

Björn Kjerfve



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# University Administrators

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 Ms. Miriam Kiwan, Director, Strategic Communications and Marketing  
     Mr. Toufic El-Saifi, Director, Events Management  
     Mr. Nazzal Nazzal, Director, Media Relations

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Dr. Khaled Assaleh, Interim Vice Provost, Research and Graduate Studies  
 Mr. Kevin Mitchell, Vice Provost, Undergraduate Affairs and Instruction  
     Dr. Mehvash Ali, Director, Academic Support Center  
     Dr. Cindy Gunn, Director, Faculty Development Center  
 Dr. Varkki Pallathucheril, Dean, College of Architecture, Art and Design  
     Ms. Zinka Bejtac, Associate Dean, College of Architecture, Art and Design  
 Dr. Mahmoud Anabtawi, Dean, College of Arts and Sciences  
     Dr. Ahmad Al-Issa, Associate Dean, College of Arts and Sciences  
     Dr. James Griffin, Associate Dean, College of Arts and Sciences  
 Dr. Richard Schoephoerster, Dean, College of Engineering  
     Dr. Hany El Kadi, Associate Dean, College of Engineering  
     Dr. Mohamed El-Tarhuni, Associate Dean, College of Engineering  
 Dr. Jörg Bley, Interim Dean, School of Business Administration  
     Dr. Mohsen Saad, Interim Associate Dean, School of Business Administration  
 Dr. Moza Al Shehhi, Dean of Students  
     Ms. Juliet Coutinho, Director, Judicial Affairs  
     Dr. Mohamed Helal, Director, Student Athletics and Recreation  
     Mr. Munketh Taha, Director, Student Development and Organizations  
     Ms. Haifa Ismail, Director, Student Leadership Programs  
     Mr. Mohammad Atif Ehsan, Director, Student Residential Life  
 Mr. Ali Shuhaimy, Executive Director, Enrollment Management  
     Ms. Jessica March, Acting Director, Achievement Academy  
     Mr. Rami Mahfouz, Director, Enrollment Services  
     Mr. Mohamad El-Shahed, Director, Student Recruitment  
 Mr. Nabeel Amireh, Director, Academic Computing  
 Mr. Asif Hashim, Director, Academic Planning and Analysis  
 Dr. Linda Angell, Director, International Exchange Programs  
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     Ms. Lina El-Khoury Bendaly, Associate Registrar  
 Ms. Daphne Flanagan, University Librarian  
     Ms. Alanna Ross, Associate Librarian

## Dr. Cleve McDaniel, Chief Operating Officer

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 Mr. Varghese Thomas, Director, Budget and Planning  
 Mr. Shwan Alhashimi, Director, Campus Development  
 Ms. Paula Doyle, Director, Human Resources  
 Mr. Frank Seifae, Director, Information Technology  
 Mr. Stephen James Fenn, Executive Director, Operations  
     Mr. Mazin Elya, Director, Facilities  
     Mr. Jayant Menon, Director, Supply Chain  
 Dr. Lubna Yousif, MD, Director, University Health Center

The graduation requirements for any individual student are normally determined by the catalog that was effective when the student matriculated in the major. A student may choose to follow the catalog effective for the semester when the student expects to complete his/her graduation requirements. A student who changes majors may petition to revert to the catalog in effect at the time of matriculation into the university. The policies, procedures and academic regulations published in the American University of Sharjah catalog are effective at the time of publication but may be subject to change. Students are responsible for adherence to the most up-to-date policies, procedures and academic regulations.

# Undergraduate Academic Calendar 2016–2017

Fall Semester		2016	
<b>April</b>	14	Thursday	Early applications deadline for Fall Semester 2016
	8	Wednesday	Transfer students' application deadline for Fall Semester 2016
<b>June</b>	28	Tuesday	Regular admissions applications deadline for Fall Semester 2016 for applicants from outside UAE
	14	Thursday	Regular admissions applications deadline for Fall Semester 2016 for applicants from inside UAE
<b>August</b>	18	Thursday	Residential halls open   TOEFL Test
	19	Friday	Welcome session for new students and parents
	21	Sunday	New students' academic and school orientation
	22	Monday	Registration for all returning students ends at 5 p.m.
	22–23	Monday–Tuesday	Placement tests for new students
	24–25	Wednesday–Thursday	Registration for new students
	28	Sunday	First day of classes   Late registration and add/drop period begin
	30	Tuesday	Late registration and add/drop period end at 5 p.m.
	8	Thursday	Classes end at 10 p.m. for Eid Al Adha holiday*
	18	Sunday	Classes resume at 8 a.m.
<b>September</b>	22	Thursday	Applications for Fall Semester 2016 graduation due
	29	Thursday	Classes end at 10 p.m. for Al Hijra holiday*
	3	Monday	Classes Resume at 8 a.m.
<b>October</b>	8	Saturday	Make-up class day
	3	Thursday	Honors Convocation
<b>November</b>	10	Thursday	Deadline to withdraw from a course without a grade penalty, 5 p.m.
	12	Saturday	Make-up class day
	27	Sunday	Advising and early registration for Spring Semester 2017 begins
	30	Wednesday	Classes end at 10 p.m. for Martyr's Day and UAE National Day Holiday
	4	Sunday	Classes resume at 8 a.m.
<b>December</b>	8	Thursday	Classes end at 10 p.m. for Al Mawlid Al Nabawi holiday*
	12	Monday	Classes resume at 8 a.m.
	13	Tuesday	Fall Semester 2016 classes end at 10 p.m.
	14	Wednesday	Regular admissions applications deadline for Spring Semester 2017 for applicants from outside UAE
	14	Wednesday	Fall Semester 2016 study and examination period begins
	21	Wednesday	Fall Semester 2016 study and examination period ends at 10 p.m.
	21	Wednesday	Transfer students' application deadline for Spring Semester 2017
	22	Thursday	Make-up examination day
	22	Thursday (Evening)	Fall Semester 2016 Commencement**
	25	Sunday	Holiday for Christmas Day
	29	Thursday	Regular admissions applications deadline for Spring Semester 2017 for applicants from inside UAE
	1	Sunday	Holiday for New Year's Day
Spring Semester		2017	
<b>January</b>	12	Thursday	Residential halls open   TOEFL test
	13	Friday	Welcome session for new students and parents
	15	Sunday	New students' academic and school orientation
	16	Monday	Registration for all returning students ends at 5 p.m.
	16–17	Monday–Tuesday	Placement tests for new students
	18–19	Wednesday–Thursday	Registration for new students
	22	Sunday	First day of classes   Late registration and add/drop period begin
	24	Tuesday	Late registration and add/drop period end at 5 p.m.
	2	Thursday	Applications for Spring Semester 2017 graduation due
<b>February</b>	30	Thursday	Classes end at 10 p.m. for Spring Break
	30	Thursday	Application for Summer Term 2017 graduation due
<b>March</b>	30	Thursday	Deadline to withdraw from a course without a grade penalty, 5 p.m.
	9	Sunday	Classes resume at 8 a.m.
<b>April</b>	20	Thursday	Classes end at 10 p.m. for Al Israa Wal Miraj holiday*
	24	Monday	Classes resume at 8 a.m.
	24	Monday	Advising and early registration for Summer Term 2017 and Fall Semester 2017 begins
	30	Sunday	Transfer students' application deadline for Summer Term 2017
<b>May</b>	2	Tuesday	Deadline to submit Summer Permission to Take Courses Outside AUS forms
	9	Tuesday	Spring Semester 2017 classes end at 10 p.m.
	10	Wednesday	Spring Semester 2017 study and examination period begins
	17	Wednesday	Spring Semester 2017 study and examination period ends at 10 p.m.
	18	Thursday	Make-up examination day
	27	Saturday	Spring Semester 2017 Commencement**
Summer Term		2017	
<b>May</b>	24–25	Wednesday–Thursday	Registration for Summer Term 2017
	28	Sunday	First day of classes   Late registration and add/drop period begin
	30	Tuesday	Late registration and add/drop period end at 3 p.m.
<b>June</b>	22	Thursday	Deadline to withdraw from a course without a grade penalty, 3 p.m.
	22	Thursday	Classes end at 10 p.m. for Eid Al Fitr holiday*
<b>July</b>	2	Sunday	Classes resume at 8 a.m.
	13	Thursday	Summer Term 2017 classes end at 10 p.m.
	16	Sunday	Summer Term 2017 study and examination period starts
	17	Monday	Summer Term 2017 study and examination period ends at 10 p.m.
	18	Tuesday	Make-up examination day

\* Islamic holidays are determined after sighting the moon. Thus, actual dates may not coincide with the dates in this calendar. In the event of loss of teaching days due to unscheduled closings, the semester(s) may be extended.

\*\* Commencement dates are tentative and are subject to change.

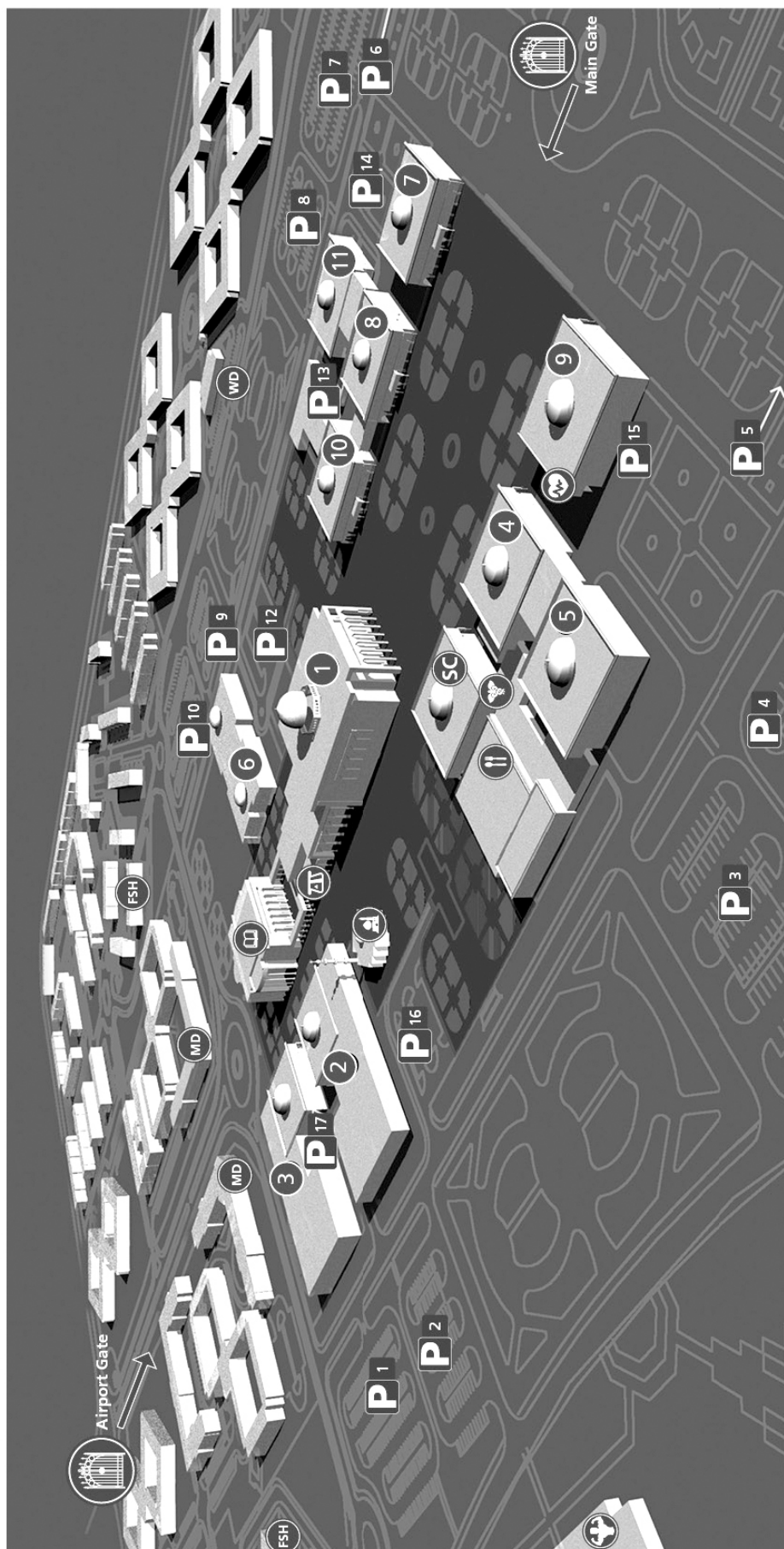


# Directory





UAE Code 971, Sharjah Code 6

[www.aus.edu/contact](http://www.aus.edu/contact)

Department	Telephone	Fax	Email
Academic Support Center	515 2096	515 2097	asc@aus.edu
Achievement Academy/Bridge Program	515 2653/54	515 2638	academy@aus.edu
Admissions/Enrollment Management	515 1000	515 1020	<a href="https://infodesk.aus.edu">https://infodesk.aus.edu</a>
Advancement and Alumni Affairs	515 2547	515 2297	oaaa@aus.edu
Career Services	515 2063	515 2065	careerservices@aus.edu
Chancellor	515 2205	558 5858	chancellor@aus.edu
College of Architecture, Art and Design	515 2825	515 2800	deancaad@aus.edu
College of Arts and Sciences	515 2412	558 5067	deancas@aus.edu
College of Engineering	515 2948	515 2979	deancen@aus.edu
Corporate Relations	515 2016	515 2065	oaaa@aus.edu
Finance	515 2185	515 2190	finance@aus.edu
General Information	558 5555	558 5858	info@aus.edu
Grants and Scholarships	515 2005/55/60/72	515 4050	scholarship@aus.edu
Health Center	515 2699	515 2690	clinic@aus.edu
Human Resources	515 2228	515 2139	hr@aus.edu
Information Technology	515 2119	515 2120	itservicedesk@aus.edu
Institutional Effectiveness and Planning	515 2206	558 5858	oiep@aus.edu
International Exchange Programs	515 4018/27/29	515 4010	ixo@aus.edu
Library	515 2252	558 5008	auslibrary@aus.edu
Office of the Chief Operating Officer	515 2192	515 2130	coooffice@aus.edu
Operations	515 2126	558 5009	operations@aus.edu
Protocol and Security	515 2296	515 5078	aus_security@aus.edu
Provost	515 2020	515 2150	provost@aus.edu
Public Relations	515 2079	515 5078	gr@aus.edu
Registrar	515 2031	515 2040	registration@aus.edu
Research	515 2208	515 4025	research@aus.edu
Research and Graduate Studies	515 2208	515 4025	vprgs@aus.edu
School of Business Administration	515 2310	515 4065	deanofsba@aus.edu
Sponsorship Liaison	515 1016	515 1011	sponsors@aus.edu
Strategic Communications and Marketing	515 2212	515 2288	communications@aus.edu
Student Accounts	515 2039/2233	515 2190	studentaccounts@aus.edu
Student Affairs	515 2166	558 5024	studentaffairs@aus.edu
Student Leadership Programs	515 4772	515 4770	osaslp@aus.edu
Student Residential Life	515 2244/2434	515 2294	res-halls@aus.edu
Testing and Professional Development Center	515 1111	515 1011	testingcenter@aus.edu
Undergraduate Affairs and Instruction	515 2281	515 2050	vpua@aus.edu
University Counseling Services	515 2792/2685	--	ucs@aus.edu
<b>Emergency Numbers</b>			
Maintenance Emergency	515 2100		
Medical Hotline (24 hours)	050 635 7651		
Security	050 626 7818		



	Pharmacy
	Health Center
	Bank
	Faculty/Staff Housing
	Women's Dorm
	Men's Dorm

11	New Academic Building
SC	Student Center
P16	Visitor Parking
P5 - P6	Free Parking
P1 to P4 P7 to P15 P17	Reserved Parking
	Library
	Food Court
	Mosque
	Sport Complex

1	Main Building Auditorium
2	College of Engineering 1
3	College of Engineering 2
4	Architecture, Art and Design 1
5	Architecture, Art and Design 2
6	Business and Management
7	Arts and Sciences: Physics
8	Arts and Sciences: Chemistry
9	Language Building
10	Arts Building

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# The University

## Historical Preamble

American University of Sharjah (AUS) was founded in 1997 by His Highness Sheikh Dr. Sultan Bin Muhammad Al Qasimi, Member of the Supreme Council of the United Arab Emirates and Ruler of Sharjah. Sheikh Sultan articulated his vision of a distinctive institution against the backdrop of Islamic history and in the context of the aspirations and needs of contemporary society in the UAE and the Gulf region.

AUS was mandated to:

- reinforce the efforts of the leaders of the UAE "to ensure that science and education regain their rightful place in the building and advancement of our society and shaping the lives of our children"
- join other institutions of higher education in seeking "to reshape fundamentally the minds of our youth to enable them to address the challenges of life using the scientific method"
- become a "center of research for educational development and the solution of social problems"
- become "organically linked" to the economic, cultural, scientific and industrial sectors of society in "productive cooperation"
- exercise the "independence and objectivity in teaching and research" necessary for the achievement of these goals

## Vision Statement

American University of Sharjah (AUS) will be the region's leader in higher education, known for excellence and innovation in teaching, learning, research and service.

## Mission Statement

American University of Sharjah (AUS) is a comprehensive, independent, non-profit, coeducational institution of higher education that fosters excellence in teaching, learning and research. Based on an American model of higher education and grounded in the culture of the Gulf region, AUS fosters a community that embraces cultural diversity and whose members are committed to the ideals of open intellectual inquiry, ethical behavior, and social and civic responsibility. An engaged, productive and effective member of society, AUS educates lifelong learners who display mastery in the core competencies of their areas of specialization, and who communicate

clearly, think critically and solve problems creatively.

## Overview

American University of Sharjah is an independent, not-for-profit, coeducational institution. Although consciously based upon American institutions of higher education, AUS is expected also to be thoroughly grounded in Arab culture and to be part of a larger process of the revitalization of intellectual life in the Middle East.

American University of Sharjah has succeeded in building a multicultural education environment that brings together people from diverse nations and backgrounds. AUS strives to instill in its students the importance of appreciating and understanding diversity, global issues and their own roles in society.

AUS is a leading comprehensive coeducational university in the Gulf, serving students from the Gulf region and around the world. AUS students are introduced to a culture of high aspiration and achievement to aid them in leading productive and meaningful lives. AUS is also dedicated to the preservation of the physical environment, free from pollution and neglect. This sense of environmental responsibility is passed on to AUS graduates in order to create ecologically aware citizens.

In keeping with its mission, AUS offers students an education that will enable them to comprehend the dynamism and complexity of contemporary global processes. Through the integration of liberal studies and professional education, students are given both breadth of knowledge and specialization in their chosen fields. Education at AUS runs the gamut from art, poetry and religions from past civilizations to the latest skills and technologies of today's information age. These are all presented to students in order to produce future leaders with a firm understanding of how society has reached its present state. The combination of traditional and innovative teaching methods provides an educational environment in which students can realize their individual potential and pursue their goals.

Through the College of Architecture, Art and Design, the College of Arts and Sciences, the College of Engineering, and the School of Business Administration, the university offers 26 majors and 45 minors at the undergraduate level and 13 master's degrees.

While Arabic is the official language of the United Arab Emirates, the language of instruction at AUS is English. All classes and administrative functions are conducted in English.

Islam is the official religion of the state, and Arab Islamic culture predominates in the UAE. The nation is also distinguished by its tolerance toward its large expatriate communities, which comprise diverse nationalities, cultures and religious beliefs. Following in this spirit of understanding and acceptance of all peoples, AUS admits students solely on the basis of their academic qualifications regardless of race, color, gender, religion, disabilities, age or national origin. The university's mission is to create a multicultural, international academic community in order to prepare its students to become lifelong learners equipped to adapt to the needs of our changing world.

AUS was established as an "American" university not only in its formal academic and organizational characteristics but also in the recognition that the total culture and philosophy of the educational community is as significant as the formal program of studies. Students learn the lessons of the classroom and the lessons of life in a coeducational, multicultural and multinational environment. From its inception, AUS was envisioned as a place that would "feel" like an American campus.

## Accreditation and Licensure

AUS is licensed and its programs are accredited by the Commission for Academic Accreditation of the Ministry of Education's Higher Education Affairs Division in the United Arab Emirates.

AUS is also accredited in the United States of America by the Middle States Commission on Higher Education (3624 Market Street, Philadelphia, PA 19104, USA, Tel +1 215 662 5606).

The bachelor of science degree programs in chemical engineering, civil engineering, computer engineering, electrical engineering and mechanical engineering offered by the College of Engineering are accredited by Engineering Accreditation Commission of ABET ([www.abet.org](http://www.abet.org)).

The bachelor of science degree program in computer science offered by the College of Engineering is accredited by the Computing Accreditation Commission of ABET ([www.abet.org](http://www.abet.org)).

The Bachelor of Science in Business Administration (BSBA) and the Master of Business Administration (MBA)



degrees offered by the School of Business Administration are accredited by the Association to Advance Collegiate Schools of Business (AACSB), [www.aacsb.edu](http://www.aacsb.edu).

The Bachelor of Architecture program of the College of Architecture, Art and Design is accredited by the National Architectural Accrediting Board (NAAB) of the United States, [www.naab.org](http://www.naab.org).



# Campus Life

## The Campus Complex

American University of Sharjah is situated in University City, which is located 16 kilometers (10 miles) from the center of Sharjah. The distinctive architecture of the domes and arches of the academic and administrative buildings is accentuated with graceful Arab motifs.

The center of the AUS campus comprises 12 academic buildings. These buildings house classrooms and lecture halls of various sizes; a state-of-the-art library; laboratories, workshops and studios; and offices for faculty, academic administrators and support staff.

The campus includes student residential halls (for men and for women) as well as a large Sports Complex and a Student Center. Approximately 40 percent of the student body lives in campus housing. Unlike most American universities, AUS requires faculty members and their families to live on campus. Thus, there is a large and continuous faculty presence at the heart of the campus, providing students with a learning and living environment that allows for ongoing interaction with faculty members and their families.

### The City of Sharjah

The location of the university enhances its mission. Sharjah is situated strategically between the Far East and the West, between Africa and Asia. Straddling the breadth of the UAE, the emirate of Sharjah has beautiful beaches on the shores of both the Arabian Gulf and the Gulf of Oman. Its landscape varies from level plains to rolling sand dunes and mountain ranges.

Today, as in ancient times, Sharjah is a global trade center. Modern Sharjah is a city of learning and the arts, as confirmed by its 1998 UNESCO designation as the Cultural Capital of the Arab World. Due to its distinctive contributions to Islamic and human culture, Sharjah was selected as the Islamic Culture Capital of the Arab Region for 2014 by the Islamic Organization for Education, Science and Culture. This context facilitates the university's intention to be an academic center at the intersection of ancient cultural traditions and contemporary intellectual currents. The city of Sharjah boasts over 27 museums with splendid collections of artifacts and art objects as well as exhibits on science and natural history. These institutions are sites for field trips, research and possible internships. Sharjah hosts many

cultural festivals, programs, educational conferences, fairs and economic expositions, including the annual book fair and the Sharjah International Biennial art exhibition. These resources permit AUS to broaden students' formal education in a way not possible elsewhere in the region.

### Campus Services

Miscellaneous service outlets are available on campus to cater for the needs of faculty members, staff members, students and campus residents alike. These include services such as banking, dining, transportation, laundry, minimarts, a full-service post office and copy center, a bookstore, a travel office, a hairdresser, a barbershop and a pharmacy.

Parking facilities, free and paid, are provided for faculty, staff, students, residents and visitors. AUS reserves the right to restrict or prohibit access to the campus.

The Office of Protocol and Security is responsible for campus security, as well as serving as the university's contact with federal and local government entities, embassies and consulates. The office also provides services such as AUS ID cards, parking stickers, lost and found, assistance with car registration, assistance with procedures related to traffic violations and on-campus accidents, vehicle assistance and official letters required by the University City Police. The Office of Protocol and Security is located in the west Mezzanine Floor of the Main Building (offices MM 29/30/31/32/33) and can be reached at 06 515 2114/515 2074/2075 or at [aus\\_security@aus.edu](mailto:aus_security@aus.edu).

Campus safety is monitored by the Safety division, which provides information on occupational safety and health hazards, and promotes a safe and healthy environment on campus. The Safety division is located on the second floor of the Main Building, (office M-247B) and can be reached on 515 2068.

Immigration-related services are offered for faculty, staff and students, including passport custody, medical test assistance, and the processing of visas and residence permits. For specific details, contact Public Relations at [gr@aus.edu](mailto:gr@aus.edu).

Detailed information on campus services is available in the On Campus section of the AUS website and in the *Student Handbook*, available at [www.aus.edu/osa/handbook](http://www.aus.edu/osa/handbook).

## Facilities and Resources

### Advancement and Alumni Affairs

The Office of Advancement and Alumni Affairs (OAAA) fosters relationships between AUS and its alumni by providing opportunities for mutual involvement that contribute to the missions and interests of both. Since many of the alumni are situated within the neighboring community, OAAA also seeks to publicize the university's programs, goals and achievements to the off-campus community, including alumni, parents and other constituencies of the university.

OAAA promotes a spirit of unity and of possible collaboration among current and former students on current as well as future projects. The alumni are valuable assets, and they are provided ways to aid in the further development of the university by drawing on their knowledge, skills, financial resources and their sense of deep loyalty to their alma mater.

OAAA enhances the financial wellbeing of AUS by raising contributions for the AUS Endowment Fund and establishing fruitful contacts and mutual collaborations with the wider community, which in turn enhances the visibility of AUS and its stature in the UAE and beyond.

OAAA also offers students and alumni comprehensive career services. It works closely with industry in the UAE and the region to promote interaction between potential employers and AUS students and alumni. It organizes corporate briefings, the AUS Careers Forum, the annual Alumni Reunion and the annual Career Fair, and provides information on job opportunities, internships and summer employment. OAAA has a career resource library and an up-to-date database of AUS alumni and employers in the UAE and Middle East.

For more information about OAAA, please visit [www.aus.edu/oaaa](http://www.aus.edu/oaaa) or contact the office at [oaaa@aus.edu](mailto:oaaa@aus.edu).

### Architecture, Art and Design Facilities

College of Architecture, Art and Design (CAAD) students benefit from open studios and robust, state-of-the-art facilities. Students accepted into the second-year studio majors have dedicated individual worktables and computer workstations with network connections. Dedicated ancillary spaces, which are shared by all curricula, include an exhibition gallery, lecture hall, digital classrooms, high-end

computing labs and comprehensive printing facilities. For CAAD students and faculty, there is a Digital Fabrication Lab that includes CNC routing, robotics, thermoforming, laser cutting, rapid prototyping/small laser cutter and rapid prototyping/3D printing. The Digital Fabrication Lab is among the most advanced facilities found in universities internationally. There is also a wet lab, and labs for metals, media production, photography, printmaking and a photo darkroom. Facilities cover a wide spectrum of making, both analog and digital, including conventional material fabrication as well as advanced digital technology.

### Central Instrumentation Facility

The Central Instrumentation Facility (CIF) at American University of Sharjah is an interdisciplinary research facility that is dedicated primarily to supporting faculty and students in their efforts to find creative solutions to challenging problems through collaborative work. The CIF goals are to:

- provide training and basic analytical research support for faculty and students at AUS
- house expensive, multi-user instruments that require a stable source of power, controlled atmosphere (e.g., temperature, humidity, chemicals, dust, etc.), operational supervision and maintenance
- promote research projects that transcend normal disciplinary boundaries and encourage active collaboration between faculty at AUS and elsewhere
- allow outside users to utilize CIF equipment on a fee basis

### Computer Learning Resources

Information Technology (IT) serves the computer-related administrative, instructional, technical and research needs of students, faculty and staff. It also acts as the university's gateway to the Internet for academic and administrative purposes. Services provided include email, a learning management system (Blackboard), online collaboration, academic mobile apps, Wi-Fi, audio/video conferencing, network storage, telephone and printing services.

All classrooms are networked and equipped with data projectors and other technology that enable faculty members and students to enhance learning with digital and online content. Wireless network access is available in all dormitories and academic areas of the campus.

AUS departments and programs offer a range of specialized and general computer laboratories with software to support student work. Additionally, the library features an information commons with an expanded range of computers, software and related technology along with support for students' research and other academic work.

The university's computer network uses fiber-optic cables that interconnect the entire campus, including the residential halls and faculty housing. Additional information can be found in the IT section of the university website.

### Interactive Trading Floor

The Interactive Trading Floor (ITF) at American University of Sharjah is a technologically advanced 24-seat learning space designed to be the exact duplicate of the trading floor found in typical Wall Street or global investment firms, including the same live feeds, industry software and analytical tools such as Capital IQ, Thomson Reuters, and Zawya, as well as state-of-the-art Bloomberg terminals.

The ITF allows students to apply analytical models and trading techniques to real time market data, thereby extending theory into practice. Assignments integrating live data, trading simulations, analytical assignments and practical cases as well as trading competitions are used to promote interactive learning and facilitate a profound understanding of the intricacies of financial markets.

### Jafar Center for Executive Education

Executive development programs for business and government leaders are an integral part of the university's contribution to the future of the UAE. Located in the School of Business Administration, the Jafar Center for Executive Education (JCEE) provides an ideal venue for executive learning. Leadership programs, professional training, short courses and conferences can be hosted in a state-of-the-art facility with equipment and furnishings to support a variety of learning formats, including team activities, video conferences, lectures and seminars. The mission of JCEE is to facilitate interaction between AUS faculty and the business community for the purpose of developing the leadership capacity of enterprises in the UAE and the wider region. Faculty interaction with business leaders also allows professors to take the needs of business and government back into the classroom with graduate and undergraduate students. Bringing together faculty from across the

university, the JCEE is able to respond to almost any business requirement.

### Laboratories

#### Engineering and Computing Laboratories

The College of Engineering has some 50 laboratories and workshops. All equipment and instruments are accessible to and extensively used by students. Laboratory focus areas are presented below and may be reviewed in detail on the college's website.

Chemical engineering laboratories focus on unit operations and process control, corrosion, environmental, petroleum, refining, water, materials, thermodynamics, fluid flow, heat transfer, and process computer simulation.

Civil engineering laboratories contain equipment and facilities to support teaching and research in structural, geotechnical, geological, water resources and environmental engineering and construction materials.

Computer science and computer engineering laboratories relate to programming, digital systems, microprocessors, very large scale integration (VLSI), embedded systems, industrial computer applications, computer networks, software engineering, operating systems, databases, and mobile and Internet computing.

Electrical engineering laboratories focus on electronics, electric power, control, measurements, machines, communications and signal processing, antennas and microwave, and medical electronics. The Department of Electrical Engineering also has a class 10,000 clean room facility for testing microelectronic chips as well as an advanced EDA lab.

Industrial engineering laboratories contain the latest software in optimization, simulation, layout design, CAD and NC programming. The Department of Industrial Engineering also shares the materials testing, conventional and advanced manufacturing laboratories with the Department of Mechanical Engineering.

Mechanical engineering has laboratories for engineering measurements, control, internal combustion engines, advanced manufacturing, fluid mechanics, materials testing, mechatronics, aeronautics, dynamics and mechanical vibrations, computer-aided engineering, refrigeration and air-conditioning, thermodynamics and renewable energy.

The various departments share eight computer labs with more than 250 stations. All labs have dedicated lab

instructors and engineers. Additionally, all engineering facilities offer wireless connectivity.

### **Interpreting and Translation Laboratory**

The Department of Arabic and Translation Studies has a purpose-built interpreting facility. It features simultaneous interpreting booths, a consecutive interpreting table, Internet access and equipment for simulated video teleconferencing. The department also uses other computer labs, which are equipped with machine translation software, TRADOS and other relevant software, including Internet-based, needed in language engineering as well as subtitling.

### **Mass Communication Studio and Creative Laboratories**

Students in the Department of Mass Communication benefit from an audio-visual studio in news presentations, talk shows and dramatic works. Students also benefit from high-tech digital classroom laboratories with Mac work stations featuring industry-standard graphic design, desktop publishing, video effects, video editing and multimedia software.

### **Science Laboratories**

The science programs benefit from up-to-date laboratories and equipment. Chemistry laboratories are equipped with standard chemical instrumentation, including balances, centrifuges, pH-meters, spectrophotometers, a rapid kinetic apparatus, glove box, physisorption apparatus, and electrochemical and chromatographic equipment. The environmental sciences and analytic chemistry laboratories are equipped with the latest sampling and analytical devices, including AA, GC-MS, ICP, FTIR, TOC, HPLC equipment and a 400 MHz Bruker Biospin NMR machine. The physics laboratories are supplied with up-to-date standard equipment, including computer interfaces, motion sensors, current sensors, voltage sensors, magnetic field sensors, linear air tracks, photogates, smart timers, projectile launchers, ballistic pendulums, rotational systems, digitometer, electric field mappers, current balance apparatus, signal/function generators, oscilloscopes, a Hall effect apparatus, lasers, spectral lamps, photoelectric effect apparatus, Geiger-Muller tubes, radiation counters, h/e apparatus, Frank Hertz apparatus, e/m apparatus, spectrometers, interferometers, X-ray machines, a Millikan oil drop apparatus, heat engines/gas law apparatus, a thermal expansion apparatus and an adiabatic gas law apparatus. The biology laboratories are equipped with the latest stereo inverted and

compound microscopes, a microtome, an autoclave, a laminar flow sterile hood, PAGE and agarose electrophoresis equipment, cryostat and microtome units, a workstation with a computer connected to digital microscope cameras, a growth chamber, IDEXX Colilert and a manifold filtration unit for microbiological analysis, a gel documentation system, a UV trans-illuminator, refrigerated microcentrifuges, a trans-blot semi-dry transfer apparatus, a gel dryer, CO<sub>2</sub> cell incubator, -80 °C freezer, a tissue homogenizer, and a thermocycler for DNA amplification.

### **Library**

The AUS Library, an 11,000-square-meter state-of-the-art facility, provides collections, services and programs to support the curricular and research needs of the university community. The majority of the library's growing physical collection of over 140,000 items is in English. There are also more than 5,000 items available in Arabic. An online catalog system can be used to search for library materials from any location on or off campus. Using the library website, students and faculty can access e-books, online databases, full-text journals and other digital resources. Library facilities include the Information Commons, group study rooms, quiet study areas and media viewing rooms. The library offers hands-on information literacy classes to teach students research skills. The library works in conjunction with all parts of the university to provide academic resources for all classes taught at AUS. The library's website is available at <http://library.aus.edu>.

### **Office of Strategic Communications and Marketing**

The Office of Strategic Communications and Marketing is responsible for developing, overseeing and implementing a comprehensive marketing and communication strategy that strengthens AUS's reputation and positioning both nationally and internationally. Aligned with the university's vision, mission and strategic directions, the office is responsible for achieving AUS's short- and long-term marketing objectives by successfully targeting and communicating with key stakeholders and core constituencies. The office works closely with the institution's leadership to advance AUS's local, regional and international positioning aspirations by actively supporting all aspects of its institutional advancement agenda; efficiently manage its media, print and electronic communication tools to engage and inform internal and external stakeholders; and ensuring

campus-wide communications processes.

### **Research and Grants**

AUS supports and promotes the research and consulting activities of its faculty members. In addition, AUS offers its students opportunities to work on faculty research projects, to present papers with faculty at international conferences and to assist faculty in developing research grants.

AUS upholds its ethical responsibility to administratively review all proposed research projects involving humans as participants. All research studies at AUS involving the participation of humans must be submitted to and approved by the AUS Institutional Review Board (IRB) before any study is undertaken.

For further information on the university's research and grant opportunities, please visit the AUS website.

### **Research Centers**

AUS has established a number of research centers as part of its commitment to research and community outreach.

### **Earthquake Observatory**

The AUS Earthquake Observatory uses state-of-the-art equipment and software to record and analyze the region's earthquake activity. The Earthquake Observatory also provides expertise on earthquake hazards and related risk in the UAE and the Gulf region; assessment of seismic hazards at construction sites and petrochemical and industrial facilities; assessment of seismic risk of existing structures and recommendations for strengthening and retrofitting; analysis and design of earthquake-resistant structures; evaluation of local site effects; preparation of macrohazard and microhazard zonation maps; evaluation of dynamic soil properties in laboratory and field; and noise and vibration analysis. The Earthquake Observatory also provides training workshops for engineers on seismic hazard and site response analysis, liquefaction analysis, geophysical techniques, structural analysis and design for earthquake loading, geotechnical analysis and design of foundations for earthquake loading, and the development of earthquake-resistant design codes.

### **Gulf Ecosystem Research Center**

The Gulf Ecosystem Research Center (GERC) is a multidisciplinary academic research center. Its mission is to monitor and conduct research on the Gulf ecosystem, broadly defined to include land, air, water and biotic systems of the Gulf, United Arab

Emirates (UAE) and GCC countries. GERC will offer advice on long-term solutions to ecological problems. GERC is a joint initiative of AUS and Bee'ah, Sharjah's environmental company. In support of GERC, AUS has initiatives with Woods Hole Oceanographic Institution (Massachusetts, US) and the Center for Coastal Margin Observation and Prediction (Oregon, US).

### **Institute of Urban and Regional Planning and Design**

The Institute of Urban and Regional Planning and Design advances urban planning as it relates to the local culture and identity of the UAE and the Arab Gulf region, and promotes sustainability as integral to all activities pertinent to urban planning and urban design. The institute's objectives are to advance production and accumulation of knowledge in urban and regional planning and urban design; develop and offer educational and training opportunities in urban and regional planning and urban design; collaborate with local governmental, not-for-profit, non-governmental and private agencies concerned with urban planning and development to advance quality of practice and research; advance public discourse on urban planning through public forums (e.g., seminars, conferences, symposia); and increase public awareness in urban planning and urban design.

### **Integrated Materials Systems Group**

The Integrated Materials Systems (IMS) group was established in 2001 based on the recommendations of GCC Ministers for Public Works and Housing to promote materials research and education. It collaborates with governmental and private sectors in areas of materials research and applications, focusing on quality control, performance, sustainability, development and use of standard procedures, and quality assurance materials used in the region. Objectives of the group are to conduct applied research focused on materials properties and applications in harsh environments; assist governmental departments in establishing local and regional codes of practice; provide independent technical evaluation and consultation services on materials-related issues; enhance education through seminars, conferences and short courses; and establish collaboration with similar centers of excellence worldwide.

### **Mechatronics Research Lab**

The Mechatronics Research Lab leads research and development in advanced engineering systems to address high-tech technology transfer in the region.

It promotes multidisciplinary research activities between faculty members and graduate students at AUS, and industry and governmental agencies that require extensive integration of instrumentation, control systems, electronics, intelligent software and computers. The Mechatronics Research Lab offers excellent networking opportunity with leading industries in the region as well as top academic institutions worldwide. Areas of expertise within the research lab include embedded and distributed process control, remote monitoring, nonlinear and intelligent control systems, robotics and autonomous systems, unmanned vehicles and machine vision.

### **Testing and Professional Development Center**

The AUS Testing and Professional Development Center serves as a central point of testing for both the AUS campus and the community. The center administers external exams and placement tests for newly admitted AUS students, and facilitates general university testing.

The center is an authorized Prometric Test Center, a Pearson VUE® authorized Test Center (PVTC Select) and is part of the ETS Strategic Testing Network. AMIDEAST, one of the region's most prominent international testing administrators, is an AUS testing partner and has a permanent office on the AUS campus to administer TOEFL tests (paper-based) on a regular basis, as well as other recognized international tests.

The center offers a range of internationally recognized tests including: Internet-Based TOEFL, Institutional paper-based TOEFL, IELTS, SAT, Fundamentals of Engineering Exam (FE) and the Principles and Practice of Engineering Exam (PE).

For more information, visit [www.aus.edu/testingcenter](http://www.aus.edu/testingcenter).

### **University Health Center**

The University Health Center (UHC) provides primary health care services to all AUS students, faculty, staff members and their dependents. The center is open Sunday–Thursday from 8:30 a.m. to 4:30 p.m. and also provides 24-hour emergency care. Depending on the severity of the illness, patients are referred to a hospital for further treatment if required. Great emphasis is placed on making the campus a healthy and safe place to study, work and live through providing preliminary physical examinations to all students and employees as a mandatory part of registration/employment process, followed by continued quality care

throughout their time at AUS, including sport team fitness checks.

UHC is staffed with a qualified medical team, which includes general practitioners, a clinical counselor and registered nurses. UHC is equipped with an observation room (day care) to closely monitor patients for short stays before transferring to a hospital if required. UHC has access to an on-campus laboratory and pharmacy to assist in serving the AUS community. There is an ambulance on standby 24 hours a day on campus.

### **Health Education Programs**

As part of an educational institution, UHC plays an active role in educating the university community and promotes on-campus health and wellness activities throughout the academic year. UHC programs include and awareness campaigns on health-related issues such as first-aid training and CPR courses.

### **Health Insurance Plans for Students**

As part of the registration procedures, every undergraduate student must enroll in one of two health insurance plans by visiting the University Health Center and completing the necessary paperwork. Students may select to complete this process through the secured online student information system. Plan I is compulsory for AUS-sponsored undergraduate students but optional for others who are covered by private insurance (proof of coverage must be submitted to UHC). Plan II is compulsory for all undergraduate students who are not enrolled in Plan I. Undergraduate students who fail to complete their health insurance registration prior to the semester deadline will automatically be placed on Plan I.

For more information on the health insurance plans, visit [www.aus.edu/healthcenter](http://www.aus.edu/healthcenter).

### **University Sports Facilities**

The Sports Complex consists of indoor facilities such as basketball, tennis, squash and volleyball courts; multipurpose halls; a 50-meter swimming pool; saunas; fitness centers with free weights and exercise machines; an aerobics hall and a multipurpose hall for table tennis/martial arts. Outdoor sports facilities include the Sports Pavilion, a 400-meter running track, a soccer field, a cricket ground, a cricket practice net and a baseball field. Close to the sports pavilion are six tennis courts and two basketball courts as well as changing rooms.



Student Athletics and Recreation fosters continuous development of collegiate sports in the UAE by organizing and hosting sports tournaments, symposia and training in sports and fitness.

The AUS Sports Facilities are to benefit the entire AUS community. Students, staff, faculty members and their dependents enjoy free usage of these facilities.

Details on the AUS sports facilities are available in the *Student Handbook* and at [www.aus.edu/osa/athletics](http://www.aus.edu/osa/athletics).

## Student Life on Campus

### Code of Conduct

American University of Sharjah is a community of individuals living, working and studying together in order to create the ideal conditions for learning. Mutual respect and responsibility are imperative if each individual is to flourish and grow in this environment.

In order for the purpose of the university and its community to be realized, the rights, responsibilities and reasonable standards of conduct essential to a university community must be delineated. The legally established principles, rules and regulations of the university constitute the basic standards and guidelines for conduct on and off campus. The Office of Student Affairs (OSA) establishes and enforces those rules and regulations. The full text of the Student Code of Conduct is provided in the *Student Handbook* and at [www.aus.edu/osa/codeofconduct](http://www.aus.edu/osa/codeofconduct).

As part of OSA, Judicial Affairs is responsible for educating students about their rights and responsibilities, creating awareness within the AUS community about the Student Code of Conduct, and implementing the code in a fair and consistent manner. Allegations of misconduct under the Student Code of Conduct are resolved by Judicial Affairs in a manner consistent with the core values of fairness, honesty and integrity. Judicial Affairs also offers mediation services, which assist students in resolving conflicts through mediation. Students are trained in mediation and awarded a certificate on successful completion of mediation training and mock sessions. Judicial Affairs is located on the first floor of the Student Center in offices A254–256 and 233.

For more information, please refer to the *Student Handbook* or visit [www.aus.edu/osa/judicialaffairs](http://www.aus.edu/osa/judicialaffairs).

### Community Services

AUS Community Services is a link between students and the various

needs found in society. Community Services allows students to experience first-hand the value of serving others through charity, awareness and outreach programs. It involves them personally in community events that enrich their life experiences. Community Services coordinates a variety of volunteer programs and strongly encourages students to contribute to the development of new ones. Current volunteer programs are listed in the Student Affairs section of the university website and in the *Student Handbook*.

Students who are interested in learning more about these programs should visit Community Services located in the Student Center (office A222), call 515 2794 or email [osacom-services@aus.edu](mailto:osacom-services@aus.edu).

### Cultural Events

Drama performances and musical events, ranging from classical and regional to jazz and rock, are brought to campus through the Cultural Events Committee. For more information, visit [www.aus.edu/events](http://www.aus.edu/events).

The Performing Arts Program also presents a wide array of student productions in theatre, dance and music in the Arts Building rotunda. For more information, contact [atassa@aus.edu](mailto:atassa@aus.edu).

### Office of Student Affairs

The mission of the Office of Student Affairs (OSA) is to provide high-quality services and programs facilitating informal learning that is in congruence with the Middle Eastern culture; complements formal learning; and promotes aesthetic, ethical, intellectual, personal, social and talent growth in a safe environment.

The Office of Student Affairs is responsible for making student life interesting and noteworthy at AUS. Student Affairs transforms student life with a purpose, engaging students in activities outside the classroom. Student involvement in OSA-initiated activities enables them to accomplish their personal and educational goals. Students are engaged in diverse programs, activities and events and provided services through Student Athletics and Recreation, Student Development and Organizations, Student Clubs and Organizations, Community Services, Student Employment, the Student Multicultural Learning Program, Student Leadership Programs, Student Residential Life and Judicial Affairs.

More information on Student Affairs is available at [www.aus.edu](http://www.aus.edu). You can also visit the Office of the Dean of Students (M-217 on the Second Floor of the Main

Building), call 06 515 2166 or email [studentaffairs@aus.edu](mailto:studentaffairs@aus.edu).

### Student Athletics and Recreation

The Office of Student Affairs offers students multiple opportunities to develop their sports abilities in a variety of sports. Full-time and part-time coaches and trainers in Student Athletics and Recreation help develop student's core areas in athleticism, skills in team sports, and sportspersonship and to adopt a disciplined and healthier approach to sports. A variety of individual and team sports, fitness and leisure activities, as well as broad-based competitive and recreational programs are offered for both genders and can be viewed on [www.aus.edu/osa/athletics](http://www.aus.edu/osa/athletics).

The university's intramural sports program complements students' academic, social and cultural education. Involvement in intramural sports activities reduces stress, promotes team-bonding and provides an opportunity to socialize.

Student Athletics and Recreation offers students the opportunity to participate in local, regional and international intercollegiate sports tournaments it organizes and hosts.

### Student Center

The Student Center plays an important role in the extracurricular life at the university by serving as a central hub for student activities. It is primarily dedicated to serving the cultural, social and recreational interests of the student body as well as to providing students with a comfortable and inviting atmosphere to unwind.

The Student Center is more than just a place for students to socialize and relax; Student Development and Organizations' offices are located at the center to provide students with non-academic support services and facilities under one roof. Student Center provides a wide array of amenities and facilities. These include an information desk, a meeting room, club offices, lounges and a multipurpose room.

Student Development and Organizations manages the Student Center facilities and all events and activities that take place at the center throughout the year. More information on the Student Center is available at [www.aus.edu](http://www.aus.edu).

### Student Clubs and Organizations

Student-sponsored organizations are an integral part of the learning process at most institutions of higher education. The academic experience is enriched by participation in activities that allow

students to pursue their personal interests outside the classroom while providing opportunities for leadership development and for involvement in university life.

Student Development and Organizations is the central support for the numerous student organizations on campus. Its role includes supervising and providing assistance with program planning and implementation.

The student organizations at AUS span a wide range of interests and reflect the varied cultural/ethnic/national backgrounds of AUS students. Interest-oriented and ethnic/national clubs organize numerous professional and cultural activities throughout the academic year and play a vital role in fostering a rich multicultural environment on campus. For a complete listing of student clubs, visit [www.aus.edu/osa/studentorganizations](http://www.aus.edu/osa/studentorganizations).

Participation in student clubs and organizations is strongly encouraged. Students are also encouraged to form organizations/clubs that promote their interests and hobbies.

For more information, read the *Student Clubs and Organizations Manual* available at [www.aus.edu/osa/studentorganizations/manual](http://www.aus.edu/osa/studentorganizations/manual) or visit Student Clubs and Organizations in the Student Center (A246-248).

### Student Council

His Highness Sheikh Dr. Sultan bin Muhammad Al Qasimi strongly encouraged AUS students to establish a Student Council in order to ensure student representation on campus. The Student Council's Constitution and bylaws are amended by the council, and approved and endorsed by the Dean of Students and Chancellor.

The AUS Student Council is an elected body that articulates student views and interests in the university. The Student Council is a vehicle for ensuring that students can have a voice in formulating university priorities and policies. It also provides a structure for greater student involvement on campus. The Dean of Students advises the Student Council. For information, please see the *Student Handbook* or visit [www.aus.edu/osa/studentcouncil](http://www.aus.edu/osa/studentcouncil).

### Student Development and Organizations

Student Development and Organizations promotes student intellectual growth, skills and all-round personality development by engaging them in multicultural programs, registered student organizations, volunteer programs, student employment, and varied events and

activities locally, regionally and internationally. Student Development and Organizations offers resources and services that aid student participation and development and builds university reputation through student achievements. For more information, please see the Student Handbook or visit [www.aus.edu/osa/studentorganizations](http://www.aus.edu/osa/studentorganizations).

### Student Employment

Opportunities for on-campus employment are available to all AUS students. Students may work no more than 15 hours per week (60 hours/month). Students may work for 40 hours per week (160 hours/month) during academic breaks and summer terms only. Hourly rates vary depending on what kind of job the student is doing (i.e., clerical or computer-related) and on seniority. In addition to working in the university departments and campus outlets and facilities, students can work voluntarily off-campus during exhibitions and important events in UAE. Further information on all campus employment opportunities is available through the Student Employment office in the Student Center (office A223) or at [www.aus.edu/osa/studentemployment](http://www.aus.edu/osa/studentemployment).

### Student Leadership Programs

Student Leadership Programs (SLP) fosters ethical leadership and offers a wide range of opportunities that develop students' leadership, personal and communication skills and prepares them for a lifelong commitment to leadership and citizenship. Student Leadership Programs offers various leadership enrichment programs. SLP engages students in local, regional and international conferences and Model United Nations programs that aid in the development of character, public speaking skills, confidence, mindset and overall leadership capabilities.

Student Leadership Programs is located in the Student Center, First Floor, A249, A250 and A239. For more information visit [www.aus.edu/osa/leadership\\_program](http://www.aus.edu/osa/leadership_program), email [osaslp@aus.edu](mailto:osaslp@aus.edu) or call 515 4772.

### Student Multicultural Learning Program

The Student Multicultural Learning Program (SMLP) is for students to gain firsthand knowledge of cultural diversity and expand their understanding of the cultural, historical and sociological backgrounds of the UAE and of other countries around the world. Besides cultural diversity, students also learn about diversity in business, government, politics and lifestyle that exist in other societies around the

globe. For more details, visit [www.aus.edu/osa/multiculturalprogram](http://www.aus.edu/osa/multiculturalprogram), email [osasmplp@aus.edu](mailto:osasmplp@aus.edu) or visit SMLP office A234 in the Student Center.

### Student Publications

Practical writing experience is available to AUS students through two student publications, the *Leopard* and *Realms*. Students interested in contributing to or working on these publications should contact Student Development and Organizations for further information.

### Student Residential Life

The main objective of Student Residential Life of OSA is to support and complement the mission of the university and its academic programs by creating a comfortable and safe environment that contributes to the success of resident students' educational progress and personal growth. The AUS residential halls offer a unique multicultural environment in which students from different parts of the world can learn from one another.

Because residential hall living is seen as a positive educational experience, students are encouraged to live on campus. Living on campus complements the overall learning experience by fostering independence and tolerance of others in students. Furthermore, living on campus allows students to make the most of what AUS has to offer, such as sports and dining facilities, the library and laboratories; it also gives students convenient access to the many activities that take place during the day and in the evening. The university offers a convenient bus service between the residential halls and other areas on campus.

The residential halls for male and female students are completely separate. All hall residents are expected to spend every night in the halls, unless they have written authorization from their parents or guardian indicating otherwise. To ensure the security of all students, the residential halls are protected by security patrols. Residential halls staff members are available around the clock for the safety and comfort of all residents. Regulations for the residential halls are available in the *Student Handbook* and at [www.aus.edu/osa/residentialhalls](http://www.aus.edu/osa/residentialhalls).

### Students with Physical Challenges

University Counseling Services provides assistance to AUS students who are physically challenged. Students who need further information should visit University Counseling Services at the rear of the University Health Center or email [ucs@aus.edu](mailto:ucs@aus.edu). Please also refer to the Academic Support Center section.

## Student Educational Services

AUS offers a broad range of educational services to support student learning. Details of these services and how to avail them are provided herein. As the university provides authorized support services, external tutors are not permitted on campus.

### Academic Support Center

The Academic Support Center (ASC) helps undergraduate students succeed academically at AUS. Advisors at ASC teach students to take responsibility for their education, set academic goals, graduate in a timely manner and successfully meet all requirements for a quality education at AUS.

ASC works with students who are struggling academically (such as those on academic probation) and provides them with extra support and skills development training required for academic progression. ASC also coordinates academic accommodations for students with documented disabilities recognized by the Americans with Disabilities Act (ADA) that are affecting their academic performance, to the extent permissible by available resources.

ASC offers a variety of study skills workshops that are available to all undergraduate students as well as peer support through our peer advisors.

For more information, visit [www.aus.edu/asc](http://www.aus.edu/asc).

### Cisco Academy

AUS hosts a Cisco networking academy in the College of Engineering. The academy is an Instructor Training Center (ITC) that trains students and professionals to design, build and maintain computer networks and prepares them for industry-standard certification. For more details, see the College of Engineering section of this catalog or visit [www.aus.edu/cen/cisco](http://www.aus.edu/cen/cisco) or email [ciscoacademy@aus.edu](mailto:ciscoacademy@aus.edu).

### HP Institute

AUS hosts an HP institute in the College of Engineering. The institute provides students and professionals with the needed IT skills to translate business objectives into technology solutions. The institute offers industry-related IT courses in the areas of networks, storage, security, connected devices, and cloud computing. For more details, see the College of Engineering section of this catalog or visit [www.aus.edu/hpi](http://www.aus.edu/hpi) or email [hpi@aus.edu](mailto:hpi@aus.edu).

### Mathematics Learning Center

The Mathematics Learning Center (MLC), located in the New Academic Building room NAB 239A, provides one-on-one tutorial sessions for students enrolled in all remedial and 100-level mathematics courses. The tutors are well-trained senior undergraduate and graduate students. Student may drop in for consultation during the weekly scheduled sessions to seek understanding of certain course-related concepts. Consultation does not cover specific homework, or project-related questions. The MLC also offers review sessions prior to the exams of some of the courses. Students can submit their math questions by email to [cas-mlc@aus.edu](mailto:cas-mlc@aus.edu).

### Study Abroad

The Office of International Exchange Programs (IXO) works with AUS students who wish to study at universities in other countries either for a semester or for one academic year. For information on study abroad opportunities for AUS students, please see the section entitled AUS Students Studying Abroad under Registration and Course Information in the Academic Policies and Regulations section of this catalog.

The office also facilitates the admission of international students coming to AUS to study abroad for a semester or up to one academic year. For more information on study abroad students' admission to AUS, please see the Other Admission Categories section in Admission to Undergraduate Studies later in this catalog.

In addition to facilitating student exchanges and study abroad, IXO also administers processes enabling faculty-led study tours, visiting scholars, visiting guests and delegations, tuition exchange programs, and the dissemination of information regarding international scholarships and internships.

For more information, visit [www.aus.edu/ixo](http://www.aus.edu/ixo).

### University Counseling Services

University Counseling Services (UCS) offers support services to enhance the success of students. These services include assisting with academic growth, educational and career goals, problem solving, decision making, understanding and appreciation of oneself, and interpersonal relationships.

#### Counseling

UCS provides different types of counseling services: individual counseling, group counseling and crisis counseling.

Counseling is strictly confidential. The information shared with a student counselor will not be disclosed to another individual or organization without the written consent of the student. Services are free, voluntary and available to all undergraduate and graduate students currently enrolled at AUS. Appointments may be arranged by visiting the UCS at the rear of the University Health Center.

For more information, please email UCS on [ucs@aus.edu](mailto:ucs@aus.edu).

### Self-Help Resources

UCS has extensive self-help resources on many subjects in the form of handouts, books, videos and links on its section of the university website. Topics include coping with stress, depression, sleep disturbance, loneliness, anxiety, eating disorders, grief and loss, substance abuse, relationship building, assertiveness, career choices, study skills, concentration and memory, motivation, time management, and test-taking strategies.

### Student Workshops

Workshops are conducted throughout the academic year on topics such as time management, study skills, communication skills, anxiety and stress management, anger management, clinical anxiety and depression, personality assessment and disorders, treatment for posttraumatic stress disorders and trauma therapy, adjusting to university life, personal development, positive psychology, motivational exercises and memory improvement. Workshop topics and dates are advertised around campus, or students can email UCS at [ucs@aus.edu](mailto:ucs@aus.edu) to learn about future workshops. Students are encouraged to contact UCS with ideas for future workshops.

### Writing Center

The AUS Writing Center, located on the ground floor of the AUS Library building (room LIB 024) and in the new School of Business Administration building (room SBM 176), helps students become independent, confident writers. Available to all AUS students, the Writing Center offers one-on-one writing conferences by appointment or on a drop-in basis. Consultations may include thesis development, organization, outlining, paragraph development, vocabulary, sentence structure and mechanics. Students may visit the Writing Center to work on drafts, to do research or to work with a consultant on particular aspects of their writing. The Writing Center also offers workshops on a variety of writing topics throughout the academic year.

For more information, visit [www.aus.edu/cas/writingcenter](http://www.aus.edu/cas/writingcenter).

# Achievement Academy

## Acting Director

Jessica March

## Instructional Staff

Diala Awwad  
Raja Mallek Bahloul  
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Paul Hudson  
Laurial Mehdi  
Claire Murphy  
Tahani Qadri  
Scott Rousseu  
Krystie Wills

The Achievement Academy is composed of two units: the Bridge Program and the Outreach Program.

The Bridge Program is a comprehensive, multifaceted university preparation program to act as a transition between high school and university studies. It is a holistic, content-based, outcome- and standards-driven English language acquisition and university preparation academic skills program. Students also receive instruction in content-based courses such as math and physics (for science and engineering students) designed to prepare them for 100 level math and physics courses.

The Outreach Program conducts courses in general English, TOEFL and IELTS (Academic Version) preparation, workplace English and business English on the AUS campus and throughout the UAE. The program establishes partnerships with various community organizations in order to provide educational opportunities for individuals who wish to further develop their English and personal and professional communication skills.

## Bridge Program

### Mission Statement

The Bridge Program in the Achievement Academy at American University of Sharjah will improve student readiness for matriculation into their majors and for the rigors of an academic program of study in higher education. The program works with students to increase their language proficiency to a level suitable for study in courses taught in English; to improve students' analytical, reasoning and problem-solving skills in math and physics (as applicable) to ready them for university math and physics courses; and to enhance students' personal, academic and study skills to maximize the

likelihood of success in their university experience.

For information on the Bridge Program, please contact:

Achievement Academy  
American University of Sharjah  
PO Box 26666  
Sharjah, United Arab Emirates  
Tel +971 6 515 2653 or 2654  
Fax +971 6 515 2638  
academy@aus.edu

## Admission and Placement

Admitted AUS students who score between 32 and 79 on the Internet-Based TOEFL (iBT), or between 400 and 447 on the AUS Institutional Paper-based TOEFL (ITP), or between 4.5 and 6.0 on the IELTS (Academic Version) may study in the Bridge Program. Students with lower scores have the option to enroll in the Outreach Program, depending on their scores, to improve their English level to meet the requirements of the Bridge Program. Registration in the Bridge Program and special Outreach Program courses is strictly determined by TOEFL and IELTS scores.

## Program Structure

The Bridge Program offers two levels of English language study, math, physics and university preparation courses. English courses include integrated instruction in reading, writing, grammar, listening, speaking, and TOEFL and IELTS (Academic Version) training. Math and physics courses prepare students for university-level courses in those subjects. The university preparation courses include topics such as time management, note-taking, research methods, public presentations, critical thinking, problem solving, adapting to university life and developing personal skills.

Students study the following per week: English, 15 hours; math (or physics, if required), 3–5 hours; university preparation, 3 hours; and test preparation to provide students with strategies and practice for the TOEFL and IELTS exams, 3 hours. Physics and math may not be taken in the same semester in the Bridge Program.

## Duration

The length of time required to satisfy the program requirements varies with each student's linguistic background, capabilities and effort. Successful completion of the program could take

as long as two semesters and one summer session.

## Academic Integrity

Students are expected to complete their own assignments and write their own quizzes and examinations. Students found guilty of academic dishonesty will receive a failing grade on the assignment, quiz or examination, and may be reported to the administration for further disciplinary action. All Bridge Program students should refer to the AUS Student Academic Integrity Code found in the Academic Policies and Regulations section of this catalog.

## Bridge Program Credit Hours

For information on course credits and course credit hours distribution, please refer to the Bridge Program's course descriptions hereafter.

After matriculation, grades earned in courses completed within the context of the Bridge Program count within the student's undergraduate cumulative GPA (CGPA). Credits earned in Bridge Program courses do not count toward a student's undergraduate graduation requirements.

## Attendance and Lateness

Bridge Program students are required to follow the Achievement Academy attendance policy. For more information on this policy, please see the *Bridge Program Student Handbook*.

## Course Withdrawal

Withdrawal from Bridge Program courses follows the undergraduate course withdrawal policy. Please see the Course Withdrawal section under Academic Policies and Regulations later in this catalog.

## Evaluation and Promotion

Promotion within the Bridge Program is based on grades (which reflect class performance), scores on the mid-term and final exams, TOEFL or IELTS scores, and teacher recommendations. Upon passing, students are promoted to the next level.

## Repeating Courses

A student may repeat any course, pending seat availability. Only the last entry of the repeated course is counted in the calculation of the cumulative GPA.

**Exit from the Bridge Program**

Students begin studies in their major courses in the semester after they satisfy both of the following criteria:

- achieve a score of 80 or above on the iBT (550 or above on the ITP), or 6.5 or above on the IELTS
- pass all Bridge Program courses and satisfy all program requirements

Students may study in the Bridge Program for a maximum of two semesters (plus the summer term if necessary). Students who have not matriculated after two semesters plus summer term may be disallowed from continuing their studies in the Bridge Program.

**Course Descriptions****ELP 100 English Language**

**Preparation 100 (15-3-2).** Focuses on comprehending and producing English at an intermediate level. Emphasizes reading modified academic texts, writing academic-style paragraphs, comprehending spoken English in academic settings and speaking at an intermediate level. Develops students' ability to take notes from short, modified academic lectures, express opinions and give short presentations. Builds skills needed to improve TOEFL scores to at least 500 (or 61 iBT) or IELTS scores to at least 5.5.

**ELP 100C English Language Preparation 100 (Contract)**

**(15-0-0).** Provides one semester of reinforced English comprehension and production at an intermediate level for students who require additional study. Aims to develop students' academic reading and writing skills. Develops the ability to take notes from short, modified academic lectures, express opinions, and give short presentations. Students will spend a minimum of three hours per week in the computer lab working on a variety of assignments, including writing, grammar and vocabulary. Builds skills needed to improve TOEFL scores to at least 500 (or 61 iBT) or IELTS scores to at least 5.5. Graded as Pass/Fail.

**ELP 200 English Language**

**Preparation 200 (15-3-3).** Focuses on understanding and producing English at an upper-intermediate level (university entry). Emphasizes reading, listening to, and discussing academic and literary texts and lectures. Enhances skills in writing summaries of texts, paragraphs and basic essays in response to the material and topics covered. Develops students' ability to understand complex ideas in texts and lectures, to apply critical thinking and to prepare for university situations.

Builds skills needed to improve TOEFL scores to at least 80 on the iBT (550 ITP) or IELTS scores to at least 6.5.

**ELP 200C English Language Preparation 200 (Contract)**

**(15-0-0).** Provides one semester of reinforced English comprehension and production at an upper-intermediate level (university entry) for students who require additional study. Aims to develop students' academic reading and writing skills. Focuses on reading, listening to, and discussing academic and literary texts and lectures as well as building ability to write summaries of texts, paragraphs and basic essays in response to the material and topics covered. Enhances understanding of complex ideas in texts and lectures, critical thinking and preparation for university situations. Builds skills needed to improve TOEFL scores to at least 80 on the iBT (550 ITP) or IELTS scores to at least 6.5. Graded as Pass/Fail.

**ELP250 English Language**

**Preparation 250 (15-3-0).** Focuses on the skills required to improve TOEFL scores to at least 80 iBT (550 ITP) or IELTS scores to at least 6.5. Emphasizes reading, listening to, and discussing academic texts and lectures. Enhances abilities to write summaries and essays in a variety of rhetorical modes. Limited to students who have passed ELP200 but have not yet achieved the required TOEFL or IELTS scores to matriculate. Graded as Pass/Fail.

**UPA 100 University Preparation**

**(3-0-1).** Focuses on developing a positive attitude toward study at university and providing the skills necessary for success in all classes. Stresses goal setting, time management, and specific study skills such as note-taking, memorization, critical thinking and accessing the library for academic research purposes. Designed for Bridge Program students.

**UPA 200 University Preparation for Non-Bridge Program Students**

**(3-0-0).** Focuses on developing a positive attitude toward study at university and providing the skills necessary for success in all classes. Stresses goal setting, time management, and specific study skills such as note-taking, memorization, critical thinking and accessing the library for academic research purposes. Designed for matriculated students on Academic Probation 1. Graded as Pass/Fail. Registration fee applies.



# Admission to Undergraduate Studies

American University of Sharjah places special emphasis on quality education. Applicants are considered based on their qualifications regardless of race, color, gender, religion, disabilities, age or national origin. The most qualified candidates are selected to fill the available places.

The medium of instruction is English and a good command of the language, both oral and written, is essential for students to be successful at AUS.

The university requires regular attendance at all classes. Students are not permitted to pursue AUS degrees through correspondence or by merely passing university examinations. AUS does not offer any degrees by distance education.

For admission consideration, secondary school grades and university grade point averages (if applicable) must meet the minimum established standards as set by the university.

Furthermore, applicants with previous college/university experiences applying to AUS as first-year students will be considered only if they were in good standing in their previous college/university, provided seats are available.

All inquiries, requests for admission application forms and subsequent correspondence should be addressed to:

American University of Sharjah  
Office of Enrollment Management  
Undergraduate Admissions  
PO Box 26666  
Sharjah, United Arab Emirates  
+971 6 515 1000  
<https://infodesk.aus.edu>

## Freshman Admission

### Minimum Admission Requirements

The university's minimum admission requirements depend on the applicant's type of secondary education program and certificate. For non-vocational certificates, only subjects classified as academic are accepted for admission consideration and the calculation of averages.

Admission to the university is competitive, and the actual required minimum average for admission consideration and to guarantee a seat will depend on:

- secondary education certificate or school average

- Internet-Based TOEFL (iBT) score, or Institutional Paper-based TOEFL (ITP) or IELTS (Academic Version) score

- number of qualified applicants

- number of available seats

The minimum required average for accepting an application for admission consideration is the equivalent of 80 percent or more in the final year of secondary education, or 80 percent or more in the best two out of the last three years. Higher averages may be applicable for certain colleges/school and/or specific majors. Other program-specific requirements or restrictions may also apply.

Furthermore, in order to be admitted to an AUS college/school, applicants must obtain a score of at least 80 on the Internet-Based TOEFL (iBT), or a score of at least 550 on the AUS Institutional Paper-based TOEFL (ITP) or a score of at least 6.5 on the academic IELTS. Scores are only valid for two calendar years. Students who score below the minimum required TOEFL or IELTS score but who otherwise meet AUS admission standards may be admitted to the Achievement Academy/Bridge Program at AUS. For information on matriculation into the chosen field of study after studying in the Bridge Program, please refer to the Exit from the Bridge Program section under the Achievement Academy/Bridge Program section.

### Notes:

- The AUS SAT code is 5543.
- The AUS iBT TOEFL code is 0526.
- The AUS AP code is 5543.

### Secondary School Certificates

#### Recognized Secondary School Certificates

Secondary school certificates are awarded either by ministries of education or by private schools and institutions. AUS recognizes certificates awarded by ministries of education. However, some countries award two levels of secondary school certificates. In this case, the university recognizes the higher certificate. The university accepts certificates awarded by private secondary schools that are recognized by their host country.

The university also accepts certificates awarded by recognized qualification authorities, international boards and national boards.

#### Examples of Secondary School Certificates

Following is a list of some common certificates and the corresponding minimum levels of performance required for accepting an application at AUS. These certificates and levels of achievement serve as guidelines only for admission to AUS and may change depending on the education system or school. Moreover, they may differ from other institutions or the standards that are generally accepted in an applicant's native country. The university may consider other types of secondary school certificates.

- **National General Secondary School Certificates (Arts or Science):** minimum required average is the equivalent of 80 percent or more in the final year national exam, or 80 percent or more in best two years
- **American-style High School Diploma:** minimum 3.0 CGPA (or equivalent) on a 4.0 scale (only subjects classified as academic are considered in the calculation of the CGPA). SAT scores are also required.
- **International Baccalaureate Diploma (IB):** obtaining the diploma and completing any six subjects, with at least three at the higher level
- **Lebanese Baccalaureate:** obtaining the baccalaureate with an average equivalent to 80 percent
- **French Baccalaureate or equivalent:** obtaining the baccalaureate with an average equivalent to 80 percent
- **Pakistani Board(s) Certificates:** Higher Secondary School Certificate (Part II) required, with an average equivalent to 80 percent
- **Indian Board(s) Certificates:** Senior Secondary School Certificate (12th Standard) required, with an average equivalent to 80 percent
- **Iranian Certificate:** completion of pre-university year required with an average equivalent to 80 percent
- **German Abitur:** minimum average of 3.00 required
- **IGCSE, GCSE, GCE:** For applications to be accepted for admission consideration, applicants must have completed at least 12 years of schooling; school leaving certificate must be provided showing last grade (year) completed. Applicants must submit a minimum of eight different IGCSE/GCSE and/or GCE subjects with four C grades and four B grades, or higher. However, priority in admission consideration and the selection of majors will be given to

applicants who meet the following requirements:

1. have completed GCE advanced supplementary level (AS-level) and/or advanced level (A-level) subjects
2. have the highest grades
3. Subjects must be from at least four different subject groups. Also, only subjects classified as academic by AUS (including arts and creativity subject group) will be accepted for admission consideration.

### Program Admission Requirements

Certain types of secondary school certificates are accepted only for specific programs at AUS.

- **Literary Certificates:** Holders may be admitted to the College of Arts and Sciences (except for the biology, chemistry, environmental sciences and mathematics majors), the College of Architecture, Art and Design (except for the architecture and interior design majors) and any major offered by the School of Business Administration.
- **Scientific Certificates:** Holders may be admitted to any major in any of the colleges/schools.
- **Technical and Vocational Secondary School Certificates:** Highly motivated and academically qualified students may be admitted to a major that corresponds to the nature of the technical or vocational secondary

school program. For example, the holder of a technical secondary certificate in electricity may apply to electrical engineering.

### Advanced Standing Credit Transfer

Students who achieve a minimum grade equivalent to B in the IB Higher Levels, GCE A-Levels, the Lebanese Baccalaureate, the French Baccalaureate, the German Abitur or the American Advanced Placement tests may be awarded course credits for freshman-level courses. The complete transfer policy is available from the Office of Enrollment Management/Undergraduate Admissions.

Applicants must submit a copy of their original secondary school certificate attested by the UAE Ministry of Education, or the appropriate authority, along with the subjects' descriptions to the Office of Enrollment Management/Undergraduate Admissions no later than the early registration of their second semester of study at AUS. Applicants who submit their documents before their first semester of study will have their documents evaluated toward credit transfer as well as exemption from appropriate placement tests. More information on placement tests is provided in the following section.

### Pre-entry Requirements for Freshman Students

#### Placement Tests

All freshman applicants who attain the minimum score or higher on the TOEFL or IELTS are required to sit for placement tests appropriate for their intended majors as shown in the chart below.

Taking the Writing Placement Test is mandatory for all students admitted to the freshman year. Advanced standing and transfer students granted credits for writing courses are waived from taking the Writing Placement Test.

Students who do not sit for the placement tests (with the exception of the Writing Placement Test) will be required to complete the corresponding preparatory course.

Advanced standing and transfer students may be exempted from taking certain placements tests depending on subjects/courses completed and grades earned. For more information, refer to [www.aus.edu/testingcenter/placement](http://www.aus.edu/testingcenter/placement). Applicants who have completed SAT Subject Test - Math Level 1 with a minimum score of 600 are exempt from taking the AUS math placement tests.

No student is allowed to sit for a placement test more than once. The sole exception is for the Mathematics Placement Test if a student is changing programs and the mathematics level is different in the two programs.

Required Placement Tests					
Majors	Placement Test				
	Engineering Math	Business Math	Architecture Math	Physics	English
Architecture/Interior Design	No	No	Yes	No	Yes
Biology/Chemistry/Environmental Sciences	Yes	No	No	Yes	Yes
Business Administration (all majors)/Economics (BA)	No	Yes	No	No	Yes
Computer Science	Yes	No	No	Yes	Yes
Design Management	No	Yes	No	No	Yes
Engineering majors	Yes	No	No	Yes	Yes
English Language and Literature	No	No	No	No	Yes
International Studies (International Relations Concentration)	No	No	No	No	Yes
International Studies (International Economics Concentration)	Yes*	Yes*	No	No	Yes
Mass Communication	No	No	No	No	Yes
Mathematics	Yes	No	No	Yes	Yes
Multimedia Design/Visual Communication	No	No	No	No	Yes
Undeclared Major	**	**	**	**	**

\* Students with a declared concentration in international economics must take either the business math placement test or the engineering math placement test.

\*\* Students with undeclared major should take all the placement tests of their intended major.

**Note:** The appropriate placement test(s) must be taken before a student can enroll in the corresponding first-year course.

## Preparatory Courses

Students who score low on a particular placement test are enrolled in an appropriate preparatory course (i.e., MTH 00X, PHY 00X, WRI 00X). The course's final grade counts toward the cumulative grade point average, but the course's credits do not count toward graduation requirements. A failing grade in a preparatory course cannot be changed in the student record by passing the placement test later. Students are allowed to repeat a preparatory course up to Sophomore I (less than 45 credits).

## Transfer Admission

### Admission Requirements

Depending on available seats, candidates transferring from institutions of higher education may be considered for admission, subject to the following conditions:

- They are in good standing (i.e., not on any probation or dismissal from the institution from which they are transferring).
- They achieved at their institution a minimum cumulative grade point average (CGPA) as required by AUS for that type of institution.
- They are transferring from independently accredited institutions of higher education recognized by the UAE Ministry of Education's Higher Education Affairs Division and offering learning experiences equivalent to those offered at AUS, and have successfully completed one or more semesters at their institutions.
- Prior to their admission to the institutions from which they are transferring, they met the AUS requirements for admission.
- They meet the English language proficiency requirements of AUS. TOEFL or IELTS may not be required for students studying at a four-year university in North America where English is the medium of instruction.
- They submit official transcripts of their high school and college/university records along with the syllabi for and descriptions of courses they seek to transfer.

### Pre-entry Requirements for Transfer Students

Depending on credits transferred, transfer students might need to sit for certain placement tests. Please check the information on Pre-entry Requirements for Freshman Students earlier in this section for details on placement tests and preparatory courses.

## Transfer of Credits

Transfer applicants from two-year community colleges in North America and four-year colleges/universities with a similar mission to AUS may be awarded transfer credits. The minimum required course grade(s) to be considered for credit transfer will depend on the institution from which the applicant is transferring.

Transfer applicants with transcripts from two or more institutions of higher education are eligible for transfer evaluation of only the courses completed at the institutions meeting the AUS transfer admission requirements.

Courses completed more than five years prior to matriculation as an undergraduate student at AUS are not transferable.

No more than 50 percent of the credits required to earn a degree from AUS may be transferred from another institution. A maximum of 30 credits may be transferred from an institution where the language of instruction is not English. In addition, transfer students must satisfy the university's graduation residence requirements as outlined in the Academic Policies and Regulations section of this catalog.

Transfer students must submit their official transcripts, syllabi and requested work samples to the Office of Enrollment Management/Undergraduate Admissions by the dates specified in the Transfer Applicants' Deadlines section hereafter. In addition to the official transcript and the syllabi and descriptions for courses students seek to transfer, some programs may require students to submit samples of their work, assignments and/or examinations. Students who seek transfer credits for studio courses are advised to provide a portfolio of completed course work in photographic, digital or original format.

Files completed by the transfer applicants' deadlines will be evaluated, and students will be awarded transfer credits, as applicable, before the first day of registration of the student's first semester at AUS. Files not completed by the deadline may be evaluated during the first semester at AUS. No transfer of credits will be awarded beyond the first semester. Transcripts of transfer students will be evaluated only once.

Courses identified as equivalent in content and level to AUS courses will be transferred as the equivalent AUS course. Other appropriate university-level courses may be transferred as free electives or as unassigned courses meeting specific degree requirements.

Students will receive email notification of their transferred credits by the Office of the Registrar.

Grades earned on a transferred course do not transfer and will not be used to calculate the student's cumulative grade point average (CGPA). The transfer course(s) could be used to satisfy registration and graduation requirements where applicable.

No engineering or computer science courses will be considered for transfer from academic programs not recognized by ABET, Inc. ([www.abet.org](http://www.abet.org)).

Courses related to areas taught within the School of Business Administration will be evaluated for transfer of credits only if they were completed within programs accredited by the Association to Advance Collegiate Schools of Business (AACSB), the European Quality Improvement System (EQUIS) or from universities approved by the School of Business Administration.

The decision regarding credits awarded is made by the appropriate academic division at AUS. The Office of the Registrar maintains and updates the transfer students' records. The complete transfer policy is available from the Office of Enrollment Management/Undergraduate Admissions.

## Applicants for a Second Degree

Applicants who have completed an undergraduate degree at AUS are not eligible to apply for a second undergraduate degree at AUS.

Applicants with an undergraduate degree earned at another independently accredited university recognized by the UAE Ministry of Education's Higher Education Affairs Division and by AUS may apply for a second undergraduate degree at AUS. Courses completed within the context of the first undergraduate degree program will not be evaluated for transfer of credits or course waivers towards the AUS degree program graduation requirements.

Applicants for a second undergraduate degree apply through the Office of Enrollment Management/Undergraduate Admissions. A complete application, along with the official transcript of the previously earned undergraduate degree, must be submitted to the Office of Enrollment Management/Undergraduate Admissions by the assigned dates (see the section on Admission Deadlines).

To be considered for admission, applicants must meet the minimum

established university admission requirements, as well as any additional requirements specific to the degree program they are applying for.

### **Applicants with Physical Challenges**

Depending on available facilities and the type of physical condition, the university may provide special services to applicants with physical challenges. Applicants with special needs are requested to contact University Counseling Services at [ucs@aus.edu](mailto:ucs@aus.edu) to determine if a specific service can be provided by AUS. This information will be treated confidentially.

### **Non-degree Admission**

Non-degree status is the designation used for students who are enrolled in credit courses at AUS but who are not currently pursuing a degree program. Some students begin their studies in non-degree status while others do not wish to pursue a degree program. To be considered for admission, an applicant must meet the same minimum admission criteria established for freshman or transfer admission and must submit the corresponding application with all the required documents to the Office of Enrollment Management/Undergraduate Admissions by the assigned dates (see the section on Admission Deadlines).

American University of Sharjah students who have not yet completed their degree programs and students who have been dismissed from the university cannot register for non-degree status.

Non-degree students may enroll in any university course for which they have the necessary academic background and qualifications. They must register for courses through the Office of the Registrar. In courses with enrollment limits, priority is given to AUS students.

Non-degree students may request to change status to undergraduate degree-seeking students. For details, please refer to the Change of Status section hereafter.

### **Early Freshman Admission**

A student in his/her final year of secondary school may apply for early provisional admission by submitting official transcripts from at least the two years previous to the final year of secondary school and SAT scores (refer to Secondary School Certificates earlier in this section).

Early freshman admission is offered only to highly qualified applicants and is not considered final until students

submit a recognized and official secondary school certificate, or equivalent, showing the successful completion of a secondary education and all items as requested in the applicant's letter of admission.

Students cannot register for courses until the admissions process has been completed.

### **Admission Deadlines**

#### **Freshman Applicants' Deadlines**

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All applications must be on file in the Office of Enrollment Management/Undergraduate Admissions by the following dates:

#### **Fall Semester 2016**

*Early Admission Applicants*  
April 14, 2016

*Regular Applicants:*

From outside UAE: June 28, 2016  
From inside UAE: July 14, 2016

#### **Spring Semester 2017**

*Regular Applicants:*

From outside UAE:  
December 14, 2016  
From inside UAE:  
December 29, 2016

#### **Summer Term 2017**

*All Applicants*  
May 23, 2017

Admitted international students who need visas for the UAE should submit the visa application form, available on the AUS website at [www.aus.edu/new\\_international\\_students](http://www.aus.edu/new_international_students), at least two months prior to the first day of class.

#### **Transfer Applicants' Deadlines**

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All transfer applications along with materials for evaluation of transferable courses must be on file in the Office of Enrollment Management/Undergraduate Admissions by the admission deadlines listed below. Courses will not be evaluated for transfer until the official transcripts, syllabi and requested work samples are submitted.

#### **Fall Semester 2016**

June 8, 2016

#### **Spring Semester 2017**

December 21, 2016

#### **Summer Term 2017**

May 9, 2017

Upon receipt, AUS will investigate the authenticity and accuracy of all submitted transcripts and supporting documents/materials.

### **The Offer of Admission**

The offer of admission, regardless of type, is valid only for the semester for which a student applies. If an applicant is granted admission for a certain semester and for some reason fails to register in that semester, the applicant may request, in writing, deferring admission for the following semester only. Admission consideration for the following semester will depend on available seats and the applicable admission criteria.

#### **Admission Deposit**

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All admitted students, regardless of type, are required to pay a seat reservation deposit of UAE Dirhams (AED) 5,000 and a residential hall room reservation deposit (if applicable) of AED 500 by the deadline indicated in the letter of admission. Both deposits are non-refundable, non-transferable to others and cannot be utilized for any other purpose than the intended. These deposits are deductible from the student's bill if the applicant joins AUS in the semester of admission. If a student requests to defer admission to the following semester and the request is approved, both deposits will be applied to the following semester's invoice.

#### **Falsified Admission Documents**

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American University of Sharjah reserves the right to take disciplinary action up to and including the revocation of admission or permanent dismissal if the university determines that information has been misrepresented in application documents or falsified documents have been submitted in support of an application for admission.

### **Other Admission Categories**

#### **Exchange Student Admission**

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An exchange student is not formally admitted to American University of Sharjah but is allowed to take courses at the university in the context of a semester exchange program. Exchange students should check with their home institutions about the transferability of AUS credits to their programs.

To be admitted as an exchange undergraduate student, a student must be enrolled in an undergraduate program at an accredited institution and be in good academic standing in his/her current institution. In addition, students must have attained a minimum Internet-Based TOEFL score of 80 or a minimum IELTS (Academic Version) score of 6.5, or they must have successfully completed the CEFR English C1 level. Exchange students coming from institutions located in an

English-speaking country and where English is the language of instruction, or from institutions with a TOEFL/IELTS admission requirement higher than at AUS, are exempt from this requirement.

Students must first apply through the study abroad office at their home institutions. In addition, they must submit to the AUS Office of International Exchange Programs (IXO) a complete online application, accessible through [www.aus.edu/ixo](http://www.aus.edu/ixo), along with an official university transcript showing courses in progress at the time of application. To secure seats in courses, applications should be submitted by the first Saturday of March for summer and fall enrollment, and the first Saturday of October for spring enrollment.

Exchange students register through IXO. They may enroll in any university course for which they have the necessary academic background and qualifications. In courses with enrollment limits, priority may be given to AUS students. Tuition and fees are governed by exchange agreements. Details are available with AUS IXO.

Normally, a student is allowed to register as an exchange student for not more than one academic year.

For further information, please contact IXO at [ixo@aus.edu](mailto:ixo@aus.edu).

Undergraduate students admitted as exchange students may request to change status to undergraduate degree-seeking students. For details, please refer to the Change of Status section hereafter.

### Transient Student Admission

Transient student status covers:

- those who have obtained their undergraduate or graduate degrees from AUS and have returned to take extra course(s) at AUS
- those who hold degrees from universities other than AUS and who want to take course(s) at AUS but not toward a degree

Applicants seeking transient student status at AUS must submit to the Office of the Registrar the complete Transient Student Application available at [www.aus.edu/registration/forms](http://www.aus.edu/registration/forms).

Transient students may enroll in any university course for which they have the necessary academic background and qualifications. They must register for courses through the Office of the Registrar. In courses with enrollment limits, priority is given to AUS students. Normally, a student can register as a transient student for no more than one academic year.

For further information, please contact the Office of the Registrar at [registration@aus.edu](mailto:registration@aus.edu).

### Visiting Student Admission

A visiting student is one who is not formally admitted to American University of Sharjah but is allowed to take courses at AUS for transfer back to the student's home institution. Visiting students are not registered in the context of a semester exchange program between AUS and the student's university. Visiting students should check with their home institutions about the transferability of AUS credits to their programs.

To be admitted as a visiting undergraduate student, a student must be enrolled in an undergraduate program at an accredited institution and be in good academic standing in his/her current institution. In addition, students must have attained a minimum Internet-Based TOEFL score of 80 or a minimum IELTS (Academic Version) score of 6.5, or they must have successfully completed the CEFR English C1 level. Visiting students coming from institutions located in an English-speaking country and where English is the language of instruction, or from institutions with a TOEFL/IELTS admission requirement higher than at AUS, are exempt from this requirement.

Applicants seeking visiting student status must submit to the AUS Office of International Exchange Programs (IXO) a complete online application accessible through [www.aus.edu/ixo](http://www.aus.edu/ixo), along with an official university transcript showing courses in progress at the time of application. To secure seats in courses, applications should be submitted by the first Saturday of March for summer and fall enrollment, and the first Saturday of October for spring enrollment.

If the application is approved, registration is completed through IXO. Visiting students may enroll in any university course for which they have the necessary academic background and qualifications. In courses with enrollment limits, priority may be given to AUS students. Standard undergraduate tuition and fees apply.

A student is allowed to register as a visiting student for not more than one academic year.

For further information, please contact IXO at [ixo@aus.edu](mailto:ixo@aus.edu).

Undergraduate students admitted as visiting students may request to change status to undergraduate degree-seeking students. For details, please refer to the Change of Status section hereafter.

### Change of Status

Students may request a change of status from non-degree to degree status or from exchange/visiting to degree status by submitting a complete application as transfer students through the Office of Enrollment Management/ Undergraduate Admissions by the assigned transfer applicants deadlines (see the section on Admission Deadlines). All admissions requirements for transfer admission in place at the time of the change of status request must be met. Students wishing to transfer to degree status must have achieved a minimum cumulative GPA of 2.00 in courses completed at AUS.

Courses taken at AUS while under exchange/non-degree/visiting status can be used to satisfy registration and graduation requirements where applicable. Grades earned in such courses will count in the cumulative grade point average (CGPA).

Courses completed outside AUS prior to admission to the degree program are evaluated for transfer of credits at degree program admission time. The university deadlines, rules and regulations governing transfer courses and credits will apply.

The degree program graduation requirements are determined by the catalog effective when the student is admitted to the degree program or the catalog effective the semester of the student's graduation. For more information, please refer to the Catalog section under Graduation Requirements.

# Academic Integrity

## Student Academic Integrity Code

Academic integrity lies at the heart of intellectual life. As members of a diverse community committed to the advancement of knowledge, American University of Sharjah affirms the importance of respecting the integrity of individual work. The AUS Student Academic Integrity Code describes standards for academic conduct, students' rights and responsibilities as members of an academic community, and procedures for handling allegations of academic dishonesty. As an institution of higher learning, AUS views academic integrity as an educational as well as a judicial issue.

The first obligation of a student is to pursue conscientiously the academic objectives that he/she has chosen. Accordingly, each student is required to conform to the regulations of the university, of the college/school in which he/she has enrolled and of the classes in which he/she is registered. It is further expected that all examinations, tests, papers and other assignments will be completed according to the standards set forth in this code.

In order to establish within the AUS student body a sense of ethical responsibility, honor and mutual respect, upon matriculation every student must sign the following Academic Integrity Pledge.

*I [student's name] pledge my commitment to the following values:*

- *I will hold myself accountable for all that I say and write;*
- *I will hold myself responsible for the academic integrity of my work;*
- *I will not misrepresent my work nor give or receive unauthorized aid;*
- *I will behave in a manner that demonstrates concern for the personal dignity, rights and freedoms of all members of the community;*
- *I will respect university property and the property of others; and*
- *I will not tolerate a lack of respect for these values.*

Students are responsible for becoming familiar with their rights and responsibilities as defined by the academic integrity code and for understanding the requirements for their particular courses (e.g., regarding such issues as collaborative work, use of study aids or take-home examinations, etc.). Students are also

responsible for learning the conventions of documentation and acknowledgment of sources required in academic work.

### Definition of Academic Violations

Members of the academic community are expected to conduct themselves with integrity as a matter of course. Certain violations of ethical conduct relate specifically to academic integrity. Academic violations include, but are not limited to, the following categories.

#### Plagiarism

To plagiarize is to use the work, ideas, images or words of someone else without attribution. Plagiarism may involve using someone else's wording—a distinctive name, a phrase, a sentence or an entire passage or essay—without using quotation marks. It may also involve misrepresenting the sources that were used. The issue of plagiarism applies to all student assignments.

#### Inappropriate Collaboration

Close collaboration on academic work requires acknowledgment. Inappropriate collaboration involves working with someone else in developing, organizing or revising a project (such as a paper, an oral presentation, a research or design project or a take-home examination) without acknowledging that person's help. The use of unauthorized assistance must be avoided in the production of all academic work. Specific policies regarding collaborative work, peer review, the use of tutors and editing may vary among individual professors.

#### Inappropriate Proxy

Students must attend their own classes and be present for all examinations. Those impersonated and impersonators will be suspended or dismissed from the university.

#### Dishonesty in Examinations and Submitted Work

All academic work and materials submitted for assessment must be the sole original work of the student, unless otherwise directed by the instructor. Communication is not allowed between or among students, nor are students allowed to consult books, papers, study aids or notes without explicit permission. Cheating includes, but is not limited to, copying from another's paper, giving unauthorized assistance, obtaining unauthorized advance knowledge of examination questions, and the use of mechanical or marking

devices or procedures for the purpose of achieving false scores on machine-graded examinations. Specific policies regarding examinations may vary with individual professors. Students are prohibited from submitting any material prepared by or purchased from another person or company.

#### Work Completed for One Course and Submitted to Another

Students may not present the same work for more than one course. Under exceptional circumstances, faculty members may permit a significant piece of research to satisfy requirements in two courses. However, both professors must agree in advance to this arrangement. Students are reminded that when incorporating their own past research in current projects, they need to reference such previous work.

#### Deliberate Falsification of Data

Students may not deliberately falsify data or distort supporting documentation for course work or other academic activity.

#### Interference with Other Students' Work

Students may not intentionally interfere with the work of others, such as sabotaging laboratory experiments, research or digital files, or by giving misleading information or disrupting class work.

#### Copyright Violations

Copyright laws must be observed. These laws govern practices such as making use of printed materials, duplicating computer software, duplicating images, photoduplicating copyrighted materials and reproducing audio/visual works. The academic integrity code prohibits theft and the unauthorized use of documents and requires adherence to the laws of Sharjah and the federal laws of the UAE.

#### Complicity in Academic Dishonesty

Complicity in academic dishonesty consists of helping or attempting to help another person commit an act of academic dishonesty or willfully assisting another student in the violation of the academic code of integrity. Complicity in academic dishonesty is pre-meditated and intentional. This can include, but is not limited to:

- doing work for another student
- designing or producing a project for another student

- willfully providing answers during an exam, test or quiz
- communicating with another student on a computer, mobile phone or other device while taking an exam
- providing a student with an advance copy of a test
- leaving inappropriate materials behind at the site of an exam or test
- altering outcome results

## Adjudication of Academic Offenses

### Jurisdiction

Academic cases resulting from alleged violations of the university's academic integrity code are within the jurisdiction of either a faculty member or the dean (or appointed designee) of a college/school. Faculty members who wish to bring charges against students should do so through the dean (or appointed designee) of the college/school in which the alleged academic integrity code violation occurred. Students who wish to bring charges against other students must do so through the faculty member in whose course or academic activity the alleged academic integrity code violation occurred. The student who brings the charges must identify himself/herself to the faculty member.

Violations of the academic integrity code that involve admission and/or placement testing fall within the jurisdiction of an ad hoc committee that is called upon when such violations are reported and could result in the revocation of admission or dismissal from the university.

### The Adjudication Process

One of two procedures may be followed in the adjudication process. The first grants authority to the faculty member to exercise discretion in those cases involving a student's judgmental error rather than willful dishonesty. The second grants jurisdiction to the dean (or appointed designee) of the college/school in which the alleged violation has occurred.

#### 1. Faculty Authority

If a faculty member is convinced that an alleged offense has resulted from an error in judgment on the student's part rather than from purposeful dishonesty, the faculty member may decide to use the occasion for instructing the student on acceptable standards for academic work. In such cases, the faculty member may, for example, require the student to rewrite or correct the original assignment or to submit a substitute assignment.

When faculty jurisdiction is exercised in the case of an unintentional violation of the Student Academic Integrity Code, the faculty member shall send a written notification of the event to the dean (or appointed designee) of the college/school in which the offense has occurred. When the student is enrolled in another college/school, the dean (or appointed designee) who receives the notification will notify the student's dean (or appointed designee) that the offense has occurred. Through this process, the university can monitor multiple occurrences of such errors of judgment by particular students.

#### 2. Dean's Jurisdiction

In all other circumstances, the following procedures will be observed:

- a. Faculty members reporting an allegation of dishonesty must do so within 10 working days of the date of discovery of the alleged offense. The report should be supported by such documentation as is appropriate and delivered to the college/school dean (or appointed designee).
- b. The college/school dean (or appointed designee) will promptly notify the student of the charge and will arrange a meeting to discuss the charge with the student. The dean (or appointed designee) will also notify the head of the department or unit in which the offense occurred, and the student's dean (or appointed designee) if the student is a member of another college/school, that an allegation has been made.
- c. At the meeting, the student will be presented with the charge and the evidence submitted by the faculty member. He/she will be advised of the procedures, including his/her rights, and given the opportunity to respond. The student may respond immediately or respond in writing within five working days. The signed document will become additional evidence in the case. If the student fails to attend this preliminary meeting, the dean (or appointed designee) may proceed with the process as appropriate.
- d. Faculty members, at their discretion, may discuss the alleged case of dishonesty with the student before the case is adjudicated. However, faculty members are not to submit grades for the work in question or for the course until the case has been adjudicated. If the semester grades are due before the adjudication process is complete, a

temporary grade of N will be assigned.

- e. When appropriate, the dean (or appointed designee) hearing the case will gather additional evidence from the student, the complainant and other concerned parties before the adjudication process.
- f. After reviewing the charges and the evidence, the dean (or appointed designee) hearing the case may dismiss the case or refer the case to the faculty member bringing the charge. For cases not dismissed or referred, the dean (or appointed designee) may assign a penalty. The dean (or appointed designee) may request a meeting with the student at any time.

### Other Adjudication Issues

While the assignment of penalties is the province of the dean (or appointed designee) hearing the case, the faculty member making the charge may recommend a grading penalty or other sanctions.

Legal counsel is not permitted at any point during the adjudication process.

The standard of proof for any instance of academic dishonesty will be clear and convincing evidence.

### Penalties

Students are advised that violations of the Student Academic Integrity Code will be treated seriously, with increasingly severe penalties considered for repeat offenders.

1. In assigning a penalty, the dean (or appointed designee) will take into account both the seriousness of the offense and any particular circumstances involved. A second violation may result in suspension or dismissal.
2. Penalties for an academic offense may include one or more of the following:
  - a. resubmission of the work in question
  - b. submission of additional work for the course in which the offense occurred
  - c. a lowered grade or loss of credit for the work found to be in violation of the integrity code or a lowered overall grade for the course (to be specified at the time that the penalty is assigned)
  - d. a failing grade of XF for the course in which the offense occurred
  - e. suspension for the semester/term in which the offense occurred with a possible addition of one or more academic semester/term

- f. dismissal from the university
3. Penalties (a)–(c) are levied by the dean (or appointed designee) hearing the case. Penalties (d)–(f) are levied by the dean (or appointed designee) hearing the case only with the concurrence of the student's dean (or appointed designee) as applicable. If consensus cannot be reached, the Vice Provost for Undergraduate Affairs and Instruction will adjudicate.
4. Penalties (d)–(f) will become a permanent part of the student's file maintained by the Office of the Registrar, with appropriate notation indicating that there has been a violation of the Student Academic Integrity Code.
5. Penalties (c)–(e) will result in non-academic sanctions that may include prohibition from extracurricular activities and the loss of athletic scholarships. See the *AUS Student Handbook* for details.
6. For penalties (e) and (f), the student is assigned a grade of N for all semester/term registered courses, with a provision for a grade penalty for the course where the academic offense was reported. No refund or cancellation of tuition fees will be permitted in such cases.
7. The student must remain enrolled in the course in which an infraction has been reported until the hearing is conducted. No refund or cancellation of tuition fees will be permitted in such cases.
8. Students found guilty of an academic integrity violation will not be allowed to complete a course evaluation for the course in which the offense occurred.
9. Students with a record of sanctions resulting from violations of the Student Academic Integrity Code or Student Code of Conduct will not be eligible for the Dean's List.
10. The student may petition to replace an XF grade resulting from a category (d) penalty with an F grade at the time of graduation or following complete withdrawal from the university. For details, please refer to the Appeal of an XF Grade section under Student Petitions and Appeals.

### Suspension and Dismissal

The decision as to whether suspension or dismissal is appropriate in a given instance will necessarily depend on the circumstances of each case.

#### Suspension

Suspension is effective for not less than the term in which the sanction is taken or for not more than one calendar year.

The length of a suspension is to be specified precisely at the time the action is taken.

A student who is suspended is entitled to resume studies in the same college/school at the conclusion of the period of suspension, provided he/she has satisfied all requirements imposed by the dean (or appointed designee) hearing the case when the original action was implemented. The student must submit a Reactivation Form to the Office of the Registrar. The form is available at [www.aus.edu/registration/forms](http://www.aus.edu/registration/forms).

Courses completed outside AUS while on suspension do not transfer.

#### Dismissal

Dismissal is invoked in cases of serious infractions of rules and regulations and when circumstances indicate that a student's association with the university should be terminated in the interest of maintaining the standards of behavior and conduct normally expected in a university community. In instances where the dean (or appointed designee) hearing the case has recommended dismissal, the Academic Appeals Review Committee will review the case and make a recommendation to the Provost.

#### Notification of Penalty

The dean (or appointed designee) hearing the case will notify the student in writing of the findings and, if applicable, the assigned penalty. The faculty member bringing the charge will also be notified in writing of these results, as will the head of the department in which the case occurred and the student's dean (or appointed designee) if the student is enrolled in another college/school.

In addition to the above and for penalties (d)–(f), the following notification process will apply:

- For penalty (d), the dean (or appointed designee) hearing the case will inform the Office of the Registrar.
- For penalty (e), the dean (or appointed designee) hearing the case will inform the student's dean (or appointed designee) who will, in turn, notify the Office of the Registrar as well as the Dean of Students, and take the appropriate academic action.
- For penalty (f), the dean's decision will be subject to review by the Academic Appeals Review Committee. The dean (or appointed designee) hearing the case must inform the Vice Provost for Undergraduate Affairs and Instruction in writing within five working days of the date of the notice. The Vice

Provost for Undergraduate Affairs and Instruction will refer the case to the Academic Appeals Review Committee, which will review it and make a recommendation to the Provost. The Provost will inform the student, the dean (or appointed designee) hearing the case, the Vice Provost for Undergraduate Affairs and Instruction, the Office of the Registrar and the Dean of Students of the final decision.

All academic integrity violations will be recorded in the university's academic integrity database maintained by the Office of the Vice Provost for Academic Affairs and Instruction.

For record keeping of documents pertaining to the infringement of the academic integrity code, please refer to the appropriate section under Student Records herein.

#### Appeal of Penalty

In cases concerning notation to the student's record [penalties (d)–(f)], students will be notified in writing of their right of appeal. Appeals must be made in writing within five working days of the date of notice. Appeals are limited to grounds of excessive sanction, improper procedure and unavailability of relevant evidence at the time of the meeting with the college/school dean (or appointed designee) to discuss the charge with the student. Appeals must be submitted to the Vice Provost for Undergraduate Affairs and Instruction. The Office of the Provost will review the appeal and may consult the case's written record, the appeal request and any person involved in the adjudication process. Following the review, the Office of the Provost may deny the appeal or may lower the sanction or remand the matter to the appropriate dean (or appointed designee) in the event of improper procedure or new evidence.



# Student Records

## Custody of Records

All transcripts and other documents students submit from other institutions at the time of admission or later are the property of AUS, and, as such, are part of the student record that is under the custody of the Office of the Registrar. The university is not required to provide (or allow the making of) copies of these documents. Transcripts submitted to AUS for admission or credit transfer cannot be returned to the student or forwarded to other institutions.

The academic record of an individual student is maintained by the Office of the Registrar for a maximum period of five years after the student graduates or leaves AUS. Beyond this retention limit, documents in a student's record are managed in accordance with the AUS Office of the Registrar policy on file retention, which could entail permanent destruction of some of these documents.

## Student Privacy Rights

The university reserves the right to disclose students' records to the parent, the immediate guardian of the student and to the private or public authority sponsoring the student, if applicable.

Students have the right to:

- inspect and review information contained in their educational records. The university is not required to provide (or allow the making of) copies of these documents. Under specific circumstances, the university may allow specific documents included in a student's record to be provided. Requests for copies of documents will be reviewed after submission of a signed request from the student concerned. The request form is available at [www.aus.edu/registration/forms](http://www.aus.edu/registration/forms). A nominal fee applies.
- request changes or updates to their personal data. Registered students are given access to update their emergency telephone/mobile contact numbers and their personal email address via the secured online student information system. For mailing address updates, an official request signed by the student concerned must be submitted to the Office of the Registrar/Student Records section. The form is available at [www.aus.edu/registration/forms](http://www.aus.edu/registration/forms).
- request non-disclosure, within the extent of UAE federal and local laws, of personally identifiable and/or

academic information from education records.

For further information on students' records, please check with the Office of the Registrar/Student Records section.

## Academic Transcripts

The Office of the Registrar maintains and updates the academic records of all students who register at the university. The permanent record reflecting the academic achievements of each student throughout his/her entire study period at the university is referred to as academic transcript or transcript.

At the end of every semester/term, the Office of the Registrar updates the academic transcripts of the students who were registered in that semester/term. Students may access their transcripts through the secure online student information system. Students are encouraged to review their records online periodically. Online transcripts are not official and are only intended to update students on their academic achievement.

At the end of any given semester/term, the Office of the Registrar mails the students who are not in good academic standing an unofficial copy of their updated transcript. These transcripts are mailed to the address maintained in the student's record at the Office of the Registrar. For details on academic standing policy, refer to Academic Standing in this section of the catalog.

Students may obtain copies of their academic transcripts at AUS from the Office of the Registrar. Transcripts will only be released with a signed request from the student concerned or an online request submitted by the student via the secured student information system. The request form is available at [www.aus.edu/registration/forms](http://www.aus.edu/registration/forms). A nominal fee applies. The university will issue only complete transcripts, not parts of the student record.

A brief explanation of the university's grading system is provided on the back of every official transcript. The detailed explanation is included in the Grades and Academic Standing section herein.

## Records on Academic Integrity Code Violations

The retention of records on academic integrity code violations is governed by the following:

- In cases where penalties (a)–(c) were assigned: All records pertaining to the infringement of the code are maintained by the student's

college/school. If the student does not graduate from AUS, the records are retained for five years after the student's last registration. If the student graduates from AUS, these records are destroyed by the college/school upon the student's graduation.

- In cases where penalties (d)–(f) were assigned: The notation indicating a violation of the Student Academic Integrity Code will become a permanent part of the student's file maintained by the Office of the Registrar. Upon graduation, all records pertaining to the violation of the Student Academic Integrity Code that were maintained by the college/school will be transferred to the Office of the Registrar for retention. If the student does not graduate from AUS, all records pertaining to violations of the academic integrity code will be retained by the college/school for five years after the student's last registration at AUS and then transferred to the Office of the Registrar for retention.
- For tracking purposes, all violations are recorded on the university's academic integrity database maintained by the Office of the Vice Provost for Academic Affairs and Instruction.

Records on Student Academic Integrity Code violations maintained by the Office of the Registrar are subject to university regulations concerning the confidentiality of student records. Upon written request, students have the right to inspect their records related to violations of the integrity code.

## Enrollment Verifications and Certifications

Students may need different types of official certificates pertaining to their academic record at AUS. These certificates must be requested from the Office of the Registrar using the request forms available at [www.aus.edu/registration/forms](http://www.aus.edu/registration/forms). A nominal fee applies.

# Registration and Course Information

## Registration

### Assessment

AUS administers standardized tests to assess student learning. Although individual test scores do not affect academic standing or appear on official transcripts, test results provide students with an opportunity to compare their performance to those of students in other universities.

The test scores are used by AUS to better understand and support student learning. Students who are selected for testing and are unavailable due to a documented illness or time conflict resulting from course schedules must petition for an exception prior to the test date. For further details, contact the Office of Institutional Effectiveness and Planning at [oiop@aus.edu](mailto:oiop@aus.edu). Those students who are not granted an exception and who choose not to complete the test will not be eligible for priority registration during the Early Registration period.

### Orientation Program

Prior to registration, academic orientation is held for all new students to introduce them to the university's general academic regulations, policies and support services. In addition, each college/school has an orientation to familiarize students with its specific regulations and assist them with the registration process. The Office of Student Affairs also introduces university life through campus tours and visits, meetings, lectures, demonstrations and other activities. The program is aimed at helping new students adjust to AUS, meet other new students and speak with senior students who assist with the orientation program.

Attendance at these programs is mandatory for all new students.

### Academic Advisors

Academic advising is an essential element of the educational process. American University of Sharjah requires advisor-student conferences at least once per semester/term.

Students are assigned academic advisors who help them in selecting their courses of study and in planning their schedules. Their advisors also approve their schedules each semester/term. However, students are responsible for selecting their courses, meeting course prerequisites and adhering to the most recent university policies and procedures. The advisor

assists the student in obtaining a well-balanced education and in interpreting university policies and procedures.

Students may also consult faculty members, department or program heads, program coordinators and associate deans or deans.

Students on academic probation are provided additional advising and guidance by the Academic Support Center.

### Registration Process

Before the registration period begins, the Office of the Registrar posts the registration guide at [www.aus.edu/registration](http://www.aus.edu/registration). The guide provides pertinent information and indicates the registration steps along with the place, date and time for each step. A continually updated list of courses offered is posted on the online student information system as well. Students should carefully read the registration guide as they prepare for registration and meet with their academic advisor.

Registration involves three main steps:

- advisement and consultation
- selection and registration of courses
- payment of fees

New students and transfer students register with the assistance of their respective colleges/schools. Exchange, non-degree, study abroad, transient and visiting students register with the Office of the Registrar. Continuing and returning students register through the AUS student information system.

New and transfer students must ensure that all documents required for finalizing their admission, particularly those indicated in the letter of admission, are submitted to the Office of Enrollment Management before registration begins. Transfer students must complete their transfer file and be awarded transfer credits before the end of their second semester at AUS.

All registered students must complete course evaluations for courses they are enrolled in prior to the beginning of the early registration period of the following semester/term. Students who do not complete all required surveys during the course evaluation period will not be eligible for early registration.

In cases of limited seat availability, AUS may give priority to students who have not had an opportunity to take a course for the first time. During the early registration period, the university reserves the right to drop students who

are repeating courses that were previously completed with a grade of C- or above. For violations related to registration, refer to the AUS Student Code of Conduct.

### Student Course Load

A student admitted to and enrolled in a degree program normally registers for 15 to 19 credits each semester. The required minimum load for all full-time students is 12 credits per semester, and the maximum load is 19 credits per semester. A student can register for up to seven credits in a six-week summer term.

The degree programs have been designed to be completed normally in four years, except for architecture, which is a five-year program. However, some students may require additional time. The proposed sequence of study for every program is intended to assist students in planning their semester/term course load so that they complete their degree requirements within the normal time limit of their respective programs.

### Full-Time Students

To be considered full-time, a student must carry a minimum course load of 12 credits per semester.

### Part-Time Students

Part-time students are those students who register for less than 12 credits in a given semester.

Degree seeking students are expected to maintain full-time status. Degree seeking students with academic difficulty could be moved to part-time status by their Academic Support Center advisor. Due to special medical conditions or other special considerations, a degree-seeking student could select to move to part-time status.

Part-time students are not evaluated for placement on the Dean's List and the Chancellor's List (see University Honors and Awards later in this section). Part-time students are normally not candidates for AUS disbursed financial grants or scholarships (for details, refer to the Tuition, Grants and Scholarships section later in this catalog). Some other AUS privileges of full-time degree seeking students might not be available to part-time students.

### Freshman Course Load

Freshman students are normally restricted to five courses per semester to allow time for their adjustment to

the learning environment of AUS. Freshman students placed in two or more preparatory courses (e.g., MTH 001, WRI 001, etc.) in a semester should register for a maximum of 13 credits.

### Probation Students Course Load

An undergraduate student on probation for the first time is allowed to carry a maximum load of 16 credits. An undergraduate student who is on a second consecutive probation may only register for a maximum load of 13 credits.

### Overload Students

A student who has attained senior standing and a minimum cumulative GPA of 3.25 may seek the permission of his/her dean (or designee) to register for up to 21 credits in the semester of graduation or in the spring semester preceding graduation during a summer term. All credits exceeding 16 credits will require a supplemental fee.

### Auditing Courses

An AUS student who wishes to attend a course but who does not wish to take examinations, receive a final grade or receive credit for the course may register to audit the course with the permission of the instructor and approval of the associate dean of the college/school offering the course. The instructor may establish standards of class participation and attendance that must be met if a student is to remain in audit status. Registration is managed through the Office of the Registrar. In courses with enrollment limits, priority is given to students registering for credit. Changes to or from audit status must be made before the last day of the add and drop period. Tuition and fees for audit students are the same as those for students registering for credit. The audited course will appear on a student's transcript as audited.

### Auditing Graduate-Level Courses

With the permission of the instructor and approval of the graduate programs director of the college/school offering the course, a senior student (90 and above credits) with a minimum CGPA of 3.00 can audit a graduate course in his/her field of study. The student is charged based on the undergraduate tuition structure.

### Graduate Students Auditing Undergraduate Courses

With the permission of the instructor and approval of the associate dean of the college/school offering the course, a graduate student can audit an undergraduate course. The student is charged based on the graduate tuition structure.

### Registration in Graduate-Level Courses

With the approval of their associate dean and the relevant graduate programs director, undergraduate students in their last year of study who have achieved a minimum CGPA of 3.00 can register for up to two graduate-level courses while enrolled at the undergraduate level. Registration is managed through the Office of the Registrar. In courses with enrollment limits, priority is given to graduate students. Students are charged based on the undergraduate tuition structure.

Graduate-level courses completed while enrolled at the undergraduate level cannot be counted toward undergraduate program degree requirements. Once the student is admitted to an AUS graduate program, these courses may be counted toward completion of graduate program degree requirements.

### Registration in Independent Study Courses

Independent study is the umbrella term used to label two types of independent work: an independent course and directed study.

Students are allowed to take one independent study course. A second independent study, for a maximum total of eight credits used toward the graduation requirements of one degree, could be approved by the student's associate dean for graduation purposes only.

An independent study should not be used to meet core requirements, major requirements, minor requirements, concentration requirements, general education requirements or the free electives requirement. For more details, refer to the Independent Study Application form available at [www.aus.edu/registration/forms](http://www.aus.edu/registration/forms).

Students interested in registering for an independent study course must complete the Independent Study Application form available at [www.aus.edu/registration/forms](http://www.aus.edu/registration/forms) and submit it to the Office of the Registrar during the early registration period of the upcoming semester/term. Registration is handled by the Office of the Registrar.

Tuition and fees for independent study courses are the same as those for other courses.

Independent study courses are graded and appear on the student's transcript.

### Independent Course (1 to 4 credits)

An independent course is listed in the catalog but offered in an independent

study format. The course is coded using the course number in the catalog. Approved special topic courses can be offered in an independent course format.

Students are not allowed to repeat courses in an independent course format.

To be eligible to apply for an independent course, students must be in good academic standing.

### Directed Study (1 to 4 credits)

A directed study is an investigation under faculty supervision beyond the scope of existing courses. Directed study courses are numbered as 396 or 496. The three-letter course prefix reflects the field of study of the course.

A directed study proposal must be accompanied by a syllabus that provides a description and clearly specified outcomes.

In order to be eligible to pursue a directed study, students must have completed a minimum of 75 credits with a minimum CGPA of 3.00.

### AUS Students Studying Abroad

AUS offers students the opportunity to study abroad at other institutions during a regular semester and gain full AUS course credit. The Office of International Exchange Programs aims to provide students the opportunity to immerse themselves in a different culture, to enhance their language skills, to build international work connections and to gain further insight into their field of expertise. With this in mind, students must choose to attend accredited institutions that provide learning experiences similar to those offered by AUS and which meet the following additional requirements:

- The host university is recognized by the UAE Ministry of Education's Higher Education Affairs Division. Students applying to take online courses must ensure that the host university is also approved for e-learning.
- The host institution is not located in a country the student is a citizen/resident of. Students will be permitted to study in a country in which they hold citizenship/residency provided the total period of residency in the country has not exceeded five years, and no more than two years of secondary education were completed in the intended host country.
- The language of instruction of the course(s) taken at the host university must be English, except for foreign language courses conducted in other languages. Foreign-language courses may be transferred as free electives. Certified translations of syllabi or

other relevant material may be required.

- With the approval of the relevant associate dean, a student pursuing a study abroad experience at colleges and universities recognized by the United States Department of Education's regional accreditation authorities and the UAE Ministry of Education's Higher Education Affairs Division, or at an official AUS exchange partner college/university, may take course(s) at the host university that are taught in languages other than English. Courses taught in languages other than English must be determined to be equivalent in content to AUS courses or approved to meet specific degree requirements (e.g., major electives, free electives, etc.). Certified translations of syllabi or other relevant material may be required.
- Courses related to areas taught within the School of Business Administration will be evaluated for transfer of credits only if completed within programs that are AACSB accredited or at universities approved by the School of Business Administration.
- Engineering and computer science courses will only be transferred from academic programs recognized by ABET, Inc.
- Graduation residence requirements must be met. For details, see Graduation Residence Requirements under Graduation/Graduation Requirements later in this section.

Of particular interest might be institutions with which AUS has semester exchange programs.

### Requirements

Students who wish to study abroad during a regular semester must have, at application time, a minimum cumulative GPA of 2.50 and have completed at least 60 credits of undergraduate courses (excluding credits earned in Achievement Academy/Bridge Program courses and preparatory courses).

Courses taken at AUS cannot be repeated in the context of a study abroad program.

### Application Process

Interested students must apply online to the Office of International Exchange Programs (IXO). Information related to application fees and deadlines is available at [www.aus.edu/ixo](http://www.aus.edu/ixo). Students who are approved by the AUS Office of International Exchange Programs will be guided by the office through the application process. Students should be aware that further admission requirements might exist at the host institution.

Students applying to take online courses as study abroad courses must clearly identify the online courses on the Course Permission Form–Outgoing Students and provide detailed syllabi of these courses. The approved Course Permission Form–Outgoing Students must be deposited at the Office of the Registrar by the end of the third week of classes of the AUS summer term for study abroad in a fall semester, and prior to the student's departure for study abroad in a spring semester. Failure to do so will result in no credit being awarded for the work completed abroad.

### Registration

AUS students who plan to study abroad must register with the AUS Office of the Registrar in addition to registering with the study abroad host university.

Students taking online courses in addition to regular courses must be registered for all courses with the same host university.

AUS students studying abroad are not eligible to be enrolled for any type of course work at AUS for the AUS semester overlapping with the study abroad semester.

### Transfer of Credits

Credits earned in study abroad courses will transfer provided the following conditions are met:

- Upon completion of the course(s), the student submits to the AUS Office of the Registrar an official transcript from the host university demonstrating that the student met the minimum course passing grade requirement, as indicated on the study abroad form.
- The student had a 2.50 cumulative GPA at the time study abroad courses are taken at the host university.

Grades earned in courses completed outside AUS do not count in the student's cumulative GPA (CGPA). Credits of transferred courses count in the cumulative earned hours and may apply towards meeting graduation requirements.

A maximum total of 30 credits may be transferred from universities where the medium of instruction is not English.

A maximum of six online credits can be approved for transfer throughout the student's undergraduate studies at AUS.

At least 50 percent of the required credits for a degree must be successfully completed in residence at AUS.

For further information on studying abroad, please contact the Office of

International Exchange Programs at [ixo@aus.edu](mailto:ixo@aus.edu).

### Summer Courses outside AUS

#### Requirements

An enrolled student is eligible to apply to take courses at another college/university during the summer with the aim of transferring credits to AUS provided the following conditions are met:

- The student must be in good academic standing at AUS at the time that the application is reviewed.
- The summer courses at the host university must not be taken as attempts to repeat AUS courses.
- The host university must be located outside the UAE.
- The host university must be recognized by the UAE Ministry of Education's Higher Education Affairs Division. Students applying to take online courses must ensure that the host university is also approved for e-learning.
- The host university must provide learning experiences similar to those offered by AUS.
- Contact hours for courses at the host university must be equivalent to or greater than the contact hours required for equivalent courses at AUS.
- The summer term at the host institution must not begin prior to the end of the spring semester examination period at AUS.
- The summer term at the host institution must end before the first day of classes of the fall semester at AUS.
- The language of instruction of the course(s) taken at the host university must be English, except for foreign language courses conducted in other languages. Approved foreign-language courses may be transferred as free electives. Certified translations of syllabi or other relevant material may be required.
- With the consent of the relevant associate dean, a student may take course(s) at colleges and universities recognized by the United States Department of Education's regional accreditation authorities and the UAE Ministry of Education's Higher Education Affairs Division, or at an official AUS exchange partner college/university, that are taught in languages other than English. Such courses must be determined to be equivalent in content to AUS courses or approved to meet specific degree requirements (e.g., major electives, free electives, etc.). Certified

translations of syllabi or other relevant material may be required.

- Courses related to areas taught within the School of Business Administration will be evaluated for transfer of credits only if completed within programs that are AACSB accredited or at universities approved by the School of Business Administration.
- Engineering and computer science courses will only be transferred from academic programs recognized by ABET, Inc.
- Graduation residence requirements must be met. For details, see Graduation Residence Requirements under Graduation/Graduation Requirements later in this section.

#### Amount of Credits

- Students may normally transfer no more than two courses for a maximum of seven credits for a six-week summer term conducted at a host university.
- For summer terms of a different duration, AUS normally allows no more than the equivalent credits of the six-week summer term at AUS.
- Students may register for more than one summer term between spring and fall semesters with approval of the relevant associate dean(s). Students may not be concurrently registered in more than one summer term.
- A college/school may place further restrictions on the allowable maximum number of credits. Students must consult with the relevant associate dean(s) when planning for summer courses outside AUS.

#### Application Process

Prior to registering for courses at the host university, students must complete the Summer Permission to Take Courses Outside AUS form available at [www.aus.edu/registration/forms](http://www.aus.edu/registration/forms) and submit it to the Office of the Registrar. Credits will not be awarded if the completed form is not submitted to the Office of the Registrar by the end of the 14th week of the spring semester.

Students applying to take online courses as summer courses outside AUS must clearly identify the online courses on the Summer Permission to Take Courses Outside AUS form and provide detailed syllabi of these courses.

All courses must be approved by the relevant associate dean(s) prior to registration in summer courses.

For information on visas and other related issues, please contact the Office of International Exchange Programs at [ixo@aus.edu](mailto:ixo@aus.edu).

#### Registration

AUS students taking courses outside AUS in the summer are not eligible to be enrolled for any type of course work at AUS for the overlapping AUS summer term.

Students taking online courses in addition to regular courses must be registered for all courses with the same host university.

#### Transfer of Credits

Credits earned in summer courses taken outside AUS will transfer provided the following conditions are met:

- Upon completion of the course(s), the student submits to the Office of the Registrar an official transcript from the host university demonstrating that the student met the minimum course passing grade requirement, as indicated on the permission form.
- The student was in good academic standing at AUS at the time summer courses are taken at the host university.

Grades earned in summer courses completed outside AUS do not count in the student's cumulative GPA (CGPA). Credits of transferred courses count in the cumulative earned hours and may apply towards meeting graduation requirements.

A maximum total of 30 credits may be transferred from universities where the medium of instruction is not English.

A maximum of six online credits can be approved for transfer throughout the student's undergraduate studies at AUS.

At least 50 percent of the required credits for a degree must be successfully completed in residence at AUS.

For further information related to transfer of credits, please contact the Office of the Registrar.

#### Internship Registration

A number of degree programs at AUS require students to successfully complete an internship. Internships that do not carry academic credit are charged a registration fee and are graded as Pass/Fail. Internships that contribute to meeting graduation requirements must be a minimum of five consecutive weeks.

To be eligible to pursue an internship, students should normally have completed a minimum of 75 undergraduate credits. A college/school may have a higher minimum credits requirement. Approval is granted by the internship coordinator within the college/school.

Students must be registered for internships in the semester/term in which they plan to complete the internship. Internship registration has to be completed by the end of the fourth week of classes of a regular semester and by the end of the first week of classes of a summer term.

Internships are normally completed during the summer before the final year of study. Students pursuing a summer internship may not register for courses during the same summer term. With the approval of the associate dean of the student's college/school, a student who meets the eligibility requirements may pursue an internship during a fall or spring semester, provided the student's course load does not exceed seven credits.

#### Exchange, Non-degree, Transient and Visiting Student Registration

See the corresponding sections under Admission to Undergraduate Studies.

#### Tuition and Fees

Please refer to the Tuition, Grants and Scholarships section of this catalog for specific information on tuition, fees, payment methods and deferment of tuition and fees.

#### Add and Drop

Students are allowed to add and/or drop courses at the beginning of every semester/term. The add and drop period begins on the first day of class. The duration of the add and drop period may vary, and the actual dates are published in the registration guide for each semester/term, which is available at [www.aus.edu/registration](http://www.aus.edu/registration).

Courses dropped during the add and drop period are not recorded in the student's transcript. The semester/term tuition is recalculated accordingly with no fee penalty charged. Students interested in adding and/or dropping courses should first consult with their respective advisors.

#### Attendance and Lateness

Attendance and participation in all class, studio, recitation, workshop and laboratory sessions are essential to the process of education at AUS. Students benefit from the lectures and discussions with their instructors and fellow students. For this reason, students are expected to attend class regularly. Lateness or absence hinders progress for the individual and the class and affects the student's grade.

University guidelines for lateness and attendance are as follows:

- Three occasions of lateness count as one absence. Lateness is defined by the individual instructor.
- In the event a student misses 15 percent of the total number of scheduled sessions in a class for any reason, the instructor may initiate withdrawal of the student from the course if a written warning or formal notification was issued when the number of absences reached 10 percent. Students are expected to manage course attendance to ensure that absences due to personal reasons or participation in extracurricular events do not exceed the 15 percent limit. Students who are absent as the result of participation in a university-sanctioned extracurricular event approved by the Office of the Provost must notify instructors at least two weeks in advance of the event-related absence and, if the requirements of the course allow, instructors are expected to make reasonable accommodations that may include make-up exams or the submission of assignments prior to an absence.
- Stricter attendance requirements may be approved by the relevant dean (or appointed designee) for courses that depend upon student contributions to complete collaborative team-based projects or to prepare for public performances.
- Instructors must specify attendance requirements in the course syllabus. If the syllabus states that missing 15 percent of class sessions will result in withdrawal, then attendance records must be maintained.
- If withdrawal occurs prior to the end of the 10th week of classes, a grade of W is assigned to the student for the specific course. Beyond the 10th week of classes and up to the end of the 13th week of classes, a grade of WF will be assigned.
- The specific application of the attendance guidelines is at the instructor's discretion.

Students are fully responsible for dropping or withdrawing from courses that they are not attending. Students who register for a course and do not attend may be administratively withdrawn, which will render them ineligible for a tuition refund or adjustment and result in the application of a no-show penalty fee.

### Course Withdrawal

Students may withdraw from courses without grade penalty by submitting the Withdrawal Form (available at [www.aus.edu/registration/forms](http://www.aus.edu/registration/forms)). The student must submit the form in person to the Office of the Registrar.

Withdrawal from courses must occur no later than the end of the 10th week of classes (end of the fourth week of classes for a six-week summer term). A grade of W will be recorded on the transcript for the course from which the student has withdrawn. A W grade does not impact the student's GPA. The semester/term tuition is not recalculated following course withdrawal.

As of the 11th week of classes and up to the end of the 13th week of classes, a grade of WF will be recorded for those who withdraw from a course. The student will receive 0.00 grade points (F grade) for the WF, and this will be used in calculating the student's GPA. Students are not eligible to withdraw from courses past the 13th week of classes. Furthermore, as of the 11th week of classes and up to the end of the 13th week of classes, faculty members may assign a WF for excessive absence.

If a student with a documented medical condition (e.g., operation, hospital stay, serious illness, etc.) is withdrawn from a course after the established withdrawal deadline, the student may submit a Student Petition Form (available at [www.aus.edu/registration/forms](http://www.aus.edu/registration/forms)) to the Office of the Registrar with the appropriate original medical documents. The Office of the Registrar will verify the claims and approve the change of status from a WF to a W.

Students are expected to maintain a minimum load of 12 credits per semester. Students on AUS financial grants/scholarships must maintain the minimum registration load specified by their grant/scholarship. For more details, refer to the Tuition, Grants and Scholarships/Grants and Scholarships section.

Students are fully responsible for dropping or withdrawing from courses that they are not attending. Students who register for a course and do not attend may be administratively withdrawn, which will render them ineligible for a tuition refund or adjustment and result in the application of a no-show penalty fee.

A student may not withdraw from a course in which an academic integrity offense was committed until the case has been reviewed and a decision has been rendered by the dean (or appointed designee).

### Withdrawal from the University

Students seeking to withdraw from the university must submit the Complete Withdrawal Form to the Office of the Registrar in person. The form is

available at [www.aus.edu/registration/forms](http://www.aus.edu/registration/forms).

If complete withdrawal occurs during the add and drop period, the courses are dropped and are not recorded in the student's transcript. If withdrawal occurs prior to the end of the 10th week of classes (end of the fourth week of classes for a six-week summer term), a grade of W is assigned to the student for the specific course. In addition, the refund schedule outlined in the table below will apply.

<b>Withdrawal from the University*</b>	
<b>Before the end of the first week of classes</b>	
100% refund excluding non-refundable deposits	
<b>During the second week of classes</b>	
50% refund of tuition	
<b>During the third week of classes</b>	
25% refund of tuition	
<b>After the third week of classes</b>	
0% refund	

Beyond the 10th week of classes, a grade of WF will be assigned.

Students are fully responsible for dropping or withdrawing from courses that they are not attending prior to withdrawal from the university. Students who do not drop or withdraw from courses may be administratively withdrawn, which will render them ineligible for a tuition refund or adjustment and result in the application of a no-show penalty fee. Students in this category who seek to resume studies at the university following complete withdrawal must pay all the upcoming semester/term tuition and fees, including charges that resulted from administrative withdrawal from courses.

For retrieval of official documents following complete withdrawal from the university, refer to Students Records earlier in this section of the catalog.

### Interrupted Studies and Reactivation of Student Record

For the purpose of this policy, AUS students studying abroad through an AUS-recognized semester exchange program are considered to be in residence.

### Students Away for One Semester

- A student in good academic standing is allowed no more than one semester of leave. To resume studies following a one-semester leave, the student must submit a Reactivation Form (available at [www.aus.edu/registration/forms](http://www.aus.edu/registration/forms)) to the Office of the Registrar, one month prior to registration.
- Students who were on probation prior to interrupted studies must petition to

resume their studies by submitting the Reactivation Form (available at [www.aus.edu/registration/forms](http://www.aus.edu/registration/forms)) to the Office of the Registrar, one month prior to registration. Only with the approval of the student's associate dean and the Director of the Academic Support Center will a student be allowed to resume studies in his/her original major.

### Students Away Longer than One Semester

- Students in good standing who leave AUS for two or more consecutive semesters must submit a new application for admission to the Office of Enrollment Management/Undergraduate Admissions.
- Students on probation or academically dismissed students who have been away longer than one semester may not apply for readmission.

### Transfer of Credits

Courses taken at another institution while on leave from AUS will not be transferred.

## Course Information

### Course Code

Every course in each discipline or field of study offered by the university is represented by a three-letter prefix denoting the discipline or field of study, followed by a three-digit number indicating the level of the course content, e.g., BIO 260 Genetics and Molecular Biology. Courses of an interdisciplinary nature are represented by the IDS interdisciplinary prefix.

In the BIO 260 example, BIO is the course prefix (which represents biology) and 260 is the course number. This particular course is a sophomore-year course in biology (denoted by the 200 level). This course is more advanced than 100-level introductory courses such as BIO 103 Introduction to Human Biology.

Normally, 100-level course numbers denote freshman-level courses, 200-level course numbers denote sophomore-level courses, 300-level course numbers denote junior-level courses, and 400- or 500-level course numbers denote senior-level courses. Courses with a 00X number are preparatory courses. They are intended for students with a deficiency in a specific subject matter. These courses do not count toward graduation.

In general, courses should be taken in order of increasing difficulty.

### Reserved Course Numbers

Certain course numbers denote the course type or the course delivery mode. These numbers are reserved

three-digit numbers; the first digit indicates the level of the course and the last two digits indicate the type of the course. Reserved course numbers are listed in the table below:

Course Number	Reserved for
x90, x91, x92	Project courses
x93	AUS courses offered abroad
x94	Special topic courses
x95	Seminar courses
x96	Independent study courses
x97	Internship courses
x98	AUS studio courses offered abroad

A two-digit suffix could be appended to the reserved course number to allow the offering of multiple differentiated sections of the same course type, e.g., ARA 39401, ARA 39402. In this example, 394 indicates a special topic offering; 01 and 02 are the 2-digit suffixes differentiating the two offerings.

### Course Credits

All courses are valued in credits. Normally, each credit hour represents 50 minutes of class instruction per week each semester, two to three 50-minute laboratory sessions per week each semester, or one or two 50-minute recitation sessions per week each semester. Design courses, studios, and visual and performing arts courses may be weighted differently.

The numbers in parentheses following the title of a course indicate the course contact hours distribution and the course credit information. The first digit in parentheses refers to the number of class contact hours per week the course requires, the second digit denotes the number of laboratory or practice hours required weekly, and the third digit refers to the number of credits the student will receive upon successfully completing the course. Below is an example:

CHM 101 General Chemistry I (3-3-4)

In this example, CHM 101 has three contact hours per week, three lab hours per week, and the student who successfully completes the course earns four credits.

**Note:** Credits earned for preparatory courses do not count toward graduation requirements.

### Course Descriptions and Syllabi

Except for special topic courses, interdisciplinary courses, AUS courses offered abroad and independent study courses, descriptions of courses offered by AUS are listed in the Course

Descriptions section of this catalog and on the university website. Courses are grouped by course subject and sorted by course code within the college/school offering them.

Descriptions of special topics courses and interdisciplinary courses are made available during registration in the college/school offering the course.

Course syllabi are available from the department or program office. They include course title and course code; pre-requisites (if any) and co-requisites (if any); name, contact information and office hours of the instructor; course description; course outcomes; course schedule; assignments and due dates; assessment methods and the weights assigned to them; and reading material and course texts.

### Course Prerequisites

Many courses above the introductory level require a minimum background of knowledge, as indicated by prerequisite courses cited in individual course descriptions. Titles and numbers are those of AUS courses. Equivalent courses satisfactorily completed at other institutions may also meet prerequisite requirements by transfer credit. Students should consult the head of the appropriate department and the Office of the Registrar for more information.

Students are responsible for having the required competence when entering a class. Courses for which a grade below C- was received do not satisfy prerequisite requirements.

In addition to prerequisites, certain courses also have co-requisites, prerequisites/concurrent and/or other criteria. This information is noted immediately following the description of the course.

### Courses Offerings and Schedules

Courses are offered at the discretion of the department. Students should check with the respective academic departments for information on when courses will be offered.

Except for workshop, design, visual arts and performing arts courses, classes ordinarily meet three days per week in 50-minute sessions or two days per week in 75-minute sessions during regular semesters. Laboratory experiences are normally scheduled for two to three 50-minute sessions once a week. Equivalent meeting time is scheduled for summer terms.

Independent study courses, projects, internships and similar kinds of study opportunities meet according to the special arrangements of the college/school, department or faculty members concerned.

# Fields of Study

## Degree Offerings

American University of Sharjah has four colleges/schools that offer both undergraduate and graduate degree programs. Undergraduate degree programs are listed below. Graduate degree offerings are listed in the *AUS Graduate Catalog*.

### College of Architecture, Art and Design

- Bachelor of Architecture
- Bachelor of Interior Design
- Bachelor of Science in Design Management
- Bachelor of Science in Multimedia Design
- Bachelor of Science in Visual Communication

### College of Arts and Sciences

- Bachelor of Arts in English Language and Literature
- Bachelor of Arts in International Studies
- Bachelor of Arts in Mass Communication
- Bachelor of Science in Biology
- Bachelor of Science in Chemistry
- Bachelor of Science in Environmental Sciences
- Bachelor of Science in Mathematics

### College of Engineering

- Bachelor of Science in Chemical Engineering
- Bachelor of Science in Civil Engineering
- Bachelor of Science in Computer Engineering
- Bachelor of Science in Computer Science
- Bachelor of Science in Electrical Engineering
- Bachelor of Science in Industrial Engineering
- Bachelor of Science in Mechanical Engineering

### School of Business Administration

- Bachelor of Arts in Economics
- Bachelor of Science in Business Administration with majors in accounting, economics, finance, management, management information systems and marketing

## Declaration of a Major

Normally, students declare their major by applying to a particular

college/school and to a major within that college/school. If a student is admitted with an undeclared major, he/she must formally choose and declare a major by the end of his/her sophomore year in order to continue as an AUS student.

Students who wish to change major but do not meet the admission requirements of the new major may seek undeclared major status, provided they have earned less than 60 credits. Such students must secure admission to their major of choice by the end of their sophomore year. Undeclared students are responsible for consulting with the Academic Support Center for course advising.

To declare a major, the student must submit the Change of Major Form to the office of the associate dean of the college/school housing the major of his/her choice by the last day of the 12th week of classes of the fall or spring semester. This form is available from the Office of the Registrar. The office of the associate dean will forward the approved forms to the Office of the Registrar. Forms received by the Office of the Registrar after the end of the add and drop period of a semester/term will be effective as of the following semester/term.

A change in major might entail a change in a student's catalog. Please refer to the Catalog section under Graduation Requirements for more details.

## Declaration of a Double Major

Students may select to enroll in two separate majors. To declare a second major, a student must complete the Minor/Double Major Form (available at [www.aus.edu/registration/forms](http://www.aus.edu/registration/forms)) and submit it to the office of the associate dean of the college/school housing the second major by the last day of the 12th week of classes of the fall or spring semester. The office of the associate dean will forward the approved forms to the Office of the Registrar. Forms received by the Office of the Registrar after the end of the add and drop period of a semester/term will be effective as of the following semester/term.

Senior students should declare their second major no later than the end of the 10th week of classes of the semester preceding their graduation semester.

One of the two majors must be designated as the primary major, but the student's rights and responsibilities are the same in both majors. The

advisor of the primary major will serve as the student's registration advisor. The student's diploma and transcript will indicate all majors completed at the time of graduation.

For graduation information, please refer to Double Major Requirements under the Graduation Requirements section.

## Change of Major

Students seeking to change their major within their college/school or to change their college/school must complete the Change of Major Form available from the Office of the Registrar. Requests for a change of major or change of college/school should be submitted to the office of the associate dean of the college/school housing the new major by the last day of the 12th week of classes of the fall or spring semester. The office of the associate dean will forward the approved forms to the Office of the Registrar. Forms received by the Office of the Registrar after the end of the add and drop period of a semester/term will be effective as of the following semester/term.

To be eligible for a change of major, a student must meet the requirements for acceptance to the new major. For details on the admission requirements of a major, please refer to the corresponding section under the college/school housing the major.

A change in major might entail a change in a student's catalog. Please refer to the Catalog section under Graduation Requirements for more details.

## Minor Offerings

Listed below are the minors offered by the university. Detailed information about the various minors is given in the catalog section of the college/school offering the minor (refer to the index of this catalog).

### College of Architecture, Art and Design

- Minor in Design Management
- Minor in Film
- Minor in Illustration and Animation
- Minor in Photography
- Minor in Product Design

### College of Arts and Sciences

- Minor in Actuarial Mathematics
- Minor in American Studies
- Minor in Applied and Computational Mathematics
- Minor in Applied Physics



- Minor in Arabic Language and Literature
- Minor in Biology
- Minor in English/Arabic Translation
- Minor in English Language
- Minor in English Literature
- Minor in Environmental Policy
- Minor in Environmental Sciences
- Minor in Governmental Studies
- Minor in History
- Minor in International Studies
- Minor in Mass Communication
- Minor in Middle Eastern Studies
- Minor in Music
- Minor in Philosophy
- Minor in Psychology
- Minor in Theatre
- Minor in Women's Studies

#### **College of Engineering**

- Minor in Aerospace Engineering
- Minor in Biomedical Engineering
- Minor in Computer Engineering
- Minor in Computer Science
- Minor in Electrical Engineering
- Minor in Engineering Management
- Minor in Environmental and Water Engineering
- Minor in Mechanical Engineering
- Minor in Mechatronics Engineering
- Minor in Petroleum Engineering
- Minor in Renewable Energy

#### **School of Business Administration**

- Minor in Accounting
- Minor in Economics
- Minor in Finance
- Minor in International Business
- Minor in Management
- Minor in Management Information Systems
- Minor in Marketing
- Minor in Supply Chain Management

#### **Declaration of Minors**

To be eligible to apply for a minor, students must normally have completed a minimum of 30 credits of course work and be in good academic standing. Further requirements might exist. For details, check the catalog section of the

college/school housing the minor (refer to the index of this catalog).

A student cannot declare a minor in his/her major field of study. A student cannot pursue more than two minors.

To declare a minor, a student must complete the Minor/Double Major Form (available at [www.aus.edu/registration/forms](http://www.aus.edu/registration/forms)) and submit it to the head of the department or coordinator responsible for the minor by the last day of the 12th week of classes of the fall or spring semester. The approved form will be forwarded to the Office of the Registrar. Forms received by the Office of the Registrar after the end of the add and drop period of a semester/term will be effective as of the following semester/term.

Senior students should declare their minor no later than the end of the 10th week of classes of the semester preceding their graduation semester/term.

A student may drop a minor prior to graduation by submitting the Minor/Double Major Form to the Office of the Registrar no later than the end of the add and drop week of the semester/term of graduation.

Minors are noted on the student's transcript. They do not appear on the diploma.

For information on completing a minor, please refer to Requirements for Minors in the Graduation Requirements section of this catalog.

#### **Concentrations**

Some majors allow students one or more areas of concentration. This option allows students more in-depth knowledge of a subject area. Please refer to the appropriate major section for relevant concentration requirements.

To declare a concentration, a student must complete the Change of Major Form available from the Office of the Registrar and submit it to the office of their associate dean by the last day of the 12th week of classes of the fall or spring semester. The office of the associate dean will forward the approved forms to the Office of the Registrar. Forms received by the Office of the Registrar after the end of the add and drop period of a semester/term will be effective as of the following semester/term.

For programs where concentrations are a choice, students should declare their

concentrations no later than the end of the 10th week of classes of the semester preceding their graduation semester/term.

# Grades and Academic Standing

## Examinations

Regular and common final examination schedules are published by the Office of the Registrar at [www.aus.edu/registration](http://www.aus.edu/registration). If a student is scheduled for more than two examinations in one day, or has a time conflict with common examinations, then the student must report to his/her associate dean by the college/school published deadline to make the necessary adjustments to his/her schedule.

## Grading System

The grade point average (GPA) is based on a four-point scale.

Effective Fall 2009, the minimum passing grade for any course taken at AUS is C-. Courses completed with D grades prior to Fall 2009 will meet the free electives graduation requirement.

The following grading system is used at AUS:

Excellent	
A	equals 4.00 grade points
A-	equals 3.70 grade points
Good	
B+	equals 3.30 grade points
B	equals 3.00 grade points
B-	equals 2.70 grade points
Satisfactory	
C+	equals 2.30 grade points
C	equals 2.00 grade points
C-	equals 1.70 grade points
Poor	
D	equals 1.00 grade points
Fail	
F	equals 0.00 grade points
Academic Integrity Violation Fail	
XF	equals 0.00 grade points
Withdrawal Fail	
WF	equals 0.00 grade points

Grades not calculated in the grade point average are:

<b>AUD</b>	Audit
<b>AW</b>	Administrative Withdrawal
<b>I</b>	Incomplete
<b>IP</b>	In Progress
<b>N</b>	No Grade
<b>P</b>	Pass; credits counted
<b>TR</b>	Transfer; credits counted
<b>W</b>	Withdrawal
<b>WV</b>	Waive; no credit

The grade appeal process is outlined in the Student Petitions and Appeals section herein.

## Incomplete Grades

The work for a course must be completed by the end of the final exam day for that course. In the case of unexcused incomplete work, an F grade is given for the missing work and the course grade is computed accordingly. Only in exceptional cases, such as a compelling medical or other emergency certified in writing by a medical or other professional, is a student assigned an incomplete grade (I) in a given course. The instructor of the course will then process an Incomplete Grade Form through the college/school housing the course and submit it to the Office of the Registrar for final approval and implementation. The Incomplete Grade Form must be submitted within the final examinations period.

An I grade pending beyond the end of the second full week of classes of the next regular semester will revert into either an F grade or the alternative grade indicated by the instructor of the course on the Incomplete Grade Form. It is the responsibility of the student to find out from his/her professor the specific dates by which requirements must be fulfilled.

## In Progress Grades

Project and internship courses could take longer than one semester/term to complete. In this case, the college/school associate dean will request that the Registrar enter an In Progress (IP) grade. The request for an In Progress grade must be submitted within the final examination period.

The in-progress work must be completed before the deadline agreed upon with the Registrar, not exceeding the end of the following semester/term. An IP grade pending beyond this time limit will revert into an F grade. It is the responsibility of the student to find out from his/her professor the specific dates by which requirements must be fulfilled.

## Repeating Courses

A student may repeat any course, pending seat availability, up to two times. In cases of limited seat availability, AUS may give priority to students who have not had the opportunity to take a course for the first time. During the early registration period, the university reserves the right to drop students who are repeating courses that were previously completed with a grade of C- or above. For violations related to registration, refer to the AUS Student Code of Conduct.

Students are allowed to repeat a preparatory course up to Sophomore I standing (less than 45 credits). Students are allowed to repeat WRI 101 or WRI 102 up to Junior I standing (less than 75 credits).

Only the last entry of the repeated course is counted in the calculation of the cumulative GPA.

Students may not repeat AUS courses at another institution with the aim of transferring credits.

Students may not repeat courses in an independent course format.

## Class Standing

The class standing of a student in a specific semester/term is determined by the number of credits the student has earned up until and excluding that semester/term. The following table summarizes the earned credits to class standing equivalencies:

Credits Earned	Class Standing
0–29 credits	Freshman
30–59 credits	Sophomore
60–89 credits	Junior
90 credits and above	Senior

During the period of early registration, the credits of the courses in progress are considered when determining the class standing of a student who wishes to enroll in a course with a class standing restriction.

## Grade Point Average

AUS uses two grade point averages: the semester grade point average (SGPA) and the cumulative grade point average (CGPA).

## Quality Points

The quality points earned in a course are calculated by multiplying the grade point value of the letter grade by the number of credits the course is worth. The grades obtained in non-credit courses are not included in the computation of a grade point average.

The grades of preparatory courses count in both the SGPA and the CGPA.

Only the last entry of a repeated course is counted in the calculation of the CGPA.

## Semester Grade Point Average (SGPA)

The SGPA is the grade point average of grades earned in a particular semester/term. It is calculated by dividing the sum of the quality points of

courses taken in a particular semester/term by the total number of credits of the courses taken in that same semester/term.

$SGPA = \frac{\text{sum (quality points of courses taken in semester X)}}{\text{sum (credits of courses taken in semester X)}}$

### **Cumulative Grade Point Average (CGPA)**

The CGPA is calculated by dividing the sum of the quality points of courses taken in all semesters/terms by the total number of credits of all courses taken in all semesters/terms.

$CGPA = \frac{\text{sum (quality points of courses taken in all semesters)}}{\text{sum (credits of courses taken in all semesters)}}$

Only the last entry of a repeated course is counted in the calculation of the CGPA.

Students who enroll in the Achievement Academy/Bridge Program prior to admission to the undergraduate level will have the credits earned in Bridge Program courses in addition to credits earned in preparatory courses taught within the context of the Achievement Academy/Bridge Program counted in the calculation of their undergraduate CGPA.

### **Academic Standing**

An undergraduate student's academic standing is determined by his/her CGPA.

Matriculated Achievement Academy students start their first undergraduate semester/term in good standing, regardless of their most recent Bridge Program academic standing.

### **Good Academic Standing**

In order to be considered in good standing, an undergraduate student must maintain a CGPA of at least 2.00 out of 4.00.

A student must be in good standing to be eligible for graduation.

### **Placement on Academic Probation**

All undergraduate students are placed on academic probation at the end of a semester in which the CGPA falls below 2.00. A full-time undergraduate student on probation for the first time is allowed to carry a maximum semester registration load of 16 credits. A full-time undergraduate student who is on a second consecutive probation may only register for a maximum semester registration load of 13 credits. Thereafter, an undergraduate student must be in good academic standing (minimum CGPA of 2.00) to continue at AUS.

An undergraduate student who registers for a summer term while on academic probation and who fails to remove his/her academic probation by the end of that summer term will maintain his/her academic probationary status.

Undergraduate students placed on academic probation must sign a contract with the Academic Support Center. Probation students are expected to fulfill the obligations of their probation contract and meet on a regular basis with their Academic Support Center advisor. Students who do not meet all contract obligations may not be able to continue at AUS or may not be granted permission to resume studies following withdrawal from the university.

In addition, undergraduate students who have earned less than 30 credits from courses completed at AUS and who are placed on academic probation for the first time are required to successfully complete the university study skills course UPA 200 offered by the Achievement Academy/Bridge Program in the semester/term immediately following placement on academic probation. If the placement on first academic probation with less than 30 institutional credits earned happens at the end of a spring semester, students must complete the UPA 200 course in the following fall semester. Students who achieve good standing at the end of the interim summer term, and students who have enrolled in the Achievement Academy/Bridge Program prior to admission to the undergraduate level and have completed the university study skills course UPA 100 while in the Academy are exempted from this requirement. For more details, see the section on the Achievement Academy/Bridge Program in this catalog.

### **Removal of Academic Probation**

Undergraduate academic probation will be removed at the end of any semester/term in which the student attains a CGPA of 2.00.

### **Academic Dismissal**

An undergraduate student who fails to remove his/her academic probation by the end of the second consecutive semester on academic probation, with the academic probationary status maintained at the end of the interim summer term, is academically dismissed and will not be allowed to continue as a student at AUS.

Students seeking reinstatement following academic dismissal must file a Reinstatement Petition form with the Academic Support Center (ASC) prior to

the official deadline. The Reinstatement Petition, eligibility criteria for application and submission deadlines are available from the ASC. Reinstatement petitions may be submitted only for the regular semester immediately following the academic dismissal semester. Reinstatement following academic dismissal is granted only in exceptional circumstances.

### **University Honors and Awards**

#### **Dean's List**

The Office of the Registrar issues the Dean's List of honor students at the end of each semester. A notation of the Dean's List award is also added to the student's transcript in the corresponding semester. Dean's Lists are not issued for summer terms.

To be placed on the Dean's List, a student must:

- have registered and completed a minimum of 15 credits in gradable courses in the semester
- have at least a 3.50 SGPA
- be in good academic standing
- have no failing grades in any of his/her courses during that semester
- have no incomplete grades
- have no record of sanctions resulting from violations of the Student Academic Integrity Code or Student Code of Conduct

#### **Chancellor's List**

Students who have been placed on the Dean's List for both the fall and spring semesters of an academic year are further recognized by the Office of the Provost. These students are placed on the Chancellor's List and are honored during the fall Honors Convocation of the following academic year.

#### **Graduation Honors**

The university grants Latin honors at graduation. For details on graduation honors, please see Graduation Honors in the Graduation/Graduation Procedures section.

# Student Petitions and Appeals

## Student Responsibility

All official university communications are distributed through the AUS-issued email address. These are considered official notifications. Students are responsible for checking their AUS email accounts and for responding to or acting upon messages accordingly.

Students should keep their own records of all transactions with the university (e.g., registration schedules and forms, grade reports, payment records, etc.). It is also advisable to keep copies of all tests, digital files, papers and so forth submitted in fulfillment of course work. Students should keep copies of all course syllabi.

## Petitions

Students may petition for exceptions to academic policies of the university. Petitions are processed through the Office of the Registrar. The Student Petition Form is available at [www.aus.edu/registration/forms](http://www.aus.edu/registration/forms).

Registration-related petitions must be submitted to the student's head of department by the first day of the semester/term for which the exception is requested. The office of the associate dean will forward the approved petitions to the Office of the Registrar.

## Appeal of a Grade

Students are entitled to objective, professional evaluation of their academic work and to fair, equitable treatment in the course of their academic relationships with members of the faculty. These criteria are observed by the members of the AUS faculty as a part of their professional responsibilities.

A student who believes that he/she has a legitimate concern regarding a final course grade must inform the professor responsible for the course in writing and then discuss the matter with the professor. If a resolution cannot be reached, the student should contact the department head in writing to file a formal grade appeal no later than two working days after the grade has been made available on the student information system. If the matter cannot be resolved at the department level, a grade appeal review will be conducted by a college/school committee appointed by the dean (or appointed designee). Based on the committee's formal recommendation, the dean (or appointed designee) may grant or deny the appeal and notify the student and the professor responsible

for the course of the decision. If a change of grade is warranted, the dean (or appointed designee) will inform the Registrar of the grade change.

If a student believes that the grade appeal review by the college/school was affected by procedural errors or the lack of consideration of factors relevant to the case, the student may submit an appeal to the Academic Appeals Review Committee through the Vice Provost for Undergraduate Affairs and Instruction. The student must clearly state the reasons for the appeal and submit all relevant material to the Vice Provost for Undergraduate Affairs and Instruction within five working days from the date of notice of the outcome of the grade appeal review by the college/school. The Academic Appeals Review Committee will consider the case to determine if due process was followed by the college/school and make a formal recommendation to the Provost. The Provost may deny the appeal and notify the student and the college/school of the outcome or, in the event of improper procedure or new evidence, remand the matter to the appropriate dean (or appointed designee) for review at the college/school level.

## Appeal of an XF Grade

In cases where a failing grade of XF was assigned to a course as a result of an academic offense penalty, a student may petition during the semester/term of graduation, or at the time of complete withdrawal from AUS, to have the grade converted to an F on the academic transcript. The petition is submitted to the Office of the Registrar along with the Application for Graduation or the Complete Withdrawal Form. The final decision will be made by the Office of the Vice Provost for Undergraduate Affairs and Instruction.

The F grade resulting from an XF grade will be reverted back into an XF grade if the student reactivates his/her record at AUS.

## Appeal of Other Academic-Related Issues

If a student wishes to discuss an issue pertaining to a course, an instructor or other academic-related issues, the student may direct his/her concern to the head of the department and/or dean of the college/school.

If, in the judgment of the dean of the college/school, the grievance is of such gravity or its resolution would have such impact on the welfare of students generally or on the conduct of professional responsibilities at the university as to require even more formal safeguards for the aggrieved student and faculty member involved, the dean will prescribe an appropriate procedure consonant with the university's mission or refer the matter to the Academic Appeals Review Committee through the Vice Provost for Undergraduate Affairs and Instruction. Academic appeals requests must be submitted no later than the end of the first day of orientation week of the following semester.

# Graduation

## Graduation Requirements

### Catalog

The graduation requirements for any individual student are determined by the catalog that was effective when the student matriculated in the major. A student may choose to follow the catalog effective for the semester/term when the student expects to complete the graduation requirements. To change catalogs, a student must file a Change of Academic Catalog Form (available at [www.aus.edu/registration/forms](http://www.aus.edu/registration/forms)) with the Office of the Registrar no later than the end of Add/Drop period of the student's graduation semester/term.

A student who changes majors may petition to revert to the catalog in effect at the time of matriculation into the university. The Petition Form (available at [www.aus.edu/registration/forms](http://www.aus.edu/registration/forms)) must be approved by the student's associate dean and submitted to the Office of the Registrar no later than the end of the add/drop period of the student's graduation semester/term.

Every individual student is personally responsible for meeting all graduation requirements as detailed in his/her catalog year.

If a required course within a program changes its number of credits, then the number of credits required by the program for graduation may, at the discretion of the college/school, change by the same amount provided the minimum total number of credits for graduation is 120 and the CGPA is at least 2.00.

In case of substantial changes in course offerings, equivalent graduation requirements are determined by the dean of the student's college/school.

**Disclaimer:** *Course information, content and prerequisites may be subject to change as a result of the university's commitment to a process of continual improvement in academic programs. Students must comply with the most up-to-date course requirements.*

### Courses

Courses are considered primary components of the curriculum and should not be split into individual credits to be counted in different areas of the degree audit.

### Passing Grade Requirement

Effective Fall 2009, the minimum passing grade requirement for a course

to meet any area of the graduation requirements and to satisfy any course prerequisites and/or co-requisites is C-. Courses completed with D grades prior to Fall 2009 will meet the free electives graduation requirement.

### General Education Program

#### Mission Statement

Liberal studies form the core component of an AUS education. The General Education Program encourages intellectual discovery and critical reflection, promotes an appreciation of the various modes of human inquiry, and develops the knowledge and skills to succeed in and contribute to the Arab Gulf region and the world at large. The program fosters personal development by providing the foundation for lifelong engagement with the questions that shape individuals and societies. General education at AUS complements professional programs by offering opportunities for students to reflect on a diverse and increasingly interdependent world and their place within it.

#### Program Goals and Outcomes

The General Education Program provides students with opportunities to:

Goal A. Gain an understanding of the history and culture of the Arab World

#### Outcomes

- Explain the literary, artistic or scientific traditions of the Arab world
- Analyze the interdependencies between the Arab Gulf region, the Middle East and the world at large

Goal B. Examine the values and ideas that have shaped the Western intellectual and cultural traditions

#### Outcomes

- Describe intellectual and cultural traditions of the Western world
- Analyze and explain how Western traditions have influenced the present

Goal C. Explore how modes of human inquiry or expression enhances our understanding of culture

#### Outcomes

- Analyze cultural ideals and values in order to enhance self-understanding and empathy for others
- Explain how societies are defined in relation to culture, nationality, race, ethnicity or gender
- Analyze and explain implied and expressed cultural values and

attitudes in works of literature (literary perspectives)

- Analyze and explain the development of human institutions, ideas and social structures (historical perspectives)
- Analyze and explain philosophical works that present perspectives on social and cultural issues or problems (philosophical perspectives)

Goal D. Appreciate the roles of creative endeavors in enriching the human condition

#### Outcomes

- Identify, interpret and explain themes in works of literature or art (study of arts/literature)
- Explain how artistic and literary traditions have influenced individuals, cultures or societies (study of arts/literature)
- Demonstrate an understanding of creative processes through the production of works of art or literature (engagement in arts/literature)
- Reflect upon and explain the decisions made during the creative process (engagement in arts/literature)

Goal E. Reflect on the consequences of individual and collective human action

#### Outcomes

- Explain the ways in which individuals, groups, institutions or societies behave and influence one another
- Analyze and describe how social, cultural, political or economic conditions affect individuals
- Analyze and explain human behavior in a variety of contexts
- Assess the ethical dimensions of actions and explain the relationships between individual moral choices and professional responsibility

Goal F. Recognize the value of the natural sciences

#### Outcomes

- Explain how scientific hypotheses are conceived and tested
- Explain how basic scientific concepts are related to contemporary issues

Goal G. Employ quantitative reasoning as a conceptual tool for analysis and description

#### Outcomes

- Analyze data to identify quantitative and qualitative relationships
- Apply basic mathematical concepts

- Demonstrate proficiency in deductive reasoning and problem solving

Goal H. Develop the skills and abilities to thoughtfully seek information, critically analyze sources and clearly formulate complex ideas

#### *Outcomes*

- Communicate effectively in written English
- Communicate effectively in spoken English
- Evaluate written communication, identify key ideas and establish hierarchies of information
- Structure clear and persuasive arguments based on an analysis and presentation of evidence
- Analyze and explain how culture affects communication
- Identify and access information resources efficiently and effectively based upon the Association of College and Research Libraries standards

Goal I. Investigate how digital technology can facilitate inquiry and the advancement of knowledge

#### *Outcomes*

- Demonstrate how digital technology can contribute to understanding
- Demonstrate the ability to use digital technology to enhance analysis, description and presentation

### **General Education Requirements**

All students must complete a minimum of 42 credits in core and non-core general education requirements (GER) with a minimum grade of C- in order to graduate. In addition, students must successfully complete one course from each area of the major-designated requirements. Information on specific courses meeting each of the general education areas is available at [www.aus.edu/generaleducation](http://www.aus.edu/generaleducation).

Students who transfer to AUS may satisfy general education requirements if the course(s) being transferred meet the outcomes of a general education area as defined by the general education program.

#### *Core Requirements*

Students must successfully complete a minimum of 18 credits in courses meeting the following core general education areas. Credits earned in these areas cannot be counted towards other general education requirements or other degree program requirements.

- history and culture of the Arab world: three to six credits
- culture in a critical perspective: three to six credits

- arts and literature: three to six credits
- human interaction and behavior: six to nine credits

#### *Non-Core Requirements*

Students must successfully complete a minimum of 24 credits in courses meeting the following non-core general education areas. Courses in these areas may also meet major requirements. In cases where a course is considered both a non-core general education requirement and a major requirement, credits for the course are counted only once towards the overall credits earned.

- natural sciences: a minimum of six credits
- mathematics: a minimum of three credits
- statistics: a minimum of three credits (for College of Engineering, please see degree program details)
- communication: a minimum of 12 credits in 100-level or above writing (WRI)/English (ENG) courses in this area. WRI 101 Academic Writing and WRI 102 Writing and Reading across the Curriculum should be completed in the first year (freshman) or before completion of 30 credits and cannot be repeated once the student has earned 75 credits. Either ENG 203 or ENG 204 can be used to meet the communication requirement.

#### *Major-Designated Requirements*

Students must successfully complete one course from each of the following areas:

- ethical understanding
- discipline-specific writing intensive course
- oral proficiency
- information literacy
- computer literacy

### **Major Requirements**

Each student in a degree program must complete at least 36 credits in major and major-related courses. The specific major requirements of a major are listed under the corresponding degree program section in this catalog. Some major requirements may count toward fulfilling non-core or major-designated general education requirements; credits of such courses will not double count.

### **Double Major Requirements**

To complete a double major, students must satisfy all of the degree program requirements of the two majors requested. Some courses may be counted toward the fulfillment of both degree programs' requirements. The catalog in effect for the student's

primary major will be followed for the degree audit of the second major.

### **Double Concentration Requirement**

Certain degree programs offer students the choice of a double concentration. In cases where the two concentrations have common courses, courses used to fulfill the requirements of the first concentration can double count toward the second concentration.

Because the second concentration is not a degree program requirement, it is considered a free choice of the student. As such, courses used toward the second concentration can double count as free electives.

### **Minor Requirements**

Minor programs consist of a minimum of 18 credits including at least 50 percent of the credits in courses at or above the 300 level. At least six credits of the courses at or above the 300 level must be taken in residence at AUS. Fifty percent of all credits required for the minor must be completed in residence at AUS.

Students must meet the prerequisite requirements for courses required for the minor.

The catalog in effect for the student's major will normally be followed for the audit of the minor. If the minor is not listed in the student's designated catalog, then the first catalog in which the minor is listed will be applied.

Graduation requirements of the minor(s) must be completed prior to the award of the degree.

The minimum cumulative GPA for minor courses is 2.00. The specific course requirements constituting a minor are listed in the corresponding college/school section in this catalog (refer to the index of this catalog).

All courses used for the major and/or the double major degree requirements may also be used toward the minor. To complete an additional minor, students must satisfy all the requirements of the two minors.

### **Free Electives Requirement**

To satisfy the free electives requirement, students must complete at least two courses with a minimum of six credits of free electives.

Courses taken to satisfy a double concentration requirement can count toward free electives. Preparatory courses do not fulfill the free electives requirement. A college/school may exclude certain courses from being counted as free electives. For more details, please refer to the degree requirements section of the

corresponding degree program section later in this catalog.

As of Fall 2009, a grade of C- or higher is required for any course taken to satisfy the free electives requirement. Courses completed with D grades prior to Fall 2009 will meet the free electives graduation requirement.

### Internships

Internships that contribute to meeting graduation requirements must be a minimum of five consecutive weeks. Internship offerings and requirements are listed under the various degree program requirements.

For information on internship registration, please see Registration and Course Information/Internship Registration earlier in this section of the catalog.

### Graduation Residence Requirements

Candidates for the bachelor's degree are expected to complete their last semester/term in residence at the university unless registered with an official AUS exchange partner college/university.

A minimum of 36 credits of 300- and/or 400-level course work must be successfully completed in residence at AUS to obtain a bachelor's degree. Coursework at the 300- and/or 400-level completed at a recognized AUS exchange partner will meet the AUS upper-level requirement if the courses have been pre-approved by the relevant college/school.

Transfer students must successfully complete at least 50 percent of the required credits for a degree in residence at AUS.

### Time Limit on Duration of Study

Regardless of the catalog by which the student's graduation requirements are governed, all degree requirements must be completed within eight years of admission to AUS as an undergraduate student or matriculation from the Achievement Academy/Bridge Program, inclusive of any leave.

### Academic Standing Requirement

A student must be in good academic standing to be eligible for graduation.

## Graduation Procedures and Diploma Information

### Participation in the Commencement Ceremony

The university holds two commencement exercises: a fall commencement ceremony at the end of

the fall semester and a spring commencement ceremony at the end of the spring semester.

Prospective candidates for graduation in a fall or spring semester are eligible to participate in the corresponding semester commencement ceremony. Prospective candidates for graduation in a summer term are eligible to participate in the following fall semester commencement ceremony.

Students registered at the 11th week of a semester for courses/project/internship necessary to complete their degrees may participate in commencement at the end of that semester.

Students who do not wish to participate in the commencement exercises of their semester/term of graduation must complete the Absentia Form available at [www.aus.edu/registration/forms](http://www.aus.edu/registration/forms) or [www.aus.edu/commencement](http://www.aus.edu/commencement). Absentia graduates are not eligible to participate in another semester/term commencement ceremony.

### Application for Graduation

Candidates for degrees file an Application for Graduation form in the Office of the Registrar during the registration period of the last expected semester/term of study. The Application for Graduation form is available at [www.aus.edu/registration/forms](http://www.aus.edu/registration/forms) or [www.aus.edu/commencement](http://www.aus.edu/commencement). The deadlines for application submission are published in the academic calendar at the front section of this catalog, as well as at [www.aus.edu/commencement](http://www.aus.edu/commencement). Only after an Application for Graduation form has been filed can the Office of the Registrar begin processing the necessary information for final certification for graduation.

Students who fail to complete all degree requirements by the end of the semester/term for which they apply to graduate need not reapply for graduation. Their previous application will be automatically moved to the following semester/term.

### Conferral of Degrees

Only students who have successfully completed degree requirements by the end of the semester/term for which they have applied to graduate are certified for conferral of a degree.

Degrees are conferred at the end of the semester/term in which requirements have been met. Conferral of the degree is noted on the academic transcript of the graduate with the date of graduation.

### Names on Diplomas

The names of AUS students will be spelled in English exactly as they appear on their passports or identity cards when printed on diplomas. If a name on a passport or an identity card does not appear in English, then the spelling of the name will be printed according to the personal preference of the student.

### Degree Information on Diplomas

The diploma will list the full name of the degree program awarded, as well as the applicable concentration(s). The diploma of students graduating with a double major will also list the second major. Completed minors appear on the student's academic transcript but not on the diploma.

### Graduation Honors

The university grants Latin honors at graduation. To be eligible for graduation honors, students must have achieved the requisite CGPA. These are:

Summa cum laude: 3.90–4.00 CGPA

Magna cum laude: 3.70–3.89 CGPA

Cum laude: 3.50–3.69 CGPA

Latin honors are noted on the student's diploma and transcript.

### Attestation of Diplomas and Transcripts

The Office of the Registrar provides information relevant to the attestation of diplomas and transcripts with the UAE Ministry of Education's Higher Education Affairs Division. For details, please see [www.aus.edu/commencement](http://www.aus.edu/commencement).

# Tuition, Grants and Scholarships

## Tuition and Fees

Tuition for full-time undergraduate students is given in the table below. The full-time course load is 12 to 16 credits. Students registering for more than 16 credits are charged a supplementary fee per credit over 16.

Part-time students are charged per credit regardless of their major.

Additional undergraduate fees and housing charges are given in the tables that follow.

Non-degree, transient and visiting students must pay the same tuition and fees as regular students. Tuition payment for exchange students attending AUS is governed by the specific terms of the exchange agreement.

The tuition payment of AUS students studying abroad at universities with which AUS has a semester exchange program is governed by the exchange agreement. For details on payment procedures, please check with the International Exchange Office.

AUS students who have received approval to study abroad at a university that does not have a semester exchange program with AUS make their payments directly to their study abroad host university.

AUS reserves the right to revise tuition and fees. Tuition schedules are published prior to the beginning of the fall semester each academic year.

Tuition (in AED)		
	Regular Semester	Summer Term
<b>Achievement Academy Tuition</b>	29,720	3,860 per credit
<b>Undergraduate Students Registered in All Majors</b>		
Less than 12 credits	3,980 per credit	3,860 per credit
12 to 16 credits	45,760	-
Over 16 credits	45,760 + 3,050 per credit exceeding 16 credits	-

Compulsory Fees (in AED)			
Fee Type	Description	Regular Semester	Summer Term
Seat Reservation Deposit	For all admitted applicants. Non-refundable fee. Deductible from student's tuition if applicant joins AUS in the semester/term of admission	5,000	5,000
Textbook Fee	For all full-time undergraduate students; redeemable only at the AUS bookstore	500	-
Student Activities	All students	300	150
Health Insurance	<b>Plan I:</b> For AUS-sponsored students and for students who do not have insurance coverage	600	300
	<b>Plan II:</b> For all students who are <b>not</b> on Plan I	300	150
	Students who join AUS in the summer term are assigned to Plan II for the summer term only.	150 AED for the summer term only	
FE (Fundamentals of Engineering) Exam	For all senior chemical, civil, electrical and mechanical engineering students, payable once [US \$250 directly to NCEES (National Council of Examiners for Engineering and Surveying) and AED 250 to AUS].	\$250 + AED 250	-

Conditional Fees (in AED)		
Lab/Technology Fee A	Applies for each registered course that has Lab/Tech Fee Rate A noted in its course description	1,270
Lab/Technology Fee B	Applies for each registered course that has Lab/Tech Fee Rate B noted in its course description	1,410
UPA 200 Registration Fee	Charged to undergraduate students registered for UPA 200	2,500
Belbin SP Charge	Charged to students registered for ENG 207	50
SBA Software Charge	Charged to SBA courses using a specialized software	630
Internship Registration Fee	Charged to students registered for a 0-credit internship	200



Student Housing Fees (in AED)			
Room Reservation Fee	First time student residential hall application fee. Non-refundable. Deductible from the student residential hall fees	500	
Utilities Service Fee	Fee automatically added to any residential hall room reserved (except in summer)	290	
Refundable Dorm Maintenance Deposit	One-time fee applied when students first register for residential halls–refundable after cancelation	1,000	
Room Type	Description	Regular Semester	Summer Term
<b>Private</b>	Single occupancy with private bath and kitchenette	17,230	6,890
<b>Semi-Private</b>	Single occupancy with a shared bath and kitchenette	12,200	4,880
<b>Sharing</b>	Double occupancy with a shared bath and kitchenette	9,280	3,710
<b>Single</b>	Single occupancy with a common bath and no kitchenette (men only)	6,430	-
<b>Double</b>	Double occupancy with a common bath and no kitchenette (men only)	3,740	-

Fines/Charges (in AED)	
Late Registration	500
Late Payment (if tuition and fees are not settled by the first due date)	500
Reinstatement Fee (if fees are not settled by the second due date)	1,500
Returned Check Penalty (per check if returned by bank)	500
Declined Credit Card (per transaction for deferred payments if credit card is declined upon charging)	500
No-Show Penalty (if a student does not show up for one or more registered courses)	1,500

### Payment Methods

Tuition and fees are due each semester at or before the time of registration and form an integral part of registration. For information on the deferment of tuition and fees, please see the Deferment of Tuition and Fees section below.

AUS accepts the following methods of payment:

- cash in UAE Dirhams (AED) only
- checks drawn on local banks in UAE Dirhams (If two or more checks return due to insufficient funds, checks will no longer be accepted.)
- credit cards (including online payment)
- direct transfers to Sharjah Islamic Bank Account No. 0029-200170-001, IBAN number: AE65 0410 0000 2920 0170 001 (student's name and ID number must be noted on transfer)

A charge of AED 500 is added if a check is returned for insufficient funds or if a credit card authorization payment is declined.

All student financial transactions with the university are processed through the Student Accounts Office located on the mezzanine floor of the Main Building. Questions concerning student accounts should be directed to the

Student Accounts Office by calling 515 2282/515 2039 or sending an email to [studentaccounts@aus.edu](mailto:studentaccounts@aus.edu).

### Deferment of Tuition and Fees

Students are expected to pay their tuition and fees or to make arrangements for deferred payment during the registration period. The deferment of tuition and fees is approved only if all of the following conditions are met:

- 60 percent of the tuition and fees have been paid by the payment deadline.
- The student does not have access to checks or credit cards.
- The student has a clean payment history.
- The Fee Deferment Request Form is completed and signed by the student and is authorized by a Finance Department official. The form is available at [www.aus.edu/admin/forms/or](http://www.aus.edu/admin/forms/or) from Student Accounts.

### Late Fees and Fines

All university students must adhere to university deadlines, rules and regulations. Late fees and fines may apply for late book returns, parking

violations, breakage/replacement charges, late tuition payment, etc.

### Grants and Scholarships

Located on the mezzanine floor of the Main Building, the Office of Financial Grants and Scholarships administers a range of grants and scholarship packages that help undergraduate students finance their education.

Students may apply for grants and scholarships regardless of their race, color, gender, religion, disabilities, age or national origin. Transfer students are eligible to apply for financial grant only after having completed one regular semester at AUS as full-time students.

Applications for grants and scholarships may be collected directly from the Office of Financial Grants and Scholarships. Specific forms, as indicated in the appropriate sections below, can also be printed from the office website at [www.aus.edu/grants\\_scholarships](http://www.aus.edu/grants_scholarships). Applications/renewal forms must be submitted by the specified deadlines, as published on the office website. All documents submitted at the time of applying for a scholarship/grant or renewing an application for scholarship/grant are the property of AUS and, as such, are part of the student record that is under the

custody of the Office of Grants and Scholarships. The university is not required to provide (or allow the making of) copies of these documents.

For more information, please call 515 2055/2060/2072/2005 or visit [www.aus.edu/grants\\_scholarships](http://www.aus.edu/grants_scholarships).

## Grants

### Chancellor's Scholars Award

First-time students who have paid the seat reservation deposit by the deadline specified on the letter of admission and who meet the following requirements may apply for the highly competitive Chancellor's Scholars Award:

- outstanding personal qualities and leadership abilities in school and the community
- scientific or literary contributions to the community
- special school or community honors or awards
- community service
- school extracurricular activities as detailed in an essay the student must submit
- a minimum average of 95 percent or equivalent in the last three years of secondary education
- limited financial resources

The award is offered in fall semesters only; it is granted for the academic year, provided the recipient continues to meet the requirements at the end of the fall semester. It covers 75 to 100 percent of the student's tuition (for a maximum of 16 credits) and lab/technology fees. Recipients of the Chancellor's Scholars Award who live on campus in single, double or sharing rooms are granted partial assistance toward their residential hall fees.

The Chancellor's Scholars Award is granted for a maximum period of eight semesters from the time of matriculation into the university; it is granted for 10 semesters for students in engineering majors and 11 semesters for Bachelor of Architecture students.

The application for the Chancellor's Scholars Award is available at the Office of Financial Grants and Scholarships website ([www.aus.edu/grants\\_scholarships](http://www.aus.edu/grants_scholarships)). Applications must be submitted by the specified deadlines, as published on the website.

#### *Conditions for Maintaining the Chancellor's Scholars Award*

Recipients of the Chancellor's Scholars Award who wish to maintain it for the upcoming year must submit a renewal application (available at

[www.aus.edu/grants\\_scholarships](http://www.aus.edu/grants_scholarships)) by the enrolled students' deadlines. Please refer to the Office of Financial Grants and Scholarships website for the actual dates.

Chancellor's Scholars Awards are re-evaluated at the end of every regular semester. In order to maintain the award, students must meet the following conditions:

- achieve a minimum semester GPA of 3.00
- achieve a minimum cumulative GPA of 3.30
- maintain a full-time student status with a minimum of 15 credits
- not be suspended or placed on conduct probation

In addition to meeting the above conditions, students applying to renew their Chancellor's Scholars Award must provide evidence of limited financial resources.

### Family Tuition Grant

For families with more than one child enrolled simultaneously at AUS as full-time undergraduates in a degree program, a tuition discount of 25 percent is given to each sibling after the first. The 25 percent discount is granted for both tuition (for a maximum of 16 credits) and lab/technology fees. Family tuition grants are awarded for fall and spring semesters only.

To receive the family tuition grant, students must complete the Family Tuition Grant Application form available at [www.aus.edu/grants\\_scholarships](http://www.aus.edu/grants_scholarships) and submit it to the Office of Financial Grants and Scholarships by the end of the first week of classes.

In the event that the credit load of any sibling falls below 12 credits, the family grant will be discontinued at the next regular semester the awarded sibling is registered.

### Financial Grant

AUS financially assists full-time undergraduate students who demonstrate limited financial resources in the form of a financial grant. A financial grant is normally awarded in fall and/or spring semesters for two consecutive semesters. Financial grants apply to AUS summer terms, provided the student was on financial grant in the spring semester of the same academic year and is registered in credit bearing courses for the summer term.

A financial grant is awarded for a maximum period of eight semesters from the time of matriculation into the university; it is awarded for 10

semesters for students in engineering majors and 11 semesters for Bachelor of Architecture students.

Financial grants normally apply toward students' tuition for a maximum of 16 credits. Students on financial grant who live on campus in single, double or sharing rooms are granted partial assistance toward their residential hall fees.

#### *First-time Students*

First-time students who demonstrate limited financial resources and have paid the seat reservation deposit by the deadline specified on the letter of admission may apply for a financial grant.

The amount awarded depends on the financial need and academic qualifications of the applicant.

The Financial Grant Application for new students is available at the Office of Financial Grants and Scholarships website ([www.aus.edu/grants\\_scholarships](http://www.aus.edu/grants_scholarships)). Applications must be submitted by the new students' specified deadlines, as published on the website.

#### *Enrolled Students*

Enrolled full-time students who demonstrate limited financial resources and have completed a minimum of 12 credits at AUS and who achieve a minimum cumulative GPA of 2.00 may apply for a financial grant.

The amount awarded depends on the financial need and academic qualifications of the applicant.

The Financial Grant Application for enrolled students is available from the Office of Financial Grants and Scholarships website ([www.aus.edu/grants\\_scholarships](http://www.aus.edu/grants_scholarships)). Applications must be submitted by the enrolled students' specified deadlines, as published on the website.

#### *Maintaining the Financial Grant*

Students who wish to maintain their financial grant must submit, each year, a renewal application (available at [www.aus.edu/grants\\_scholarships](http://www.aus.edu/grants_scholarships)) by the enrolled students' deadlines.

Financial grants are re-evaluated every year. In order to maintain their award, students on financial grant must meet the following conditions:

- be in good academic standing at the end of the evaluation period
- maintain a full-time student status (minimum of 12 credits) in each semester of the evaluation period
- not be suspended or placed on conduct probation in any semester of the evaluation period

In addition to meeting the above conditions, students applying to renew their financial grant must provide evidence of limited financial resources. Students must notify the Office of Financial Grants and Scholarships of any change in their financial situation.

### Study Tour Grant

Students receiving a minimum of 25 percent financial grant and enrolled in a credit-bearing study tour are eligible to apply for funding that can be used to supplement tour costs.

The study tour grant application form is available from the Office of International Exchange Programs or the Office of Financial Grants and Scholarships. The form must be received by the Office of Financial Grants and Scholarships at least four weeks prior to the commencement of the study tour.

## Scholarships

### Active Student Scholarships

Active Student Scholarships are awarded to undergraduate students who have excelled in extracurricular activities and whose efforts have yielded exceptional results.

The scholarships consist of up to 50 percent tuition remission (for a maximum of 16 credits) and are granted on a renewable semester basis.

The scholarship program aims to encourage and support students who have served the community and the university. It also aspires to support students who have limited financial resources and who demonstrate excellent leadership skills.

For more information, contact the Office of Student Affairs or email [studentaffairs@aus.edu](mailto:studentaffairs@aus.edu).

### Athletic Scholarship Program

Athletic scholarships are offered by the Office of Student Affairs to talented student-athletes who demonstrate athletic excellence and outstanding sports qualities with the aim of helping them finance their studies at AUS.

Student Athletics and Recreation recruits and retains elite student-athletes, offers them full and partial athletic scholarships, and provides them with professional coaching so that they can represent AUS and compete at the highest level of intercollegiate sports.

The full athletic scholarship includes free tuition; coverage of the medical insurance fee, utility fee, textbook fee, activity fee and application fee; and accommodation in the AUS residential halls. It is awarded on a renewable

yearly basis unless a student-athlete enrolls mid-year.

The partial athletic scholarship includes up to 50 percent tuition remission (for a maximum of 16 credits) and is awarded on a renewable semester basis.

Athletic scholarships are granted to eligible student-athletes subject to terms and conditions of the AUS Athletic Scholarship Program. For more information on athletic scholarships, please contact Student Athletics and Recreation or email [osaathletics@aus.edu](mailto:osaathletics@aus.edu).

### Dean's List Scholarship

Subject to available budget, students placed on the Dean's List at the end of the fall or spring semesters are eligible for a Dean's List Scholarship, which provides a tuition remission (for a maximum of 16 credits) of up to 10 percent including lab/technology fees. This remission is applicable to the semester immediately following the semester when the student was placed on the Dean's List, provided that in this semester the student is enrolled as a full-time student and is receiving no more than 90 percent of student financial grant and/or scholarship from AUS and other external sponsors.

Application forms are not required. The Dean's List Scholarship is awarded during the third or fourth week of classes of the fall and spring semesters; it is not available in the summer.

### Merit Scholarship

First-time students who demonstrate academic excellence by achieving a minimum cumulative average grade score of 95 percent or its equivalent in the final year of their secondary education may be eligible for a Merit Scholarship.

Application forms are not required. First-time students are evaluated for eligibility by the university at the time of admission. Merit Scholarships of continuing students are automatically renewed as long as the conditions for maintaining the scholarship are met. Should a student disqualify for any given semester/term, the Merit Scholarship cannot be reinstated in any future semester/term.

The scholarship is granted by semester. It covers 10 percent of both tuition (for a maximum of 16 credits) and the lab/technology fees. Continuing students who meet the conditions for maintaining the Merit Scholarship at the end of a spring semester are granted this scholarship for the summer term of the same academic year, provided they are registered in credit bearing courses for an AUS summer term.

The Merit Scholarship is awarded for a maximum period of eight semesters from the time of matriculation into the university; it is awarded for 10 semesters for students in engineering majors and 11 semesters for Bachelor of Architecture students.

### Conditions for Maintaining the Merit Scholarship

- achieve a minimum semester GPA of 2.50
- achieve a minimum cumulative GPA of 3.00
- maintain a full-time student status (minimum of 12 credits)
- Students who are placed on conduct probation at any time during the semester may not be eligible for the award in the following semester.

### Most Outstanding Active Student Award

This award goes to students who have exceeded expectations through hard work, dedication, leadership and professionalism and have provided extraordinary support to clubs/organizations during various events. The awardees receive an AED 5,000 tuition remission. For more information, contact the Office of Student Affairs or email [studentaffairs@aus.edu](mailto:studentaffairs@aus.edu).

### Most Outstanding Athlete Award

The most outstanding athletes are honored for their contributions to AUS sports team/programs, especially those who exhibit noteworthy leadership qualities. The awardees receive an AED 5,000 tuition remission. For more information, contact the Office of Student Affairs or email [studentaffairs@aus.edu](mailto:studentaffairs@aus.edu).

### Most Outstanding Community Services Volunteer Award

Students are selected for this award based on their exemplary record of serving humanity and in making a difference in the life of the underprivileged. The awardees receive an AED 5,000 tuition remission. For more information, contact the Office of Student Affairs or email [studentaffairs@aus.edu](mailto:studentaffairs@aus.edu).

### Most Outstanding Student Leader Award

Students selected for this award have made significant contributions and exhibited leadership at AUS and the community in general. They have exceeded expectations with their hard work and dedication during various events/projects. The awardees receive an AED 5,000 tuition remission. For more information, contact the Office of Student Affairs or email [studentaffairs@aus.edu](mailto:studentaffairs@aus.edu).

### Petrofac Endowment Scholarship

The Petrofac Endowment Scholarship provides assistance for junior and senior students in the College of Engineering who have limited financial resources and who demonstrate academic excellence and exemplify the hallmark traits that characterize American University of Sharjah: honor, integrity, leadership and service to others.

The scholarship covers up to 50 percent of tuition (for a maximum of 16 credits) and is awarded yearly in the fall semester. This scholarship does not cover AUS residential hall fees or summer term courses.

Students applying for this scholarship must hold the passport of a country in which Petrofac operates. A list of these is available from the Office of Financial Grants and Scholarships. Applications for the Fall 2017 semester must be submitted to the Office of Financial Grants and Scholarships by the specified deadlines, as published on the office website ([www.aus.edu/grants\\_scholarships](http://www.aus.edu/grants_scholarships)).

#### *Conditions for Maintaining a Petrofac Endowment Scholarship*

- achieve a minimum cumulative GPA of 3.25
- maintain a full-time student status (minimum of 12 credits)
- not be suspended or placed on conduct probation

### Sharakah School Scholarship

Partner Sharakah program schools can nominate exceptional students from their school for a Sharakah School Scholarship. To qualify for this highly competitive scholarship, nominated students must meet the following requirements:

- demonstrate outstanding personal qualities and leadership abilities in school and the community
- have made scientific or literary contributions to his/her local community
- received special honors or awards for community service and school extracurricular activities
- achieved a minimum average of 95 percent or equivalent in at least two of the last three years of his/her secondary education

Applicants with limited financial resources will be given priority in consideration.

The award is granted for the academic year, provided the recipient continues to meet the requirements at the end of every semester. It covers 50 to 100 percent of the student's tuition (for a

maximum of 16 credits) and lab/technology fees. Recipients of the Sharakah School Scholarship who live on campus in single, double or sharing rooms are granted partial assistance toward their residential hall fees.

The Sharakah School Scholarship is awarded for a maximum period of eight semesters from the time of matriculation into the university; it is awarded for 10 semesters for students in engineering majors and 11 semesters for Bachelor of Architecture students.

Applications for the Sharakah School Scholarship are available at the Office of Financial Grants and Scholarships and in the offices of the Sharakah Schools. Applications for the Fall 2017 semester must be submitted to the Office of Grants and Scholarships by the specified deadlines, as published on the office website ([www.aus.edu/grants\\_scholarships](http://www.aus.edu/grants_scholarships)).

#### *Conditions for Maintaining the Sharakah School Scholarship*

Recipients of the Sharakah School Scholarship who wish to maintain it for the upcoming year must submit a renewal application (available from the Office of Financial Grants and Scholarships) by the enrolled students' deadlines. Please refer to the Office of Financial Grants and Scholarships website ([www.aus.edu/grants\\_scholarships](http://www.aus.edu/grants_scholarships)) for the published dates.

Sharakah School Scholarships are re-evaluated at the end of every regular semester. In order to maintain the award, students must meet the conditions mentioned on their offer letter. In addition to meeting these conditions, students applying to renew their Sharakah School Scholarship must provide information on family financial resources.

### Sheikh Khalifa Scholarship

The Sheikh Khalifa Scholarship, awarded to juniors and seniors, recognizes academic excellence, leadership potential, service to community, demonstrated talent in the field of study, and participation in extracurricular and university activities.

The Sheikh Khalifa Scholarship is awarded through an annual competition conducted within each college/school. It is granted for up to four consecutive semesters or until graduation requirements are complete, whichever occurs first, provided the continuation conditions are met. The Sheikh Khalifa Scholarship covers tuition up to a maximum of 16 credits. This scholarship is not awarded for the summer term.

Students interested in applying for the Sheikh Khalifa Scholarship must have achieved a minimum CGPA of 3.25. Students should consult with the associate dean of their college/school for further eligibility requirements and application process details.

#### *Conditions for Maintaining the Sheikh Khalifa Scholarship*

- achieve a minimum semester GPA of 3.25
- maintain a full-time student status (minimum of 12 credits)
- not be suspended or placed on conduct probation

### AUS Students on International Exchange Programs

AUS students on grants/scholarships must obtain approval from the Office of Financial Grants and Scholarships before starting a semester abroad at a host university.

In cases where the AUS student pays tuition and/or housing fees directly to AUS for study abroad, the student will continue to use their AUS grants and AUS-funded scholarships for that semester abroad. Students receiving a minimum of 25 percent financial grant may also have the cost of the meal plan covered. In all other cases of students studying abroad, financial grants and AUS-funded scholarships will not be awarded.

### Sponsorship Liaison

Sponsorship Liaison coordinates and communicates with external organizations sponsoring students to study at AUS. Sponsorship Liaison provides various support services to both the sponsoring organizations and their sponsored students, including admission coordination, orientation, academic follow-up, progress reports, guidance and financial matters. Moreover, Sponsorship Liaison is the main link for sponsors to communicate messages to sponsored students. It also coordinates the on- and off-campus annual meetings with sponsors and their students. For further assistance and information, please contact the Sponsorship Liaison Manager, 06 515 1016, [sponsors@aus.edu](mailto:sponsors@aus.edu).





# College of Architecture, Art and Design

## Dean

Varkki Pallathucheril

## Associate Dean

Zinka Bejtac

The College of Architecture, Art and Design (CAAD) is committed to providing a comprehensive education that will enable its graduates to make significant contributions to the Gulf region and the broader global community through conscientious participation in practice.

All its undergraduate programs have received accreditation from the UAE Ministry of Education's Higher Education Affairs Division. The Bachelor of Architecture program is further accredited by the National Architectural Accrediting Board (NAAB) of the United States.

The College of Architecture, Art and Design grounds its curriculum in the conviction that good design results from a combination of a deep understanding of culture, ethical engagement in society and a respect for the creative skills needed to build a sustainable material culture.

Against this background, the college is committed to the primary objective of providing its students with relevant, professional instruction in the fields of architecture, design management, interior design, multimedia design and visual communication.

The college is dedicated to inquiry and to the development of hands-on technical skills and competence in digital and other advanced media. It also fosters in its students a regional and cultural awareness and the responsibility for creating humane environments. The college seeks to contribute to the development of professional standards and innovation in architecture and design.

The College of Architecture, Art and Design meets its objectives through degree programs that feature the following:

- an environment that encourages achievement and personal growth
- a faculty of professionals who balance continuing scholarship and creative work with their desire for excellence in teaching
- an advising and student counseling system that tracks student development and progress
- a general education curriculum that offers a solid foundation

- a clear and consistent approach that is evident throughout the curriculum
- a variety of courses that are continually updated to reflect rapidly changing design practices and the growing role of digital communication
- a respect for culture, traditions and needs of society

## Degree Programs

CAAD offers the following undergraduate degree programs:

- Bachelor of Architecture
- Bachelor of Interior Design
- Bachelor of Science in Design Management
- Bachelor of Science in Multimedia Design
- Bachelor of Science in Visual Communication

CAAD also offers a Master in Urban Planning degree program. For details, please refer to the *AUS Graduate Catalog*.

## Minor Offerings

CAAD offers the following minors:

- design management
- film
- illustration and animation
- photography
- product design

Details on each minor are provided in the Department of Art and Design section later in this part of the catalog.

## Career Opportunities

CAAD prepares students for careers in a wide variety of fields:

- architecture, environmental design, interior design, urban design, urban planning
- graphic design, advertising, packaging design, illustration, digital media, animation, computer simulations, video, photography, printmaking
- communications and public relations, fine arts and cultural arts administration, gallery management, advertising campaign planning

## Special Notes

### Space Availability in Studio Majors

Admission to the studio majors (architecture, interior design, multimedia design and visual communication) in the

College of Architecture, Art and Design is competitive. The number of available seats in second-year studio majors is limited to the following:

- architecture 48
- interior design 16
- multimedia design 16
- visual communication 16

Students are formally admitted to their studio major if they are selected to advance to second-year of that major. Selection for advancement to the second-year studios is competitive. Minimum requirements for formal admission consideration are detailed in the catalog section of the degree program of each studio major.

## Year Status for Studio Majors

Year status in the College of Architecture, Art and Design is determined by enrollment in the major studio, regardless of the total number of credits earned.

## Computer Requirements

At the beginning of the third year for students in the studio majors and before taking DES 300 for students in Design Management, students are required to have a personal laptop computer. The laptop must meet the minimum specifications determined by CAAD and communicated to the students every year. Laptops that do not meet these minimum specifications may not adequately run software required to complete course work.

## Course Selection

Students are cautioned that the specific selection of courses available for a chosen major at the time of initial registration is subject to change. The College of Architecture, Art and Design will make every effort to monitor student progress through the advisement process; however, students are responsible to make course selections based on the stated degree requirements, subject to the listed prerequisites.

## Studio Supplies

Supply expenses for studio courses are in addition to tuition fees, and lab fees may apply for some courses. However, students are given a limited account for printing and plotting large-format drawings.

## Ownership of Student Work

The College of Architecture, Art and Design reserves the right to retain indefinitely selected examples of

student work for archiving, publicity and exhibition. Students are highly advised to document their work before submission.

### Responsibility for Equipment

The College of Architecture, Art and Design provides an extensive range of digital and electronic equipment for student use. For some courses, college equipment is checked out to a student or a group of students for use on or off campus. Students are expected to treat college equipment with care and will be held financially responsible for breakage, damage, late return or loss.

## Foundations Year

The foundations year is an autonomous one-year program that supports the common educational requirements for all fields of study within the College of Architecture, Art and Design. As such, the program provides the basic design education that will enable students to function on appropriate practical, theoretical and critical levels in their sophomore (second) year.

All College of Architecture, Art and Design students in studio majors are required to successfully complete the foundations year courses to be considered for formal admission to their chosen studio major.

The foundations year aims to achieve three instructional objectives:

- competence in the fundamental skills and concepts of design analysis, representation and presentation through studio-based exercises and projects
- familiarity with the historical implications and chronology of design conventions through in-class lectures and written assignments
- a basic proficiency in analog and digital technologies through exercises and projects that are integrated within the studio context

The foundations year utilizes three distinct teaching formats in order to provide a broad and inclusive introduction to design methods and practice. Studio courses, which form the core of the foundations year, encourage one-on-one student/professor interaction and allow the student to develop an independent design process. History courses are taught in a lecture context where information and ideas are disseminated in a classroom setting using visual images to support learning. Professors interact with students on various levels through the use of traditional lectures, digital media, network software and digital storage systems.

Within the foundations year, students are encouraged to develop a basic practical and critical understanding of design principles. Experimentation and exploration with materials, tools and techniques are fostered in the realization of two- and three-dimensional concepts and ideas.

Foundations courses are taught by professors from all the fields of study in the College of Architecture, Art and Design. This professional collaboration between disciplines at the foundations level initiates early student dialogue with senior-level faculty and provides the program with a healthy influx of cross-disciplinary expertise and discourse. It is this important aspect of the foundations program that ensures a balanced response to the needs of the various degree programs it supports.

The foundations year consists of the following courses, which are major requirements in all studio majors:

- DES 111 Descriptive Drawing I
- DES 112 Descriptive Drawing II
- DES 121 Introduction to Architecture, Art and Design History
- DES 122 Modern Developments in Architecture, Art and Design
- DES 131 Design Foundations I
- DES 132 Design Foundations II

Design management students must complete DES 111, DES 131 and either DES 121 or DES 122.

The foundations year studio courses DES 111, DES 112, DES 131 and DES 132 cannot be repeated.

## Department of Architecture

Michael Hughes, Head

### Faculty

Jason Carlow  
Camilo Cerro  
Brian Dougan  
W. Eirik Heintz  
Ammar Kalo  
George Katodrytis  
Jerry Kolo  
Cristiano Luchetti  
Kevin Mitchell  
Ahmed Mokhtar  
John Montague  
George Newlands  
Varkki Pallathucheril  
Rafael Pizarro  
Patrick Rhodes  
Juan Roldan  
William Sarnecky  
Faysal Mohammed Tabbarah  
Matthew Trimble  
Gregory Watson

## Bachelor of Architecture (BArch)

Architecture arises from the same wellspring of civilization as other universal manifestations of material culture: arts, histories, letters, religion and commerce. Still, the artifacts designated as architecture possess a scale, permanence and a pervasive influence unique among human endeavors. These qualities endow the discipline with a cultural prominence few other professions enjoy.

In its contemporary university setting, the study of architecture is naturally concerned with complex, interdisciplinary issues. Some matters are primarily individual and practical: the basic human need for shelter and the desire to contrive efficient, adequate forms for the patterns of daily life. Architecture, in this sense, may concern aspirations and meanings, but its primary intent is to attain a practical advantage here and now.

Architecture also has a transcendent motive, arising from an imperative to articulate, physically and spatially, the social, ceremonial and environmental choices a given culture makes within a given setting. Architecture expresses living values. It gives abiding form, order and proportion to activities. Architecture is a message to the world about certainties and doubts, values and beliefs, preoccupations and neglects. It both expresses and reveals.

The practice of architecture today, as in the past, requires coordinated contributions from multiple fields. The craft of the architect runs a gamut of expertise and awareness: technical, environmental, aesthetic, cultural, historical and commercial. Consequently, the study of architecture investigates principles and applications of technology, art, humanities, engineering, physical and social sciences, business and management. Architectural design, finally, is the synthetic practice that links and gives significant form to these interdisciplinary contributions.

### Program Goals

The Bachelor of Architecture degree program aims to:

- provide students with a comprehensive understanding of the historical and theoretical forces that shape architecture
- prepare future architects to make contributions to improving the built environment through leadership, personal engagement and professional practice while respecting human diversity and adhering to ethical standards



- provide students with the knowledge and skills necessary to conceive, develop and communicate complex design proposals
- foster critical thinking and cultivate an approach to design that values the role of research, analysis and experimentation
- promote a critical understanding of building technologies and their impact on the built environment

### Program Outcomes

Upon completion of the Bachelor of Architecture degree program, graduates should be able to:

- explain design principles in relationship to the history and theory of architecture
- demonstrate an understanding of the standards of professional practice
- demonstrate an understanding of the conventions of building systems and technology
- employ traditional means of representation, computer-aided design, digital and physical modeling and fabrication to develop and communicate design
- articulate, present and discuss design proposals in verbal, written and graphic form
- employ research, analysis and iterative processes to inform and enrich the process of design
- employ research, analysis and problem-solving skills to address unique and fluctuating conditions of design
- integrate materials, construction methodologies, site conditions and environmental control systems into a comprehensive building design proposal
- analyze and explain the relationship between design and environmental sustainability
- demonstrate the ability to independently develop design proposals that respond to context
- work in teams to conduct research on design-related issues and present results in verbal, written and graphic form

### Accreditation

In the United States, most state registration boards require a degree from an accredited professional degree program as a prerequisite for licensure. The National Architectural Accrediting Board (NAAB), which is the sole agency authorized to accredit US professional degree programs in architecture, recognizes three types of degrees: the Bachelor of Architecture, the Master of

Architecture and the Doctor of Architecture. A program may be granted an eight-year, three-year or two-year term of accreditation, depending on the extent of its conformance with established educational standards.

Doctor of Architecture and Master of Architecture degree programs may consist of a pre-professional undergraduate degree and a professional graduate degree that, when earned sequentially, constitute an accredited professional education. However, the pre-professional degree is not, by itself, recognized as an accredited degree.

The American University of Sharjah College of Architecture, Art and Design offers the following NAAB-accredited degree program:

BArch (159 undergraduate credits)

### Curriculum

The BArch degree program (five-year professional program) is intended for the student seeking a professional career in architecture. The program entails a minimum of five years of university studies plus professional training. A minimum of 159 credits comprise the degree program, including a minimum of 102 credits of required course work in architecture and closely associated fields. These courses represent the irreducible core of the discipline of architecture.

The specialized professional curriculum is supported by a minimum of 42 credits of general education requirements. Designed to ensure a broad educational foundation, this base is held in common among all graduates of American University of Sharjah.

University studies present a unique opportunity to explore other fields of interest. Based solely on individual interests, each architecture student must select a minimum of 15 credits of free electives from general university offerings.

The curriculum is designed to meet the requirements for licensure that prevail in the United Arab Emirates and to prepare the graduate for professional practice throughout the region. Some students may aspire either to advanced study in the field or to practice in a broader global setting. Accordingly, the curriculum follows established international norms for a first professional degree in architecture.

### Formal Admission to the Program

The number of seats in architecture is limited. Formal admission is competitive. Only the most highly qualified foundations students will be admitted. To be considered for formal admission to

the Bachelor of Architecture program a student must successfully complete the following minimum requirements:

- all four foundations studio courses (DES 111, DES 112, DES 131, DES 132) with a minimum grade point average (GPA) of 2.00 out of 4.00 in each sequence (Descriptive Drawing and Design Foundations)
- DES 121 and DES 122
- MTH 111 Mathematics for Architects or its prerequisite (MTH 003), or MTH 103 Calculus I
- at least one course in writing (WRI) at the 100 level or above
- a minimum of 27 undergraduate credits (credits earned including the above courses)
- a CGPA of 2.30

In addition, selection for formal admission may also include portfolio review.

Formal notification of admission will be announced by the College of Architecture, Art and Design around mid-June after release of final grades by the Office of the Registrar at the end of the spring semester.

In the event that there are more students who qualify for formal admission than available seats, candidates will be admitted based on academic achievement, and a waiting list will be established. However, if there are fewer students who qualify for formal admission than available seats, consideration will be given to students who have applied for a change of major. If seats are still available at the time of fall registration, consideration will also be given to students who fulfilled requirements during summer term. The same formal admission criteria apply.

**Note:** To repeat a second-year studio course, students must compete for the limited number of seats in second-year studio courses based on the criteria for formal admission to the program.

### Advancement Reviews

The performance of each architecture student is reviewed following the completion of each of the second, third and fourth years in the program. Only the students who have attained a minimum CGPA of C+ (2.30) at the time of the review are eligible to advance to the following year studio.

A student who does not attain the required CGPA will be required to meet with the head of the department.

A student who fails an architecture studio twice is dismissed from the program.

## Degree Requirements

To qualify for graduation with a BArch degree, students must successfully complete the following minimum requirements:

- a minimum of 159 credits, as follows:
  - a minimum of 42 credits of general education requirements
  - 102 credits of major requirements
  - a minimum of 15 credits of free electives
  - five weeks of an approved internship
- a minimum CGPA of 2.00

Please see the proposed sequence of study for information on completing the requirements in five years.

### General Education Requirements (minimum of 42 credits)

Students in the BArch degree program must successfully complete the following general education requirements:

- a minimum of 18 credits in courses meeting the core general education requirements:
  - history and culture of the Arab world requirement: three to six credits
  - culture in a critical perspective requirement: three to six credits
  - arts and literature requirement: three to six credits
  - human interaction and behavior requirement: six to nine credits
- natural sciences requirement: a minimum of six credits in courses meeting this requirement, including PHY 104 and excluding ARC 354
- mathematics requirement: MTH 103 or MTH 111
- statistics requirement: a minimum of three credits in courses meeting this requirement
- communication requirement: a minimum of 12 credits in 100-level or above writing (WRI)/English (ENG) courses meeting this requirement, including ENG 203 or ENG 204
- ethical understanding requirement: satisfied through ARC 463
- discipline-specific writing intensive course requirement: satisfied through ARC 421
- oral proficiency requirement: satisfied through ARC 401-01
- information literacy requirement: satisfied through WRI 102, and ENG 203 or ENG 204
- computer literacy requirement: satisfied through ARC 201

For complete information on general education requirements, please refer to the Graduation Requirements section within the Academic Policies and Regulations section of this catalog.

### Major Requirements (102 credits)

In addition to the foundations courses, the following courses constitute the major requirements for the BArch degree program:

- ARC 201 Architectural Design Studio I
- ARC 202 Architectural Design Studio II
- ARC 221 Pre-Modern Architecture and Urban Form
- ARC 222 Modern Architecture and Urban Form
- ARC 232 Materials and Methods I
- ARC 271 Introduction to Landscape
- ARC 281 Architectural Principles
- ARC 301 Architectural Design Studio III
- ARC 302 Architectural Design Studio IV
- ARC 331 Materials and Methods II
- ARC 342 Structures for Architects
- ARC 382 Architectural Detailing
- ARC 397 Internship in Architecture
- ARC 401-01 Architectural Design Studio V
- ARC 402 Architectural Design Studio VI
- ARC 421 Architectural Theory
- ARC 451 Environmental Control Systems
- ARC 463 Professional Practice
- ARC 501 Architectural Design Studio VII
- ARC 502 Architectural Design Studio VIII or ARC 592 Directed Architectural Design Studio
- ARC 581 Critical Practice and Contemporary Discourse

### Directed Architectural Design Studio (ARC 592)

Normally, registration in ARC 592 requires completion of ARC 591. However, approval may be granted to continue work initiated in ARC 501 as an independent project in ARC 592. A minimum cumulative GPA of 3.30 and a minimum GPA of 3.50 in the upper-level studio sequence (ARC 301, ARC 302, ARC 401-01, and ARC 402) is required to apply to register in ARC 592 following the completion of ARC 501.

Permission to register in ARC 592 will be evaluated by the department based on a

written proposal and an evaluation of studio work completed in ARC 501 or research work completed in ARC 591. Students who have not completed ARC 591 must consult with the department regarding proposal criteria and must submit all required material by the last day of exams during the semester in which they have completed ARC 501.

### Internship

To qualify for graduation with a BArch degree, students must fulfill the internship requirement. The purpose of the internship is to expose students to the profession and give them an opportunity to apply their academic knowledge in a practical setting.

The internship consists of a minimum of 200 work hours for third-year or fourth-year students with an approved employer. Students' internships are ultimately evaluated by the internship coordinator with a Pass/Fail grade. Architecture students are highly encouraged to complete the internship program during the summer following their third year.

For details on internship eligibility and registration, please refer to Internship Registration under Registration and Course Information in the Academic Policies and Regulations section of this catalog.

### Free Electives (minimum of 15 credits)

Students must successfully complete a minimum of 15 credits in free electives. Nine credits must be in courses at the 300-level or above. Six credits may be in any courses offered at or above the 100 level, excluding MTH 103 and MTH 111.

### Directed Architectural Design Research (ARC 591)

Permission to register in ARC 591 will be evaluated by the department based on previous academic performance and a written proposal. Completion of all upper-level studios (ARC 301, ARC 302, ARC 401-01, and ARC 402) with a minimum GPA of 3.50 in the sequence is required to apply to register in ARC 591. Students must consult with the department regarding proposal criteria and must submit all required material by the last day of exams during the semester in which they have completed ARC 402. ARC 591 will be counted as a free elective.

### Proposed Sequence of Study Bachelor of Architecture (BArch)

FIRST YEAR (30 credits)			
Term	Course #	Course Title	Credit
Fall	DES 111	Descriptive Drawing I	3
	DES 121	Introduction to Architecture, Art and Design History	3
	DES 131	Design Foundations I	3
	MTH 111 or MTH 103	Mathematics for Architects or Calculus I	3
	WRI 101	Academic Writing I	3
<b>Total</b>			<b>15</b>
Spring	DES 112	Descriptive Drawing II	3
	DES 122	Modern Developments in Architecture, Art and Design	3
	DES 132	Design Foundations II	3
	WRI 102	Academic Writing II	3
	GER-Core	History and Culture of the Arab World	3
<b>Total</b>			<b>15</b>
SECOND YEAR (36 credits)			
Term	Course #	Course Title	Credit
Fall	ARC 201	Architectural Design Studio I	6
	ARC 271	Introduction to Landscape	3
	ARC 281	Architectural Principles	3
	ENG 203 or ENG 204	Writing about Literature or Advanced Academic Writing	3
	PHY 104	Physics for Architects	3
<b>Total</b>			<b>18</b>
Spring	ARC 202	Architectural Design Studio II	6
	ARC 222	Modern Architecture and Urban Form	3
	ARC 232	Materials and Methods I	3
	GER-COM	Communication	3
	FRE	Free Elective	3
<b>Total</b>			<b>18</b>
THIRD YEAR (33 credits)			
Term	Course #	Course Title	Credit
Fall	ARC 301	Architectural Design Studio III	6
	ARC 221	Pre-Modern Architecture and Urban Form	3
	ARC 331	Materials and Methods II	3
	GER-STA	Statistics	3
<b>Total</b>			<b>15</b>
Spring	ARC 302	Architectural Design Studio IV	6
	ARC 342	Structures for Architects	3
	ARC 382	Architectural Detailing	3
	GER-Core	Culture in a Critical Perspective	3
	FRE	Free Elective	3
<b>Total</b>			<b>18</b>
Summer	ARC 397	Internship in Architecture	0

FOURTH YEAR (30 credits)			
Term	Course #	Course Title	Credit
Fall	ARC 401-01	Architectural Design Studio V	6
	ARC 421	Architectural Theory	3
	ARC 451	Environmental Control Systems	3
	GER-Core	Arts and Literature	3
	<b>Total</b>		<b>15</b>
Spring	ARC 402	Architectural Design Studio VI	6
	ARC 463	Professional Practice	3
	GER-SCI	Natural Sciences	3
	FRE	Free Elective	3
<b>Total</b>			<b>15</b>
FIFTH YEAR (30 credits)			
Term	Course #	Course Title	Credit
Fall	ARC 501	Architectural Design Studio VII	6
	ARC 581	Critical Practice and Contemporary Discourse	3
	ARC 591 or FRE	Directed Architectural Design Research or Free Elective	3
	GER-Core	Human Interaction and Behavior	3
<b>Total</b>			<b>15</b>
Spring	ARC 502 or ARC 592	Architectural Design Studio VIII or Directed Architectural Design Studio	6
	GER-Core	Human Interaction and Behavior	3
	GER-Core	Course Selected from General Education Core Requirements	3
	FRE	Free Elective	3
<b>Total</b>			<b>15</b>

### Bachelor of Interior Design (BID)

The profession of interior design lies between interior decoration and architecture. The interior designer must be competent to operate in both professions with an intimate knowledge of material selection, construction methods and furnishings as well as technical skills and construction expertise. Interior designers usually work as part of a design team, including architects, structural and mechanical

engineers, and specialty consultants. They must possess a broad base of knowledge and skills.

Interior designers create and are responsible for all aspects of the interior environment: program, design, construction documents, supervision, lighting, and material and furniture selection. Like architects, they create interiors using space itself as a creative material, molded by architectural elements. They know intimately the materials of interior construction and finishing, decoration and lighting, and

how to use these in innovative designs that support an overall spatial and formal idea.

Interior design services encompass research, development and implementation of plans and designs of interior environments. The objective is to improve the quality of life, increase productivity and protect the health, safety and welfare of the public. The professional interior designer must be able to see projects through from concept to physical completion.

Potential career options for persons majoring in interior design include interior designer, space planner and programmer, adaptive reuse designer, facilities planner, project manager, design journalist, educator, researcher, sales representative, renderer, healthcare designer and office planner.

### Program Goals

The Bachelor of Interior Design degree program aims to:

- provide a comprehensive understanding of the historical and theoretical forces that shape interior built environments
- prepare future interior designers to make contributions to improving the built environment through leadership, personal engagement and professional practice while respecting human diversity and adhering to ethical standards
- provide students with the knowledge and skills necessary to conceive, develop and communicate complex design proposals
- foster critical thinking and cultivate an approach to design that values the role of research, analysis and experimentation
- promote a critical understanding of building technologies and their impact on the built environment

### Program Outcomes

Upon completion of the Bachelor of Interior Design degree program, graduates should be able to:

- explain design principles in relationship to the history and theory of interior design
- demonstrate an understanding of the standards of professional practice
- demonstrate an understanding of the conventions of existing building systems and their impact on interior construction and human factors
- employ traditional means of representation, computer-aided design, digital and physical modeling and fabrication to develop and communicate design
- articulate, present and discuss design proposals in verbal, written and graphic form
- employ research, analysis and iterative processes to inform and enrich the process of design
- employ research, analysis and problem-solving skills to address unique and fluctuating conditions of design
- integrate materials, components, assembling methodologies, furniture, furnishing, health and safety, and environmental control systems into a

comprehensive interior design proposal

- analyze and explain the relationship between design, environmental sustainability and interior applications of products and systems
- demonstrate the ability to independently develop design proposals that respond to context
- work in teams to conduct research on design-related issues and present results in verbal, written and graphic form

### Curriculum

The BID degree program at AUS emphasizes creativity and innovation in the art of interior design while giving students a strong background in technique and practical knowledge. The program core comprises six rigorous design studios following the common foundations year. Interior design studios encourage the development of analytical and reasoning skills, as well as the ability to conceptualize, develop and present designs. The interior design studios are supplemented by technical courses ranging from furniture design and materials and methods of interior construction to specific training in color and light.

The BID degree program is intended for the student seeking a professional career in interior design. The program entails a minimum of four years of university studies plus an approved internship. A minimum of 129 credits comprise the degree program, including a minimum of 78 credits of required course work in interior design and closely associated fields. These courses represent the core of the interior design discipline.

The specialized professional curriculum is supported by a minimum of 42 credits of university requirements. Designed to ensure a broad educational foundation, this base is held in common among all graduates of American University of Sharjah.

University studies represent a unique opportunity to explore other areas of interest. Based solely on individual interests, each interior design student must select a minimum of nine additional credits of free electives from general university offerings.

The curriculum is designed to meet requirements for licensure that prevail in the United Arab Emirates and to prepare the graduate for professional practice throughout the region. Some students may aspire either to advanced study in the field or to practice in a broader global setting. Accordingly, the curriculum follows established international norms for a professional degree in interior design.

### Formal Admission to the Program

The number of seats in interior design is limited. Formal admission is competitive. Only the most highly qualified foundations students will be admitted. To be considered for formal admission to the Bachelor of Interior Design program, a student must successfully complete the following minimum requirements:

- all four foundations studio courses (DES 111, DES 112, DES 131, DES 132) with a minimum GPA of 2.00 out of 4.00 in each sequence (Descriptive Drawing and Design Foundations)
- DES 121 and DES 122
- MTH 111 Mathematics for Architects or its prerequisite (MTH 003), or MTH 103 Calculus I
- at least one course in writing (WRI) at the 100 level or above
- a minimum of 27 undergraduate credits (credits earned including the above courses)
- a minimum CGPA of 2.30

In addition, selection for formal admission to the second year may also include portfolio review.

Formal notification of admission will be announced by the College of Architecture, Art and Design around mid-June after release of final grades by the Office of the Registrar at the end of the spring semester.

In the event that there are more students who qualify for formal admission than available seats, candidates will be admitted based on academic achievement, and a waiting list will be established. However, if there are fewer students who qualify for formal admission than available seats, consideration will be given to students who have applied for a change of major. If seats are still available at the time of fall registration, consideration will also be given to students who fulfilled requirements during summer term. The same formal admission criteria apply.

**Note:** To repeat a second-year studio course, students must compete for the limited number of seats in second-year studio courses based on the criteria for formal admission to the program.

### Advancement Reviews

The performance of each interior design student is reviewed following the completion of each of the second and third years in the program. Only the students who have attained a minimum CGPA of C+ (2.30) at the time of the review are eligible to advance to the following year studio.

A student who does not attain the required CGPA will be required to meet with the head of the department.

A student who fails an interior design studio twice is dismissed from the program.

### Degree Requirements

To qualify for graduation with a BID degree, students must successfully complete the following minimum requirements:

- a minimum of 129 credits, as follows:
  - a minimum of 42 credits of general education requirements
  - 78 credits of major requirements
  - a minimum of nine credits of free electives
  - five weeks of an approved internship
- a minimum CGPA of 2.00

Please see the proposed sequence of study for information on completing the requirements in four years.

### General Education Requirements (minimum of 42 credits)

Students in the BID degree program must successfully complete the following general education requirements:

- a minimum of 18 credits in courses meeting the core general education requirements:
  - history and culture of the Arab world requirement: three to six credits
  - culture in a critical perspective requirement: three to six credits
  - arts and literature requirement: three to six credits
  - human interaction and behavior requirement: six to nine credits
- natural sciences requirement: a minimum of six credits in courses meeting this requirement, including PHY 104
- mathematics requirement: MTH 103 or MTH 111
- statistics requirement: a minimum of three credits in courses meeting this requirement
- communication requirement: a minimum of 12 credits in 100-level or above writing (WRI)/English (ENG) courses meeting this requirement, including ENG 203 or ENG 204
- ethical understanding requirement: satisfied through IDE 463
- discipline-specific writing intensive course requirement: satisfied through IDE 225
- oral proficiency requirement: satisfied through IDE 401

- information literacy requirement: satisfied through WRI 102, and ENG 203 or ENG 204

- computer literacy requirement: satisfied through IDE 201

For complete information on general education requirements, please refer to the Graduation Requirements section within the Academic Policies and Regulations section of this catalog.

### Major Requirements (78 credits)

In addition to the foundations courses, the following courses constitute the major requirements for the BID degree program:

- ARC 281 Architectural Principles
- IDE 201 Interior Design Studio I
- IDE 202 Interior Design Studio II
- IDE 225 History and Theory of Interior Design: Global and Regional Issues
- IDE 239 Interior Materials and Methods
- IDE 251 Color and Light
- IDE 301 Interior Design Studio III
- IDE 302 Interior Design Studio IV
- IDE 334 Furniture and Furnishings
- IDE 352 Environmental Control Systems in Interior Design
- IDE 397 Internship in Interior Design
- IDE 401 Interior Design Studio V
- IDE 402 Interior Design Studio VI or IDE 492 Final Project Design
- IDE 434 Construction, Detailing and Structures
- IDE 463 Professional Practice

### Internship

To qualify for graduation with a BID degree, students must fulfill the internship requirement. The purpose of the internship is to expose students to the profession and give them an opportunity to apply their academic knowledge in a practical experience.

The internship consists of a minimum of 200 work hours with an approved employer. Interior design students are highly encouraged to complete the internship program during the summer after completion of their third year of studies.

For details on internship eligibility and registration, please refer to Internship Registration under Registration and Course Information in the Academic Policies and Regulations section of this catalog.

### Final Project Option

Fourth-year interior design students normally complete two studio courses:

IDE 401 and IDE 402. Students who select the final project option will substitute IDE 492 Final Project Design (6 credits) for the second studio course (IDE 402). In addition, IDE 491 Final Project Research (3 credits) must be completed before IDE 492 and will count as a free elective. The final project option is subject to departmental approval.

### Free Electives (minimum of 9 credits)

Students must successfully complete a minimum of nine credits in free electives. Three credits must be in courses at the 300 level or above. Six credits may be in any courses offered at or above the 100 level, excluding MTH 103 and MTH 111.

**Proposed Sequence of Study  
Bachelor of Interior Design (BID)**

<b>FIRST YEAR (30 credits)</b>			
<b>Term</b>	<b>Course #</b>	<b>Course Title</b>	<b>Credit</b>
Fall	DES 111	Descriptive Drawing I	3
	DES 121	Introduction to Architecture, Art and Design History	3
	DES 131	Design Foundations I	3
	MTH 111 or MTH 103	Mathematics for Architects or Calculus I	3
	WRI 101	Academic Writing I	3
<b>Total</b>			<b>15</b>
Spring	DES 112	Descriptive Drawing II	3
	DES 122	Modern Developments in Architecture, Art and Design	3
	DES 132	Design Foundations II	3
	WRI 102	Academic Writing II	3
	GER-Core	History and Culture of the Arab World	3
<b>Total</b>			<b>15</b>
<b>SECOND YEAR (36 credits)</b>			
<b>Term</b>	<b>Course #</b>	<b>Course Title</b>	<b>Credit</b>
Fall	IDE 201	Interior Design Studio I	6
	IDE 251	Color and Light	3
	ARC 281	Architectural Principles	3
	ENG 203 or ENG 204	Writing about Literature or Advanced Academic Writing	3
	PHY 104	Physics for Architects	3
<b>Total</b>			<b>18</b>
Spring	IDE 202	Interior Design Studio II	6
	IDE 225	History and Theory of Interior Design: Global and Regional Issues	3
	IDE 239	Interior Materials and Methods	3
	GER-COM	Communication	3
	GER-Core	Culture in a Critical Perspective	3
<b>Total</b>			<b>18</b>

<b>THIRD YEAR (33 credits)</b>			
<b>Term</b>	<b>Course #</b>	<b>Course Title</b>	<b>Credit</b>
Fall	IDE 301	Interior Design Studio III	6
	IDE 352	Environmental Control Systems in Interior Design	3
	GER-Core	Arts and Literature	3
	FRE	Free Elective	3
<b>Total</b>			<b>15</b>
Spring	IDE 302	Interior Design Studio IV	6
	IDE 334	Furniture and Furnishings	3
	GER-Core	Human Interaction and Behavior	3
	GER-Core	Human Interaction and Behavior	3
Summer	IDE 397	Internship in Interior Design	0
<b>Total</b>			<b>18</b>
<b>FOURTH YEAR (30 credits)</b>			
<b>Term</b>	<b>Course #</b>	<b>Course Title</b>	<b>Credit</b>
Fall	IDE 401	Interior Design Studio V	6
	IDE 434	Construction, Detailing and Structures	3
	IDE 491 or FRE	Final Project Research or Free Elective	3
	GER-STA	Statistics	3
<b>Total</b>			<b>15</b>
Spring	IDE 402 or IDE 492	Interior Design Studio VI or Final Project Design	6
	IDE 463	Professional Practice	3
	GER-SCI	Natural Sciences	3
	GER-Core	Course Selected from General Education Core Requirements	3
<b>Total</b>			<b>15</b>

## Department of Art and Design

Kevin Badni, Head

### Faculty

Salem AlQassemi  
Zinka Bejtlic  
Beatriz Itzel Cruz Megchun  
Gaurang Desai  
Zlatan Filipović  
Martin Giesen  
Riem Ibrahim  
Mark Pilkington  
Philip Sheil  
Seth Thompson  
Ludmil Trenkov  
Clement Vincent

### Mission Statement

The Department of Art and Design aims to cultivate critical thinking and learning through the study of design as a practice relevant to visual culture and communication.

## Bachelor of Science in Design Management (BSDM)

The Bachelor of Science in Design Management (BSDM) provides students with the opportunity to engage in a design-based program with entrepreneurial and communication components. Design management as a discipline integrates visual design and business studies. This major is especially well suited to students who have a keen interest in the managerial aspects of design. The essential elements of this profession are the ability to communicate design needs, track progress and outcomes, identify the requirements of design projects and coordinate with clients as well as with professional teams in the field of design.

The program provides broad insights into the foundations, theory and application of design and business studies. A solid foundation in visual design prepares students to understand the language and complexities involved in the efforts of the creative teams, as well as to speak fluently the "language" of design. Additionally, course work in the disciplines of business, management and communication prepares students to

recruit clients; pitch projects; write copy for print, television and radio; and master systems and marketing skills.

Typical target professional positions in the fast growing field of design management include administrative and managerial careers in media and service industries as advertising agency principals, project managers and team leaders, advertising campaign planners, client services specialists, advertising buyers, account and sales representatives, communications specialists, public relations professionals, exhibition and event planners, material culture administrators, market research analysts and more.

### Program Goals

The Bachelor of Science in Design Management program aims to:

- provide students with appropriate management skills and knowledge for leadership within team-oriented design disciplines
- provide students with the knowledge and skills required for critically analyzing and solving design problems using specific applications to respond to a variety of audiences and contexts

- provide students with the opportunities to explore how forms of communication are influenced by ethical considerations, self-expression and professional demands

### Program Outcomes

Upon completion of the Bachelor of Science in Design Management program, graduates will be able to:

- communicate effectively both orally and in writing
- integrate analytical, technical and critical skills necessary to succeed in the contemporary world of entrepreneurial design
- demonstrate knowledge of how the management and allocation of appropriate resources will sustain a design practice
- demonstrate the skills necessary to work with interdisciplinary teams and clients to design and implement projects
- organize, plan, direct, communicate and distribute information using traditional and digital media systems
- demonstrate knowledge of management, communication and information theories
- analyze and describe the technical, formal and conceptual aspects of communication within the design process
- apply theories of design and management
- interpret principles of management and marketing in order to explain regional and global markets
- employ traditional and digital systems and media in the process of design and management projects
- demonstrate an understanding of the complex demands of design, business, labor and law
- demonstrate an understanding of ethical, social and cultural significance of design
- demonstrate an understanding of sustainable business models that are professionally and socially equitable
- explain how design projects for the media and service industries are initiated and evaluated

### Degree Requirements

To qualify for graduation with a BSDM degree, students must successfully complete the following minimum requirements:

- a minimum of 120 credits, as follows:
  - a minimum of 42 credits of general education requirements
  - 63 credits of major requirements

- a minimum of nine credits of major electives
- a minimum of six credits of free electives
- five weeks of an approved internship
- a minimum CGPA of 2.00

### General Education Requirements (minimum of 42 credits)

Students in the BSDM degree program must successfully complete the following general education requirements:

- a minimum of 18 credits in courses meeting the core general education requirements:
  - history and culture of the Arab world requirement: three to six credits
  - culture in a critical perspective requirement: three to six credits
  - arts and literature requirement: three to six credits
  - human interaction and behavior requirement: six to nine credits
- natural sciences requirement: a minimum of six credits in courses meeting this requirement
- mathematics requirement: MTH 101 or MTH 111 or MTH 103
- statistics requirement: STA 202 or QBA 201
- communication requirement: a minimum of 12 credits in 100-level or above writing (WRI)/English (ENG) courses meeting this requirement, including ENG 203 or ENG 204, and ENG 225
- ethical understanding requirement: satisfied through DES 462
- discipline-specific writing intensive course requirement: satisfied through DES 231
- oral proficiency requirement: satisfied through DES 300
- information literacy requirement: satisfied through WRI 102, and ENG 203 or ENG 204
- computer literacy requirement: satisfied through DES 230

For complete information on general education requirements, please refer to the Graduation Requirements section within the Academic Policies and Regulations section of this catalog.

### Major Requirements (63 credits)

The following courses constitute the major requirements for the BSDM degree program:

*In the College of Architecture, Art and Design (45 credits)*

- DES 111 Descriptive Drawing I

- DES 121 Introduction to Architecture, Art and Design History or DES 122 Modern Developments in Architecture, Art and Design
- DES 131 Design Foundations I
- DES 200 Communication Design
- DES 230 Digital Media in Communication Design
- DES 231 History of Design
- DES 275 Fundamentals of Design Management
- DES 300 Design Project
- DES 360 Critical Discourse in Design
- DES 380 Innovation and Strategy
- DES 397 Internship in Design Management
- DES 462 Design Management
- DES 472 Exhibition Project
- DES 475 Service Design
- DES 480 Design Thinking
- VIS 361 The Design Profession

*In the School of Business Administration (18 credits)*

- BIS 101 Business Information Systems
- ECO 201 Principles of Microeconomics
- ECO 202 Principles of Macroeconomics
- MGT 201 Fundamentals of Management
- MGT 301 Organizational Behavior
- MKT 201 Fundamentals of Marketing

### Internship

Internship is a requirement for graduation. Arrangements for the internships are normally made with the students in the spring semester of their third year.

The internship comprises five weeks of full-time work placement (normally 200 hours) at an approved professional company during the summer of the student's third year. A review of the student's internship journal and feedback from the employer are the basis of passing the internship requirement.

For details on internship eligibility and registration, please refer to Internship Registration under Registration and Course Information in the Academic Policies and Regulations section of this catalog.

### Major Electives (minimum of 9 credits)

Students are required to successfully complete at least two of the three major electives in courses at the 300 level or above. They can choose to take courses from the following:

- ENG 231 Writing for Visual Media

- PSY 101 General Psychology
- PSY 102 Social Psychology
- THE 321 Arts Management
- any course in CAAD, excluding ART courses
- any course in SBA, excluding BUS 100

- any course in mass communication

### Free Electives (minimum of 6 credits)

Students must successfully complete a minimum of six credits in free electives. Three credits must be in courses at the

300 level or above. Three credits may be in any courses offered at or above the 100 level, excluding MTH 101, MTH 103 and MTH 111.

## Proposed Sequence of Study Bachelor of Science in Design Management (BSDM)

FIRST YEAR (30 credits)			
Term	Course #	Course Title	Credit
Fall	DES 111	Descriptive Drawing I	3
	DES 121* or MJE	Introduction to Architecture, Art and Design History or Major Elective	3
	DES 131	Design Foundations I	3
	MTH 101 or MTH 111 or MTH 103	Mathematics for Business or Mathematics for Architects or Calculus I	3
	WRI 101	Academic Writing I	3
	<b>Total</b>		<b>15</b>
Spring	DES 122* or MJE	Modern Developments in Architecture, Art and Design or Major Elective	3
	DES 230	Digital Media in Communication Design	3
	WRI 102	Academic Writing II	3
	GER-Core	History and Culture of the Arab World	3
	GER-SCI	Natural Sciences	3
	<b>Total</b>		<b>15</b>
SECOND YEAR (30 credits)			
Term	Course #	Course Title	Credit
Fall	BIS 101	Business Information Systems	3
	DES 200	Communication Design	3
	DES 231	History of Design	3
	ENG 203 or ENG 204	Writing about Literature or Advanced Academic Writing	3
	STA 202 or QBA 201	Introduction to Statistics for Social Sciences or Quantitative Business Analysis	3
	<b>Total</b>		<b>15</b>
Spring	DES 275	Fundamentals of Design Management	3
	ECO 201	Principles of Microeconomics	3
	MGT 201	Fundamentals of Management	3
	GER-Core	Culture in a Critical Perspective	3
	GER-SCI	Natural Sciences	3
	<b>Total</b>		<b>15</b>

\* Students must take either DES 121 or DES 122 to meet the major requirements.

THIRD YEAR (30 credits)			
Term	Course #	Course Title	Credit
Fall	DES 300	Design Project	3
	ECO 202	Principles of Macroeconomics	3
	MJE	Major Elective	3
	GER-Core	Arts and Literature	3
	FRE	Free Elective	3
	<b>Total</b>		<b>15</b>
Spring	DES 360	Critical Discourse in Design	3
	DES 380	Innovation and Strategy	3
	ENG 225	Writing for Business	3
	MKT 201	Fundamentals of Marketing	3
	GER-Core	Human Interaction and Behavior	3
	<b>Total</b>		<b>15</b>
Summer	DES 397	Internship in Design Management	0
FOURTH YEAR (30 credits)			
Term	Course #	Course Title	Credit
Fall	DES 462	Design Management	3
	DES 475	Service Design	3
	VIS 361	The Design Profession	3
	MJE	Major Elective	3
	GER-Core	Human Interaction and Behavior	3
	<b>Total</b>		<b>15</b>
Spring	DES 472	Exhibition Project	3
	DES 480	Design Thinking	3
	MGT 301	Organizational Behavior	3
	GER-Core	Course Selected from General Education Core Requirements	3
	FRE	Free Elective	3
	<b>Total</b>		<b>15</b>

## Bachelor of Science in Multimedia Design (BSMD)

Multimedia design studies span a number of disciplines associated with time-based and interactive media. This major engages students with broad-ranging interests in communications, motion graphics, audiovisual narrative construction and interactive applications.

Potential career options for persons majoring in multimedia design include web design, mobile app design, advertising graphics, animation, computer games design and new media. Multimedia is used in social media, libraries, museums, security systems, TV, publishing houses, schools, retailers, films, games, training and interactive design.

## Program Goals

The Bachelor of Science in Multimedia Design program aims to:

- provide students with the knowledge and skills necessary to solve communication problems and competently practice within the multimedia design fields
- introduce students to the knowledge and skills to develop appropriate communicative form across media, dimensions and formats
- provide students with the knowledge and skills required for critically analyzing and solving design problems using specific applications to respond to a variety of audiences and contexts

## Program Outcomes

Upon completion of the Bachelor of Science in Multimedia Design program, graduates will be able to:

- communicate effectively both orally and in writing
- integrate a range of tools, media and technology in the processes of design and production
- reflect upon and explain the ethical dimensions of practice within multimedia design fields
- apply appropriate skills, particularly digital tools and techniques, within multimedia design fields
- demonstrate knowledge and abilities necessary to create designed experiences that are developed using



storyboarding, computer scripting, sound editing and interface design

- employ visual and verbal forms of communication to convey ideas and information
- demonstrate an understanding of the practical relationship between form, content and context
- demonstrate the ability to use new and emerging technology as a vehicle for the invention of form and a means of effective communication
- employ interactive and time-based media formats (and their delivery) to mediate and communicate content
- plan, coordinate and manage multimedia design projects
- conduct research, synthesize information and apply specific knowledge within the design process
- discuss, analyze and evaluate the technical, formal and conceptual aspects of mediated communication
- demonstrate a critical understanding of design practice within regional and global contexts
- analyze precedents of contemporary works of visual culture to inform multimedia design and production
- demonstrate an understanding of professional responsibility to client and audience

## Curriculum

The BSMD degree program requires a minimum of four years of course work for a minimum of 126 credits, 69 credits of which are required in multimedia-related studies, including sound, video, text, computer graphics and theory courses. The specialization is supported by a minimum of 42 credits of general education requirements and a minimum of 15 credits of free electives. In addition, an approved internship is required of all students; firm/company placement normally occurs in the summer after completion of the third year.

The BSMD is a professional degree program designed for those who seek careers in modern design and media practice or in preparation of graduate studies. The curriculum follows standards of professional North American practice and is conceived to meet or exceed the requirements of multimedia industries in the United Arab Emirates.

## Formal Admission to the Program

The number of seats in multimedia design is limited. Formal admission is competitive. Only the most highly qualified foundations students will be admitted. To be considered for formal

admission to the Bachelor of Science in Multimedia Design degree program, a student must successfully complete the following minimum requirements.

- all four foundations studio courses (DES 111, DES 112, DES 131, DES 132) with a minimum grade point average (GPA) of C (2.00) in each sequence (Descriptive Drawing and Design Foundations)
- DES 121 and DES 122
- MTH 100 or any other MTH course
- at least one course in writing (WRI) at the 100 level or above
- a minimum of 27 undergraduate credits (credits earned including the above courses)
- a minimum CGPA of 2.30

In addition, selection for formal admission may also include portfolio review.

Formal notification of admission will be announced by the College of Architecture, Art and Design around mid-June after release of final grades by the Office of the Registrar at the end of the spring semester.

In the event that there are more students who qualify for formal admission than available seats, candidates will be admitted based on overall academic achievement, and a waiting list will be established. However, if there are fewer students who qualify for formal admission than available seats, consideration will be given to students who have applied for a change of major. If seats are still available at the time of fall registration, consideration will also be given to students who fulfilled requirements during summer term. The same formal admission criteria apply.

## Advancement Reviews

The performance of all students in multimedia design will be reviewed following the completion of the second year for retention in the program. To successfully pass this review and to continue in the major, a combined GPA of C+ (2.30) must be attained in MUM 201 and MUM 202, with a minimum grade of C- (1.70) in each course.

Student performance is also reviewed following the completion of the third year for retention in the program. In order to continue in the major, a combined GPA of C+ (2.30) must be attained in MUM 301-01 and MUM 302-01 with a minimum of C- (1.70) in each course.

A student who fails a studio, or does not attain the required studio average, will be required to meet with the head of the department.

A student who does not attain the required studio average must repeat the studio with the lower grade.

Any multimedia design studio may be repeated only once.

A student who fails to achieve the minimum studio average necessary for promotion after repeating is dismissed from the program.

## Degree Requirements

To qualify for graduation with a BSMD degree, students must successfully complete the following minimum requirements:

- a minimum of 126 credits, as follows:
  - a minimum of 42 credits of general education requirements
  - 69 credits of major requirements
  - a minimum of 15 credits of free electives
  - five weeks of an approved internship
- a minimum CGPA of 2.00

Please see the proposed sequence of study for information on completing the requirements in four years.

**Note:** *In order to graduate with a Bachelor of Science in Multimedia Design degree, a student must have attained a studio average of 2.30 in the final studio sequences (MUM 405 and MUM 406). A student who does not attain the required 2.30 average must repeat the studio with the lower grade.*

## General Education Requirements (minimum of 42 credits)

Students in the BSMD degree program must successfully complete the following general education requirements:

- a minimum of 18 credits in courses meeting the core general education requirements:
  - history and culture of the Arab world requirement: three to six credits
  - culture in a critical perspective requirement: three to six credits
  - arts and literature requirement: three to six credits
  - human interaction and behavior requirement: six to nine credits
- natural sciences requirement: a minimum of six credits in courses meeting this requirement
- mathematics requirement: MTH 100 or a minimum of three credits in any MTH course at the 100 level or above meeting this requirement

- statistics requirement: a minimum of three credits in courses meeting this requirement
- communication requirement: a minimum of 12 credits in 100-level or above writing (WRI)/English (ENG) courses meeting this requirement, including ENG 203 or ENG 204
- ethical understanding requirement: satisfied through VIS 361
- discipline-specific writing intensive course requirement: satisfied through DES 231
- oral proficiency requirement: satisfied through MUM 405
- information literacy requirement: satisfied through WRI 102, and ENG 203 or ENG 204
- computer literacy requirement: satisfied through MUM 201

For complete information on general education requirements, please refer to the Graduation Requirements section within the Academic Policies and Regulations section of this catalog.

### Major Requirements (69 credits)

In addition to the foundations courses, the following courses constitute the

major requirements for the BSMD degree program:

- DES 231 History of Design
- DES 232 Research Methodologies for Design
- MUM 201 Multimedia Design Studio I
- MUM 202 Multimedia Design Studio II
- MUM 221 Motion Graphics and Video
- MUM 301-01 Multimedia Design Studio III
- MUM 302-01 Multimedia Design Studio IV
- MUM 304 Media Systems and Publishing
- MUM 331 3D Animation
- MUM 360 Multimedia Design History and Theory
- MUM 397 Internship in Multimedia Design
- MUM 405 Multimedia Design Studio V
- MUM 406 Multimedia Design Studio VI
- VIS 221 Photography Basics
- VIS 231 Typography I: Normative Typographic Principles
- VIS 361 The Design Profession

### Internship

Internship is a requirement for graduation. Arrangements for the internships are normally made with the students in the spring semester of their third year.

The internship comprises five weeks of full-time work placement (normally 200 hours) at an approved professional company during the summer of the student's third year. A review of the student's internship journal and feedback from the employer are the basis of passing the internship requirement.

For details on internship eligibility and registration, please refer to Internship Registration under Registration and Course Information in the Academic Policies and Regulations section of this catalog.

### Free Electives (minimum of 15 credits)

Students must successfully complete a minimum of 15 credits in free electives. Nine credits must be in courses at the 300-level or above. Six credits may be in any courses offered at or above the 100 level.

## Proposed Sequence of Study Bachelor of Science in Multimedia Design (BSMD)

FIRST YEAR (30 credits)			
Term	Course #	Course Title	Credit
Fall	DES 111	Descriptive Drawing I	3
	DES 121	Introduction to Architecture, Art and Design History	3
	DES 131	Design Foundations I	3
	MTH 100*	Fundamentals of Logic and Geometry	3
	WRI 101	Academic Writing I	3
<b>Total</b>			<b>15</b>
Spring	DES 112	Descriptive Drawing II	3
	DES 122	Modern Developments in Architecture, Art and Design	3
	DES 132	Design Foundations II	3
	WRI 102	Academic Writing II	3
	GER-Core	History and Culture of the Arab World	3
<b>Total</b>			<b>15</b>
<b>*Students can take MTH 100 or any other 100-level or above MTH course meeting the GER-MTH requirement.</b>			
SECOND YEAR (30 credits)			
Term	Course #	Course Title	Credit
Fall	MUM 201	Multimedia Design Studio I	3
	VIS 221	Photography Basics	3
	VIS 231	Typography I: Normative Typographic Principles	3
	DES 231	History of Design	3
	ENG 203 or ENG 204	Writing about Literature or Advanced Academic Writing	3
<b>Total</b>			<b>15</b>
Spring	MUM 202	Multimedia Design Studio II	3
	MUM 221	Motion Graphics and Video	3
	DES 232	Research Methodologies for Design	3
	GER-STA	Statistics	3
	FRE	Free Elective	3
<b>Total</b>			<b>15</b>

THIRD YEAR (36 credits)			
Term	Course #	Course Title	Credits
Fall	MUM 301-01	Multimedia Design Studio III	3
	MUM 331	3D Animation	3
	MUM 360	Multimedia Design History and Theory	3
	GER-Core	Culture in a Critical Perspective	3
	GER-Core	Arts and Literature	3
	FRE	Free Elective	3
		<b>Total</b>	<b>18</b>
Spring	MUM 302-01	Multimedia Design Studio IV	3
	MUM 304	Media Systems and Publishing	3
	GER-SCI	Natural Sciences	3
	GER-COM	Communication	3
	FRE	Free Elective	3
	FRE	Free Elective	3
		<b>Total</b>	<b>18</b>
Summer	MUM 397	Internship in Multimedia Design	0
FOURTH YEAR (30 credits)			
Term	Course #	Course Title	Credits
Fall	MUM 405	Multimedia Design Studio V	6
	VIS 361	The Design Profession	3
	GER-Core	Human Interaction and Behavior	3
	GER-Core	Human Interaction and Behavior	3
		<b>Total</b>	<b>15</b>
Spring	MUM 406	Multimedia Design Studio VI	6
	GER-Core	Course Selected from General Education Core Requirements	3
	GER-SCI	Natural Sciences	3
	FRE	Free Elective	3
		<b>Total</b>	<b>15</b>

## Bachelor of Science in Visual Communication (BSVC)

The creation, manipulation and production of visual images and text are at the core of this major. Visual communication is influenced to a large degree by fast-changing worldwide technologies. Apart from broad technical, computer and design education, visual communication practitioners require an understanding of aesthetic trends, human nature, ethical boundaries and societal needs. Visual communicators aim to inform, persuade and influence behavior through the application of design principles.

Potential career options for persons majoring in visual communication fall under a large umbrella that includes graphic design, commercial advertising, illustration and photography. Typical job titles include graphic designer, web designer, creative manager, art director, commercial/advertising photographer, communication designer and commercial artist.

### Program Goals

The Bachelor of Science in Visual Communication degree program aims to:

- provide students with the practical knowledge and skills necessary to competently practice design within the visual communications fields
- introduce students to the knowledge and skills to develop appropriate, communicative visual form within various media, dimensions and formats
- provide students with the knowledge and skills required for critically analyzing and solving design problems using specific applications to respond to a variety of audiences and contexts

### Program Outcomes

Upon completion of the Bachelor of Science in Visual Communication degree program, graduates will be able to:

- communicate effectively both orally and in writing
- integrate a range of tools, media and technology in the processes of design and production
- reflect upon and explain the ethical considerations related to creation, production, management and distribution within visual communication fields
- create and utilize image, language and typographic form in order to communicate specific content
- demonstrate an understanding of the practical relationship between form, content and context

- analyze various media formats to determine their effectiveness in mediating and communicating content
- demonstrate proficiency in the appropriate use of multiple design technologies
- conduct research, synthesize information and apply specific knowledge within the design process
- discuss, analyze and evaluate the technical, formal and conceptual aspects of visual communication
- analyze and describe contemporary and historical examples of visual communications
- explain how ideas are communicated and information is presented in the context of professional practice
- demonstrate a critical understanding of design practice within regional and global contexts

### Curriculum

The BSVC degree program requires a minimum of four years of university studies. The foundations year of visual communication consists of a basic education in applied design, training in computer applications and courses in the history, theory and relevance of design and visual expression. In the following years, elements of design practice are explored in individual, hands-on studio projects. The design studio sequence is the program core that integrates practical, cultural and contextual aspects of visual communication.

The BSVC is a professional degree program. The minimum of 126 credits required for the degree comprise 69 credits in required visual communication, digital applications and visual design-related courses. This specialization is supported by a minimum of 42 credits of general education requirements and a minimum of 15 credits of free electives. In addition, an approved internship is required of all students; firm/company placement occurs in the summer after completion of the third year.

The BSVC is configured to prepare those who seek careers as designers as well as those who plan to pursue graduate studies in visual communication-related areas. The curriculum follows standards of professional North American organizations and is designed to meet or exceed requirements for visual communication experts in the United Arab Emirates.

### Formal Admission to the Program

The number of seats in the visual communication program is limited. Formal admission is competitive. Only the most highly qualified foundations students will be admitted. To be

considered for formal admission to the Bachelor of Science in Visual Communication program, a student must successfully complete the following minimum requirements.

- all four foundations studio courses (DES 111, DES 112, DES 131, DES 132) with a minimum grade point average (GPA) of C (2.00) in each sequence (Descriptive Drawing and Design Foundations)
- DES 121 and DES 122
- MTH 100 or any other MTH course
- at least one course in writing (WRI) at the 100 level or above
- a minimum of 27 undergraduate credits (credits earned including the above courses)
- a minimum CGPA of 2.30

In addition, selection for formal admission may also include portfolio review.

Formal notification of admission will be announced by the College of Architecture, Art and Design around mid-June after release of final grades by the Office of the Registrar at the end of the spring semester.

In the event that there are more students who qualify for formal admission than available seats, candidates will be advanced based on academic achievement, and a waiting list will be established. However, if there are fewer students who qualify for formal admission than available seats, consideration will be given to students who have applied for a change of major. If seats are still available at the time of fall registration, consideration will be given to students who fulfilled requirements during summer term. The same formal admission criteria apply.

### Advancement Reviews

The performance of all students in the visual communication program will be reviewed following the completion of the second year for retention in the program. To successfully pass this review and to continue in the major, a combined GPA of C+ (2.30) must be attained in VIS 201 and VIS 202, with a minimum grade of C- (1.70) in each course.

Student performance is also reviewed following the completion of the third year for retention in the program. In order to continue in the major, a combined GPA of C+ (2.30) must be attained in VIS 301 and VIS 302 with a minimum of C- (1.70) in each course.

A student who fails a studio, or does not attain the required studio average, will be required to meet with the head of the department.

A student who does not attain the required studio average must repeat the studio with the lower grade.

Any visual communication studio may be repeated only once.

A student who fails to achieve the minimum studio average necessary for promotion after repeating is dismissed from the program.

### Degree Requirements

To qualify for graduation with a BSVC degree, students must successfully complete the following minimum requirements:

- a minimum of 126 credits, as follows:
  - a minimum of 42 credits of general education requirements
  - 69 credits of major requirements
  - a minimum of 15 credits of free electives
  - five weeks of an approved internship
- a minimum CGPA of 2.00

**Note:** In order to graduate with a Bachelor of Science in Visual Communication degree, a student must have attained a studio average of 2.30 in the final studio sequence (VIS 405 and VIS 406). A student who does not attain the required 2.30 average must repeat the studio with the lower grade.

Please see the proposed sequence of study for information on completing the requirements in four years.

### General Education Requirements (minimum of 42 credits)

Students in the BSVC degree program must successfully complete the following general education requirements:

- a minimum of 18 credits in courses meeting the core general education requirements:
  - history and culture of the Arab world requirement: three to six credits
  - culture in a critical perspective requirement: three to six credits
  - arts and literature requirement: three to six credits
  - human interaction and behavior requirement: six to nine credits
- natural sciences requirement: a minimum of six credits in courses meeting this requirement
- mathematics requirement: MTH 100 or a minimum of three credits in any MTH course at the 100 level or above meeting this requirement

- statistics requirement: a minimum of three credits in courses meeting this requirement
- communication requirement: a minimum of 12 credits in 100-level or above writing (WRI)/English (ENG) courses meeting this requirement, including ENG 203 or ENG 204
- ethical understanding requirement: satisfied through VIS 361
- discipline-specific writing intensive course requirement: satisfied through DES 231
- oral proficiency requirement: satisfied through VIS 405
- information literacy requirement: satisfied through WRI 102, and ENG 203 or ENG 204
- computer literacy requirement: satisfied through VIS 201

For complete information on general education requirements, please refer to the Graduation Requirements section within the Academic Policies and Regulations section of this catalog.

### Major Requirements (69 credits)

In addition to the foundations courses, the following courses constitute the major requirements for the BSVC degree program:

- DES 231 History of Design
- DES 232 Research Methodologies for Design
- DES 360 Critical Discourse in Design
- VIS 201 Design Studio I
- VIS 202 Design Studio II
- VIS 221 Photography Basics
- VIS 231 Typography I: Normative Typographic Principles
- VIS 242 Electronic Online Publishing
- VIS 301 Design Studio III
- VIS 302 Design Studio IV
- VIS 331 Typography II: Complex Typographic Systems
- VIS 342 Environment, Experience and Interaction Design
- VIS 361 The Design Profession
- VIS 397 Internship in Visual Communication
- VIS 405 Design Studio V
- VIS 406 Design Studio VI

### Internship

Internship is a requirement for graduation. Arrangements for the internships are normally made with the students in the spring semester of their third year.

The internship comprises five weeks of full-time work placement (normally 200 hours) at an approved professional company during the summer of the student's third year. A review of the student's internship journal and feedback from the employer are the basis of passing the internship requirement.

For details on internship eligibility and registration, please refer to Internship Registration under Registration and Course Information in the Academic Policies and Regulations section of this catalog.

### Free Electives (minimum of 15 credits)

Students must successfully complete a minimum of 15 credits in free electives. Nine credits must be in courses at the 300 level or above. Six credits may be in any courses offered at or above the 100 level.

**Proposed Sequence of Study  
Bachelor of Science in Visual Communication (BSVC)**

FIRST YEAR (30 credits)			
Term	Course #	Course Title	Credit
Fall	DES 111	Descriptive Drawing I	3
	DES 121	Introduction to Architecture, Art and Design History	3
	DES 131	Design Foundations I	3
	MTH 100*	Fundamentals of Logic and Geometry	3
	WRI 101	Academic Writing I	3
<b>Total</b>			<b>15</b>
Spring	DES 112	Descriptive Drawing II	3
	DES 122	Modern Developments in Architecture, Art and Design	3
	DES 132	Design Foundations II	3
	WRI 102	Academic Writing II	3
	GER-Core	History and Culture of the Arab World	3
<b>Total</b>			<b>15</b>

**\*Students can take MTH 100 or any other 100-level or above MTH course meeting the GER-MTH requirement.**

SECOND YEAR (30 credits)			
Term	Course #	Course Title	Credit
Fall	VIS 201	Design Studio I	3
	VIS 221	Photography Basics	3
	VIS 231	Typography I: Normative Typographic Principles	3
	DES 231	History of Design	3
	ENG 203 or ENG 204	Writing about Literature or Advanced Academic Writing	3
<b>Total</b>			<b>15</b>
Spring	VIS 202	Design Studio II	3
	VIS 242	Electronic Online Publishing	3
	DES 232	Research Methodologies for Design	3
	GER-STA	Statistics	3
	FRE	Free Elective	3
<b>Total</b>			<b>15</b>

THIRD YEAR (36 credits)			
Term	Course #	Course Title	Credit
Fall	VIS 301	Design Studio III	3
	VIS 331	Typography II: Complex Typographic Systems	3
	DES 360	Critical Discourse in Design	3
	GER-Core	Culture in a Critical Perspective	3
	GER-Core	Arts and Literature	3
	FRE	Free Elective	3
		<b>Total</b>	<b>18</b>
Spring	VIS 302	Design Studio IV	3
	VIS 342	Environment, Experience and Interaction Design	3
	GER-COM	Communication	3
	GER-SCI	Natural Sciences	3
	FRE	Free Elective	3
	FRE	Free Elective	3
		<b>Total</b>	<b>18</b>
Summer	VIS 397	Internship in Visual Communication	0
FOURTH YEAR (30 credits)			
Term	Course #	Course Title	Credit
Fall	VIS 405	Design Studio V	6
	VIS 361	The Design Profession	3
	GER-Core	Human Interaction and Behavior	3
	GER-Core	Human Interaction and Behavior	3
		<b>Total</b>	<b>15</b>
Spring	VIS 406	Design Studio VI	6
	GER-Core	Course Selected from General Education Core Requirements	3
	GER-SCI	Natural Sciences	3
	FRE	Free Elective	3
		<b>Total</b>	<b>15</b>

### Minor in Design Management

Students enrolling in the design management minor should have normally completed a minimum of 30 credits of course work and be in good academic standing. The following rules apply:

- The minor consists of a minimum of 18 credits, including at least nine credits in courses at or above the 300 level.
- At least nine credits of the 18 credits required for the minor must be taken in residence at AUS.
- At least six credits of the nine credits at or above the 300 level must be taken in residence at AUS.
- A grade of at least C- in each course and a GPA of at least 2.00 must be earned in courses taken to satisfy the minor.

#### Minor Requirements (18 credits)

Students seeking a minor in design management must successfully complete the following courses or their equivalent. All course prerequisites must be satisfied.

- at least nine credits in CAAD undergraduate courses, including DES 101 or DES 131. ART courses do not meet this requirement.
- at least nine credits in SBA undergraduate courses, including MGT 201

#### Minor in Film

Students enrolling in the film minor should have normally completed a minimum of 30 credits of course work and be in good academic standing. The following rules apply:

- The minor consists of a minimum of 18 credits, including at least nine credits in courses at or above the 300 level.
- At least nine credits of the 18 credits required for the minor must be taken in residence at AUS.
- At least six credits of the nine credits at or above the 300 level must be taken in residence at AUS.
- A grade of at least C- in each course and a GPA of at least 2.00 must be earned in courses taken to satisfy the minor.

Students seeking a minor in film must successfully complete the following courses or their equivalent. All course prerequisites must be satisfied.

#### Minor Requirements (12 credits)

Students must successfully complete 12 credits as follows:

- FLM 100 The Art of Film
- FLM 201 History of Film to 1945 or FLM 202 History of Film since 1945 or FLM 203 History of Arab Film
- FLM 210 Narrative Structure in Film
- FLM 310 Film Production I

#### Minor Electives (minimum of 6 credits)

Students must successfully complete a minimum total of six credits from the following list of courses:

- ENG 378 Literature as Film
- ENG 393 Shakespeare On Film
- FLM 312 Film Production II
- FLM 332 Experimental Film and Video I
- FLM 360 Screenwriting
- FLM 401 Significant Film Genres

- FLM 410 Advanced Film Production
- FLM 412 Documentary Film Production
- MUM 311 Animation
- MUM 331 3D Animation
- any approved special topic courses at the 300-level or above. Consult the online course catalog or the online class schedule accessible via the AUS student information system to view course classifications.

#### Minor in Illustration and Animation

Students enrolling in the illustration-animation minor should have normally completed a minimum of 30 credits of course work and be in good academic standing. The following rules apply:

- The minor consists of a minimum of 18 credits, including at least nine credits in courses at or above the 300 level.
- At least nine credits of the 18 credits required for the minor must be taken in residence at AUS.
- At least six credits of the nine credits at or above the 300 level must be taken in residence at AUS.
- A grade of at least C- in each course and a GPA of at least 2.00 must be earned in courses taken to satisfy the minor.

Students seeking a minor in illustration-animation must successfully complete the following courses or their equivalent. All course prerequisites must be satisfied.

#### Minor Requirements (12 credits)

Students must successfully complete 12 credits as follows:

- DES 111 Descriptive Drawing I or ART 111 Freehand Drawing
- MUM 311 Animation
- VIS 213 Illustration Drawing or ART 211 Intermediate Drawing
- VIS 313 Visual Narrative

#### Minor Electives (minimum of 6 credits)

Students must successfully complete a minimum total of six credits from the following list of courses, with a minimum of three credits from courses at the 300 level or above:

- DES 230 Digital Media in Communication Design
- ENG 301 Creative Writing
- FLM 210 Narrative Structure in Film
- MUM 331 3D Animation
- VIS 311 Illustration Design
- VIS 312 Illustration Genres

- any approved special topic courses at the 300-level or above. Consult the online course catalog or the online class schedule accessible via the AUS student information system to view course classifications.

#### Minor in Photography

Students enrolling in the photography minor should have normally completed a minimum of 30 credits of course work and be in good academic standing. The following rules apply:

- The minor consists of a minimum of 18 credits, including at least nine credits in courses at or above the 300 level.
- At least nine credits of the 18 credits required for the minor must be taken in residence at AUS.
- At least six credits of the nine credits at or above the 300 level must be taken in residence at AUS.
- A grade of at least C- in each course and a GPA of at least 2.00 must be earned in courses taken to satisfy the minor.

Students seeking a minor in photography must successfully complete the following courses or their equivalent. All course prerequisites must be satisfied.

#### Minor Requirements (9 credits)

Students must successfully complete nine credits as follows:

- DES 231 History of Design
- DES 362 History of Photography: The Portrait
- VIS 221 Photography Basics or DES 160 Introduction to Photography

#### Minor Electives (minimum of 9 credits)

Students must successfully complete a minimum total of nine credits from the following list of courses:

- ARC 316 Photography and Visual Representation
- VIS 321 Photojournalism or MCM 377 Photojournalism
- VIS 323 Photography for Communication
- VIS 325 Creative Studio Photography
- VIS 327 Analog Photography Processes
- any approved special topic courses at the 300-level or above. Consult the online course catalog or the online class schedule accessible via the AUS student information system to view course classifications.

#### Minor in Product Design

Students enrolling in the product design minor should have normally completed a minimum of 30 credits of course work and be in good academic standing. The following rules apply:

- The minor consists of a minimum of 18 credits, including at least nine credits in courses at or above the 300 level.
- At least nine credits of the 18 credits required for the minor must be taken in residence at AUS.
- At least six credits of the nine credits at or above the 300 level must be taken in residence at AUS.
- A grade of at least C- in each course and a GPA of at least 2.00 must be earned in courses taken to satisfy the minor.

Students seeking a minor in product design must successfully complete the following courses or their equivalent. All course prerequisites must be satisfied.

#### Minor Requirements (9 credits)

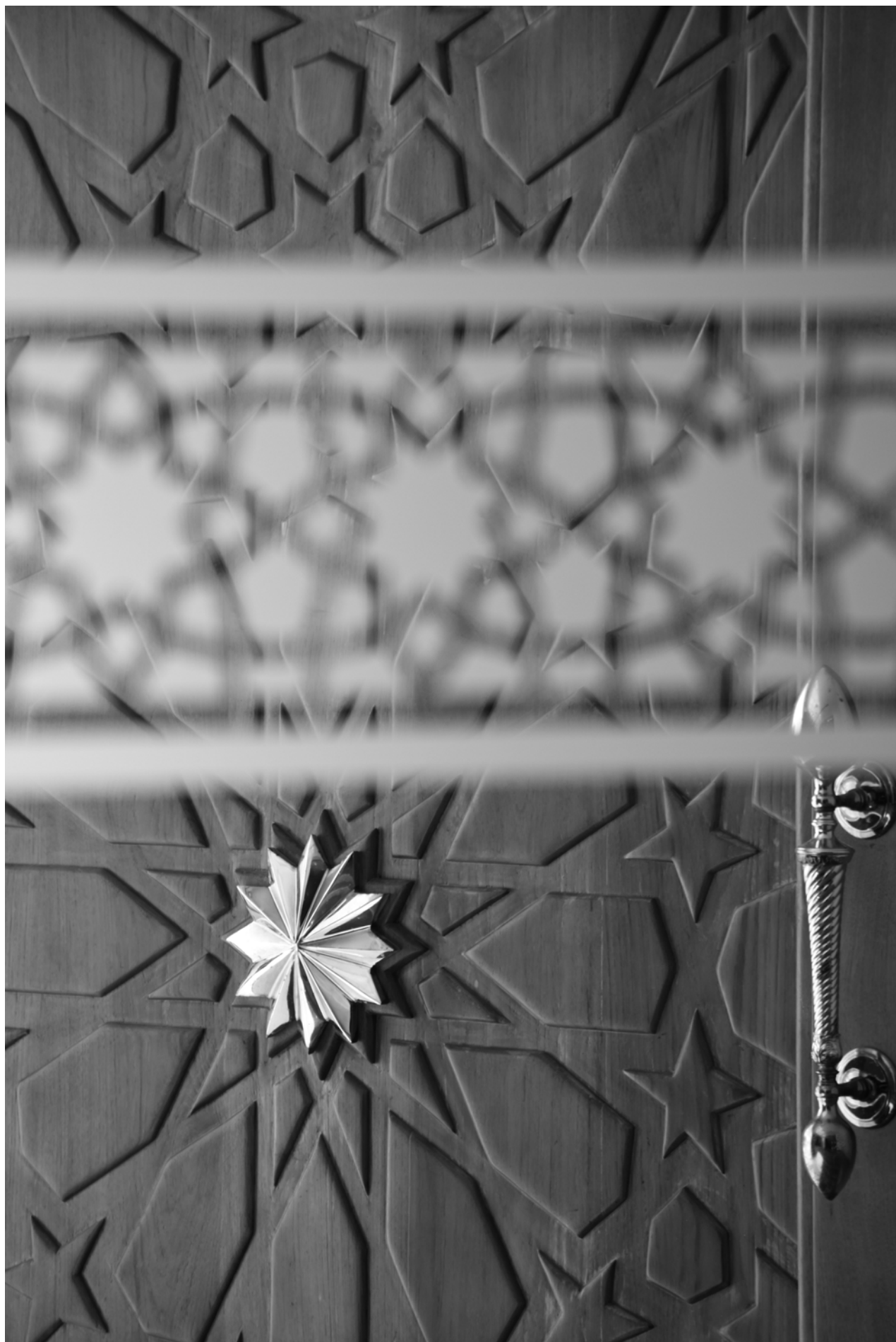
Students must successfully complete nine credits as follows:

- DES 170 Introduction to Product Design
- DES 270 Design as Form
- DES 370 Introduction to Prototyping

#### Minor Electives (minimum of 9 credits)

Students must successfully complete a minimum total of nine credits from the following list of courses:

- DES 340 Materials and Processes for Design
- DES 374 Package Design
- DES 462 Design Management
- DES 472 Exhibition Project
- IDE 335 Furniture Design Basics
- IDE 460 Exhibition Design
- any approved special topic courses at the 300-level or above. Consult the online course catalog or the online class schedule accessible via the AUS student information system to view course classifications.







# College of Arts and Sciences

## Dean

Mahmoud Anabtawi

## Associate Deans

Ahmad Al-Issa

James Griffin

The mission of the College of Arts and Sciences is to educate and train students in the liberal arts tradition and to serve as a model of collegiality, liberal learning, scholarship and inquiry. To this end, we offer students the opportunity to probe deeply within and explore linkages across the liberal arts disciplines by offering a robust, diverse curriculum of study in a variety of academic and experiential settings.

Graduates of the College of Arts and Sciences will be prepared to achieve their personal and professional aspirations. They will be well qualified to pursue professional training and/or graduate degrees of their choice.

## Degree Offerings

The College of Arts and Sciences offers the following undergraduate degree programs:

- Bachelor of Arts in English Language and Literature
- Bachelor of Arts in International Studies
- Bachelor of Arts in Mass Communication
- Bachelor of Science in Biology
- Bachelor of Science in Chemistry
- Bachelor of Science in Environmental Sciences
- Bachelor of Science in Mathematics

For information on the college's graduate programs, please see the *AUS Graduate Catalog*.

## Minor Offerings

The College of Arts and Sciences offers the following minors:

- actuarial mathematics
- American studies
- applied and computational mathematics
- applied physics
- Arabic language and literature
- biology
- English/Arabic translation
- English language
- English literature

- environmental policy
- environmental sciences
- governmental studies
- history
- international studies
- mass communication
- Middle Eastern studies
- music
- philosophy
- psychology
- theatre
- women's studies

## Department of Arabic and Translation Studies

David Wilmsen, Head

### Faculty

Wesam Al-Assadi

Ahmed Ali

Meis Al-Kaisi

Nuha Al-Sha'ar

Yousef Casewit

Said Faiq

Basil Hatim

Ronak Husni

Sattar Izwai

Boutheina Khaldi

Joseph Lumbard

Imed Nsiri

Gavin Picken

Mai Zaki

The mission of the Department of Arabic and Translation Studies is to cultivate students' knowledge and understanding of Arabic language and literature, Arab and Islamic studies, and Arabic/English translation and intercultural studies with the aim of preparing its graduates for academic and professional success. For Arabic language and literature and Arab and Islamic studies, students will acquire the necessary linguistic, literary, historical and cultural knowledge of Arabic and associated cultural contexts, and develop the ability to reflect critically on these areas. For Arabic/English translation and intercultural studies, students will acquire the knowledge of and the tools for the use of the two languages effectively in a variety of media, genres and contexts that pertain to translation as intercultural communication. The department offers minors in Arabic language and literature and in English/Arabic translation. It also houses the graduate program in Arabic/English/Arabic translation and

interpreting (see the *AUS Graduate Catalog*).

## Minor in Arabic Language and Literature

The minor in Arabic language and literature aims to enhance students' awareness and appreciation of the language, culture and literature of the Arab world. The minor is ideally suited for students in the humanities and social sciences, as well as students in applied sciences and business pursuing research or employment opportunities anywhere in the Arab world. The minor provides for a better understanding of Arabic language and literature in a global context. Furthermore, it meets the increasing regional and global demand for degree-holders proficient in Arabic language and culture.

Students enrolling in the Arabic language and literature minor should have normally completed a minimum of 30 credits of course work and be in good academic standing.

The following rules apply:

- The minor consists of a minimum of 18 credits, including at least nine credits in courses at or above the 300 level.
- At least nine credits of the 18 credits required for the minor must be taken in residence at AUS.
- At least six credits of the nine credits at or above the 300 level must be taken in residence at AUS.
- A minimum GPA of 2.00 must be earned in courses completed to satisfy the minor.

Students seeking a minor in Arabic language and literature must successfully complete the following courses or their equivalent. All course prerequisites must be satisfied.

### Minor Requirements (6 credits)

- ARA 101 Introduction to Arabic Heritage I (Arabic or English) or ARA 102 Introduction to Arabic Heritage II (Arabic or English)
- ARA 204 Intermediate Arabic II or ARA 210 Composition for Native Speakers of Arabic or ARA 308 Arabic Grammar in Use

### Minor Electives (minimum of 12 credits)

Students must successfully complete a minimum of 12 credits from any 200-level or above ARA courses, nine of which must be at the 300 level or above.

### Minor in English/Arabic Translation

To qualify for a minor in English/Arabic translation, students must demonstrate fluency in English and Arabic. In tandem with a solid grounding in communicative skills and linguistic analysis, the minor in translation focuses on written translation skills in a variety of settings and across disciplines. It also offers an insight into interpreting with a focus on the community. Throughout the program, students are provided with relevant theoretical input that establishes a framework for the study of translation and offers the tools to identify, analyze and resolve translation problems. This program of study will enable AUS students from any discipline to further enhance their employability chances and, more importantly, to be able to mediate in English between the world of their education and their community.

Students enrolling in the English/Arabic translation minor should have normally completed a minimum of 30 credits of course work and be in good academic standing.

The following rules apply:

- The minor consists of a minimum of 18 credits, including at least nine credits in courses at or above the 300 level.
- At least nine credits of the 18 credits required for the minor must be taken in residence at AUS.
- At least six credits of the nine credits at or above the 300 level must be taken in residence at AUS.
- A minimum GPA of 2.00 must be earned in courses completed to satisfy the minor.

Students seeking a minor in English/Arabic translation must successfully complete the following courses or their equivalent. All course prerequisites must be satisfied.

#### Minor Requirements (6 credits)

- TRA 210 Introduction to Translation
- TRA 220 Theoretical and Practical Issues in Translation or TRA 230 Translating Arabic Literary Texts

#### Minor Electives (minimum of 12 credits)

Students must successfully complete a minimum of 12 credits with a minimum of nine credits in courses at the 300 level or above. Courses can be taken from the following two categories:

##### Translation Courses (minimum of 6 credits)

Students must successfully complete a minimum of six credits in courses

selected from the following list and not used as minor requirements:

- TRA 220 Theoretical and Practical Issues in Translation
- TRA 230 Translating Arabic Literary Texts
- TRA 301 Modern Media Translation
- TRA 303 Interpreting: Focus on the Community
- TRA 307 Screen Translation
- TRA 401 Translation Evaluation and History
- any approved 200-level or above TRA special topic courses. Consult the online course catalog or the online class schedule accessible via the AUS student information system to verify course classifications.

##### Non-Translation Courses (maximum of 6 credits)

Students must successfully complete a maximum of six credits in courses selected from the following list:

- ARA 308 Arabic Grammar in Use
- ARA 360 Arabic Linguistics
- ENG 321 Cultures in Contact

### Department of Biology, Chemistry and Environmental Sciences

James Gannon, Head

#### Faculty

Mohamed Abouleish  
Imad Abu-Yousef  
Mohammed Al-Sayah  
Aaron Bartholomew  
Sarah Dalibalta  
Oussama El-Kadri  
Yehya El-Sayed  
Sofian Kanan  
Mustafa Khamis  
Björn Kjerfve  
Sandra Knuteson  
Amin Majdalawieh  
Lucia Pappalardo  
Dennis Russell  
Fatin Samara

The Department of Biology, Chemistry and Environmental Sciences oversees bachelor of science degrees in each of these three disciplines. The department enables graduates to pursue a variety of professions in science by providing them with rigorous training in the core areas with emphasis on hands-on experience. Whereas the biology and chemistry degree programs are similar to those in North American universities, the environmental sciences degree program is cognizant of the specific

issues and challenges in the Gulf region.

The department maintains close relationship with alumni, local industries, environmental agencies and employers who provide internship and career opportunities to students.

#### Premedical Studies Preparation

AUS offers premedical studies (premed) courses that conform to the Medical College Admission Test (MCAT) requirements. For students seeking careers in medicine, the department offers MCAT advice on enhancing their medical school admission prospects. AUS has premed memoranda of understanding (MOUs) with American University of Beirut (AUB), Lebanese American University (LAU) and University of Balamand. AUS graduates in any discipline—including science, engineering, business, arts and the humanities—can now apply to the medical schools of these universities, provided they have completed specified premed science requirements. Successful applicants must also meet minimum admission criteria in terms of major GPA, cumulative GPA, and MCAT and interview scores. In recognition of the shared values and goals with AUS, these universities evaluate AUS applicants as graduates from a “sister” university.

### Bachelor of Science in Biology (BSB)

The mission of the Bachelor of Science in Biology program is to provide students with a broadly based, rigorous education in a variety of biology areas. These include environmental biology, ecosystems management, environmental protection, species conservation, physiology, microbiology, molecular biology, genetics, health research, immunology and teaching.

#### Program Goals

The Bachelor of Science in Biology program seeks to:

- provide students with an integrated knowledge of contemporary principles and applications of biology that will prepare them for advanced degrees and careers in teaching, research, consulting, medicine, genetic engineering and biotechnology
- provide a high-quality, laboratory-rich learning environment where students will learn proper laboratory protocols, plan and conduct experiments in various areas of biology, practice the scientific method, analyze data, and reach logical and reasonable conclusions
- provide opportunities for interested and qualified students to participate

in meaningful research projects of their own, under the guidance of the biology faculty

- maintain a dynamic curriculum that reflects the needs of a changing world
- foster motivation and opportunities for lifelong learning

### Program Outcomes

Upon graduation from the Bachelor of Science in Biology program, students will be able to:

- gain practical, experience-based learning
- apply technologies and become proficient in the use of modern instrumentation
- identify and carry out thoughtful approaches to biology-related problems, including ethical issues and biological threats to the environment
- develop competence in critical thinking, communications, teamwork, information technology and adaptation to change
- produce written and oral reports using resources found in the scientific literature
- demonstrate knowledge of the fundamentals of various molecular, cell and ecological techniques, instruments and equipment

### Career Opportunities

Graduates of the Bachelor of Science in Biology program will have the training necessary to work in many areas including genetic research laboratories, immunology research, human genetics counseling, agriculture, horticulture, soil science, marine aquaculture, fisheries, forestry, science education and teaching at all levels, scientific journalism, veterinary medicine, drug and biotechnology, ecosystems management, conservation law enforcement, bioinformatics database companies, pharmaceutical sales and production, university and hospital research centers, natural history museums, nature parks and zoological gardens, government wildlife management, centers for disease control, epidemiology, virology, food testing, public health, and medical and blood testing laboratories.

### Admission to the Program

Initial admission to the program follows the university's undergraduate admission requirements.

Formal admission to the program requires meeting the following conditions:

- a cumulative grade point average (CGPA) of 2.00

- a minimum grade of C- (1.70) in at least 19 credits from the following list of required freshman-level science and mathematics courses: BIO 101, BIO 102, CHM 101, CHM 102, PHY 101, PHY 101L, MTH 103

AUS students transferring into the program must meet the formal admission requirements listed above. In the event that there are more qualified AUS students transferring into the major than available spaces, students will be admitted based on academic achievement. For more details, please check with the head of the department or the college associate dean. For information on how to submit a change of major request, please refer to Fields of Study/Change of Major under the Academic Policies and Regulations section earlier in the catalog.

### Degree Requirements

To qualify for graduation with a Bachelor of Science in Biology, students must successfully complete the following minimum requirements:

- a minimum of 120 credits, including a minimum of 36 credits in courses at the 300 level or above, as follows:
  - a minimum of 44 credits in general education requirements
  - 43 credits of major requirements
  - a minimum of 18 credits of major electives
  - a minimum of 15 credits of free electives in courses at the 100 level or above, excluding MTH 101
- a minimum CGPA of 2.00

### General Education Requirements (minimum of 44 credits)

Students must successfully complete a minimum of 44 credits as follows:

- a minimum of 18 credits in courses meeting the core general education requirements:
  - history and culture of the Arab world requirement: three to six credits
  - culture in a critical perspective requirement: three to six credits
  - arts and literature requirement: three to six credits
  - human interaction and behavior requirement: six to nine credits
- natural sciences requirement: BIO 101 and CHM 101
- mathematics requirement: MTH 103
- statistics requirement: STA 201
- communication requirement: a minimum of 12 credits in 100-level or above writing (WRI)/English (ENG) courses meeting this requirement, including ENG 203 or ENG 204

- ethical understanding requirement: satisfied through BIO 251
- discipline-specific writing intensive course requirement: satisfied through BIO 361
- oral proficiency requirement: satisfied through BIO 251
- information literacy requirement: satisfied through WRI 102, and ENG 203 or ENG 204
- computer literacy requirement: satisfied through STA 201

### Major Requirements (43 credits)

- BIO 102 General Biology II
- BIO 251 Ecology
- BIO 260 Genetics and Molecular Biology
- BIO 310 General Physiology
- BIO 332 Cell Biology
- BIO 335 Microbiology
- BIO 361 Evolution and Biodiversity
- CHM 102 General Chemistry II
- CHM 215 Organic Chemistry I
- CHM 216 Organic Chemistry II
- CHM 217 Organic Chemistry Lab I
- CHM 350 Biochemistry
- PHY 101 General Physics I
- PHY 101L General Physics Laboratory I

### Major Electives (minimum of 18 credits)

Students must successfully complete a minimum of 18 credits as follows:

#### *Biology Elective Courses (minimum of 9 credits)*

Students must successfully complete a minimum of nine credits in courses selected from the following list:

- BIO 210 Introduction to Human Anatomy and Physiology
- BIO 330 Ecosystems Management
- BIO 341 Principles of Pharmacology
- BIO 371 Principles of Neuroscience
- BIO 394/494 Special Topics in Biology
- BIO 421 Marine Environments
- BIO 461 Desert and Maritime Plants
- BIO 481 Cellular and Molecular Immunology
- BIO 491 Senior Project I
- BIO 492 Senior Project II

#### *Biology-Related Elective Courses*

Students can choose to complete a maximum of nine credits in courses selected from the following list:

- CHM 242 Quantitative Analysis
- CHM 243 Quantitative Analysis Laboratory

- CHM 315 Organic Chemistry III
- CHM 345 Instrumental Analysis
- CHM 394/494 approved special topics in chemistry. Consult the online course catalog or the online class schedule accessible via the AUS student information system to verify course classifications.
- ENV 201 Fundamentals of Environmental Science
- ENV 352 Environmental Toxicology
- ENV 394/494 approved special topics in environmental sciences. Consult the online course catalog or the online class schedule accessible via the AUS student information system to verify course classifications.
- ENV 411 Environmental Assessment and Management
- ENV 451 Waste Treatment

### Proposed Sequence of Study Bachelor of Science in Biology (BSB)

FIRST YEAR (28 credits)			
Term	Course #	Course Title	Credit
Fall	BIO 101	General Biology I	4
	CHM 101	General Chemistry I	4
	MTH 103	Calculus I	3
	WRI 101	Academic Writing I	3
	<b>Total</b>		<b>14</b>
Spring	BIO 102	General Biology II	4
	CHM 102	General Chemistry II	4
	WRI 102	Academic Writing II	3
	GER-Core	History and Culture of the Arab World	3
	<b>Total</b>		<b>14</b>
SECOND YEAR (30 credits)			
Term	Course #	Course Title	Credit
Fall	BIO 260	Genetics and Molecular Biology	4
	CHM 215	Organic Chemistry I	3
	ENG 203 or ENG 204	Writing about Literature or Advanced Academic Writing	3
	PHY 101	General Physics I	3
	PHY 101L	General Physics Laboratory I	1
	<b>Total</b>		<b>14</b>
Spring	BIO 251	Ecology	3
	CHM 216	Organic Chemistry II	3
	CHM 217	Organic Chemistry Laboratory I	1
	STA 201	Introduction to Statistics for Engineering and Natural Sciences	3
	GER-Core	Culture in a Critical Perspective	3
	GER-COM	Communication	3
	<b>Total</b>		<b>16</b>

THIRD YEAR (31 credits)			
Term	Course #	Course Title	Credit
Fall	BIO 335	Microbiology	4
	MJE	Major Elective	3
	MJE	Major Elective	3
	GER-Core	Arts and Literature	3
	FRE	Free Elective	3
	<b>Total</b>		<b>16</b>
Spring	BIO 332	Cell Biology	3
	CHM 350	Biochemistry	3
	MJE	Major Elective	3
	GER-Core	Human Interaction and Behavior	3
	FRE	Free Elective	3
	<b>Total</b>		<b>15</b>
FOURTH YEAR (31 credits)			
Term	Course #	Course Title	Credit
Fall	BIO 361	Evolution and Biodiversity	3
	MJE	Major Elective	3
	MJE	Major Elective	3
	GER-Core	Human Interaction and Behavior	3
	FRE	Free Elective	3
	<b>Total</b>		<b>15</b>
Spring	BIO 310	General Physiology	4
	MJE	Major Elective	3
	GER-Core	Course Selected from General Education Core Requirements	3
	FRE	Free Elective	3
	FRE	Free Elective	3
	<b>Total</b>		<b>16</b>

## Bachelor of Science in Chemistry (BSC)

The mission of the Bachelor of Science in Chemistry program is to provide graduates with technical and problem-solving skills in an exciting and central area of scientific knowledge. Graduates will be prepared to pursue careers in industry, consulting, teaching and research.

### Program Goals

The Bachelor of Science in Chemistry program seeks to:

- provide students with an integrated knowledge of contemporary principles and applications of chemistry that will prepare them for advanced degrees and careers in teaching, research, industry, education and business
- provide a high-quality, laboratory-rich learning environment where students will learn proper laboratory protocols, plan and conduct experiments in various areas of chemistry, practice the scientific method, analyze data, and reach logical and reasonable conclusions
- provide opportunities for interested and qualified students to participate in meaningful and significant research projects of their own, under the guidance of the chemistry faculty
- maintain a dynamic curriculum that reflects the needs of a changing world
- foster motivation and opportunities for lifelong learning

### Program Outcomes

Upon graduation from the Bachelor of Science in Chemistry program, students will be able to:

- gain practical, experience-based learning
- apply technologies and use advanced chemical instrumentation such as nuclear magnetic resonance (NMR), high pressure liquid chromatography (HPLC), inductively coupled plasma spectrometry (ICP) and Fourier-transform infrared spectrometry (FTIR)
- identify and carry out thoughtful approaches to chemistry-related problems, including ethical issues and the proper disposal of chemical waste
- develop competence in critical thinking, communications, teamwork,

information technology and adaptation to change

- produce written and oral reports using resources found in the scientific literature

### Career Opportunities

Chemists have the ability to work in a wide range of industries such as the following: agricultural companies, chemical distributors, chemical laboratories, chemical manufacturing plants, chemistry consulting firms, cosmetic companies, food and beverage companies, government, health protection branches, hospital research laboratories, industrial laboratories, mineral and metal industries, oil companies, petroleum refineries, pharmaceutical/biotechnology industries, police laboratories, pulp and paper industries, quality control laboratories, research centers/institutes, textile manufacturers and waterworks departments.

### Admission to the Program

Initial admission to the program follows the university's undergraduate admission requirements.

Formal admission to the program requires meeting the following conditions:

- a cumulative grade point average (CGPA) of 2.00
- a minimum grade of C- (1.70) in at least 18 credits from the following list of required freshman-level science and mathematics courses: CHM 101, CHM 102, PHY 101, PHY 101L, PHY 102, PHY 102L, MTH 103, MTH 104.

AUS students transferring into the program must meet the formal admission requirements listed above. In the event that there are more qualified AUS students transferring into the major than available spaces, students will be admitted based on academic achievement. For more details, please check with the head of the department or the college associate dean. For information on how to submit a change of major request, please refer to Fields of Study/Change of Major under the Academic Policies and Regulations section earlier in the catalog.

### Degree Requirements

To qualify for graduation with a Bachelor of Science in Chemistry, students must successfully complete the following minimum requirements:

- a minimum of 122 credits, including a minimum of 36 credits in courses at the 300 level or above, as follows:
  - a minimum of 44 credits in general education requirements

- 57 credits of major requirements
- a minimum of 6 credits of major electives
- a minimum of 15 credits of free electives in courses at the 100 level or above, excluding MTH 101
- a minimum CGPA of 2.00

### General Education Requirements (minimum of 44 credits)

Students must successfully complete a minimum of 44 credits as follows:

- a minimum of 18 credits in courses meeting the core general education requirements:
  - history and culture of the Arab world requirement: three to six credits
  - culture in a critical perspective requirement: three to six credits
  - arts and literature requirement: three to six credits
  - human interaction and behavior requirement: six to nine credits
- natural sciences requirement: CHM 101, PHY 101 and PHY 101L
- mathematics requirement: MTH 103
- statistics requirement: STA 201
- communication requirement: a minimum of 12 credits in 100-level or above writing (WRI)/English (ENG) courses meeting this requirement, including ENG 203 or ENG 204
- ethical understanding requirement: satisfied through ENV 252
- discipline-specific writing intensive course requirement: satisfied through CHM 335
- oral proficiency requirement: satisfied through CHM 335
- information literacy requirement: satisfied through WRI 102, and ENG 203 or ENG 204
- computer literacy requirement: satisfied through STA 201

### Major Requirements (57 credits)

- CHM 102 General Chemistry II
- CHM 215 Organic Chemistry I
- CHM 216 Organic Chemistry II
- CHM 217 Organic Chemistry Laboratory I
- CHM 218 Organic Chemistry Laboratory II
- CHM 221 Basic Concepts of Inorganic Chemistry
- CHM 242 Quantitative Analysis
- CHM 243 Quantitative Analysis Laboratory
- CHM 315 Organic Chemistry III
- CHM 321 Chemistry of Transition Metals

- CHM 330 Physical Chemistry I
- CHM 331 Physical Chemistry II
- CHM 335 Physical Chemistry Laboratory
- CHM 345 Instrumental Analysis
- CHM 350 Biochemistry
- CHM 491 Senior Research Project I
- ENV 252 Environmental Chemistry
- MTH 104 Calculus II
- MTH 205 Differential Equations
- PHY 102 General Physics II
- PHY 102L General Physics Laboratory II

### Major Electives (minimum of 6 credits)

Students must successfully complete a minimum of six credits in courses selected from the following list:

- CHE 467 Corrosion
- CHM 332 Physical Chemistry III
- CHM 394/494 Special Topics in Chemistry
- CHM 415 Spectroscopy in Organic Chemistry
- CHM 431 Biophysical Chemistry
- CHM 492 Senior Research Project II
- ENV 352 Environmental Toxicology
- ENV 353 Soil and Water Chemistry
- ENV 451 Waste Treatment
- ENV 453 Environmental Monitoring and Analysis Techniques

**Proposed Sequence of Study  
Bachelor of Science in Chemistry (BSC)**

FIRST YEAR (28 credits)			
Term	Course #	Course Title	Credit
Fall	CHM 101	General Chemistry I	4
	MTH 103	Calculus I	3
	PHY 101	General Physics I	3
	PHY 101L	General Physics Laboratory I	1
	GER-COM	Communication	3
<b>Total</b>			<b>14</b>
Spring	CHM 102	General Chemistry II	4
	MTH 104	Calculus II	3
	PHY 102	General Physics II	3
	PHY 102L	General Physics Laboratory II	1
	GER-COM	Communication	3
<b>Total</b>			<b>14</b>
SECOND YEAR (32 credits)			
Term	Course #	Course Title	Credit
Fall	CHM 215	Organic Chemistry I	3
	MTH 205	Differential Equations	3
	STA 201	Introduction to Statistics for Engineering and Natural Sciences	3
	GER-Core	History and Culture of the Arab World	3
	GER-COM	Communication	3
<b>Total</b>			<b>15</b>
Spring	CHM 216	Organic Chemistry II	3
	CHM 217	Organic Chemistry Laboratory I	1
	CHM 221	Basic Concepts of Inorganic Chemistry	3
	CHM 242	Quantitative Analysis	3
	CHM 243	Quantitative Analysis Laboratory	1
	GER-COM	Communication	3
	GER-Core	Culture in a Critical Perspective	3
	<b>Total</b>		<b>17</b>

THIRD YEAR (31 credits)			
Term	Course #	Course Title	Credit
Fall	CHM 218	Organic Chemistry Laboratory II	1
	CHM 315	Organic Chemistry III	3
	CHM 330	Physical Chemistry I	3
	CHM 345	Instrumental Analysis	3
	GER-Core	Arts and Literature	3
	FRE	Free Elective	3
<b>Total</b>			<b>16</b>
Spring	CHM 331	Physical Chemistry II	3
	CHM 335	Physical Chemistry Laboratory	3
	ENV 252	Environmental Chemistry	3
	MJE	Major Elective	3
	GER-Core	Human Interaction and Behavior	3
<b>Total</b>			<b>15</b>
FOURTH YEAR (31 credits)			
Term	Course #	Course Title	Credit
Fall	CHM 321	Chemistry of Transition Metals	4
	CHM 491	Senior Research Project I	3
	GER-Core	Human Interaction and Behavior	3
	FRE	Free Elective	3
Spring	FRE	Free Elective	3
	<b>Total</b>		<b>16</b>
	CHM 350	Biochemistry	3
	MJE	Major Elective	3
	GER-Core	Course Selected from General Education Core Requirements	3
	FRE	Free Elective	3
	FRE	Free Elective	3
	<b>Total</b>		<b>15</b>

## Bachelor of Science in Environmental Sciences (BSES)

The mission of the Bachelor of Science in Environmental Sciences program is to provide graduates with qualifications for meaningful employment in the ever-expanding environmental field. This multidisciplinary program integrates biology, chemistry and other related sciences so as to enable students to identify and understand environmental issues and devise solutions.

### Program Goals

The Bachelor of Science in Environmental Sciences program seeks to:

- provide students with an integrated knowledge of contemporary principles and applications of environmental science that will prepare them for advanced degrees and careers in research, industry, education and business
- provide a high-quality, laboratory-rich learning environment where students will learn proper laboratory protocols,

plan and conduct experiments, practice the scientific method, analyze data, and reach logical and reasonable conclusions

- provide opportunities for interested and qualified students to participate in meaningful research projects of their own, under the guidance of the environmental sciences faculty
- provide students with adequate background in the basic natural sciences, which will form the basis for their environmental studies
- foster motivation and opportunities for lifelong learning
- maintain a dynamic curriculum that reflects the needs of a changing world
- present students with opportunities for awareness of environmental issues within a global context

### Program Outcomes

Upon graduation from the Bachelor of Science in Environmental Sciences program, students will be able to:

- gain practical, experience-based learning

- gain ability to work as a research team member and become proficient in the use of advanced equipment used in environmental analysis, including gas chromatography (GC), high pressure liquid chromatography (HPLC), ion chromatography (IC) and inductively coupled plasma spectrometry (ICP)
- evaluate and discuss sources of local and regional environmental threats and perform impact assessment studies
- demonstrate knowledge of the fundamentals of environmental modeling, environmental monitoring techniques and risk assessment
- evaluate the ethical, social, civic, cultural and political dimensions as they relate to environmental issues
- produce written and oral reports using resources found in the scientific literature

### Career Opportunities

Recent events and current issues have raised major concerns related to the preservation of the environment. Local governments and private industries

have begun to recognize the importance of conservation, recycling and environmental awareness. The Bachelor of Science in Environmental Sciences program at American University of Sharjah gives students an understanding of these issues, the skills needed to function as an environmental science professional and the necessary undergraduate education to pursue a graduate program in environmental sciences. Environmental scientists, biologists, chemists and physicists participate in the instruction of the core and concentration requirements for this major.

Environmental scientists can work in four general areas:

- environmental protection, which targets air, water and land quality and often has a human and environmental health and safety perspective
- conservation and protection of natural resources, which deal both with park, fisheries and wildlife management and the operation of resource-based industries such as oil, mining, forestry and agriculture
- environmental education and communications, which are relevant to both the public and private sectors
- environmental research, which includes developing analytical methods for detecting environmental pollutants and improving prediction of environmental and geophysical changes. Job opportunities are available in public and academic-supported research facilities.

Employers of environmental scientists include government, the natural resources sector, utilities, manufacturers and industry, as well as small business. Governments at all levels need environmental scientists in the areas of enforcing regulations, writing public information, writing and researching regulations, and ensuring government departmental compliance with existing regulations. The natural resource/utility sector (i.e., oil, mining, forestry, agriculture and hydro) is interested in having environmental scientists consult on the sustainability of their operations; monitor and mitigate environmental effects on wildlife, fisheries, the watershed and natural beauty; and advise them on liability issues. Manufacturers (particularly those involved in the production of chemicals, plastics, paints, pesticides, etc.) employ environmental scientists due to concerns that include smokestack specifications and volatile emissions, wastewater quality, minimization and disposal of hazardous waste, and health and safety issues. The service sector, including banks, real estate companies, lawyers and insurance companies, also

relies on environmental scientists to accurately describe environmental risk so that they can assess potential liability. Businesses have been formed that service all these sectors in such areas as environmental impact consulting, compliances, recycling and waste management.

Currently, most work in the environmental sector is responsive to existing or anticipated problems, such as treating or monitoring effluent or gaseous emissions; preparing environmental impact statements, assessments and audits as required by law; conducting land reclamation and remediation; and completing public consultations. People with an entrepreneurial inclination to take a proactive approach to environmental stewardship and sustainable development have the opportunity to innovate current practices. There are ample prospects for individuals to generate inventions and ideas that would fundamentally change the way business, society and technology function through the creation of realistic alternatives to environmentally hazardous practices.

#### Admission to the Program

Initial admission to the program follows the university's undergraduate admission requirements.

Formal admission to the program requires meeting the following conditions:

- a cumulative grade point average (CGPA) of 2.00
- a minimum grade of C- (1.70) in at least 18 credits from the following list of required freshman-level science and mathematics courses: BIO 101, CHM 101, CHM 102, PHY 101, PHY 101L, MTH 103, MTH 104

AUS students transferring into the program must meet the formal admission requirements listed above. In the event that there are more qualified AUS students transferring into the major than available spaces, students will be admitted based on academic achievement. For more details, please check with the head of the department or the college associate dean. For information on how to submit a change of major request, please refer to Fields of Study/Change of Major under the Academic Policies and Regulations section earlier in the catalog.

Environmental sciences majors must choose among the following options:

- a concentration in environmental biology and ecosystems
- a concentration in environmental chemistry and analysis

- a double concentration in the two areas above

#### Degree Requirements

To qualify for graduation with a Bachelor of Science in Environmental Sciences, students must successfully complete the following minimum requirements:

- a minimum of 123 credits, including a minimum of 36 credits in courses at the 300 level or above, as follows:
  - a minimum of 44 credits in general education requirements
  - 37 credits of major requirements
  - a minimum of 27 credits of concentration requirements and concentration electives
  - a minimum of 15 credits of free electives in courses at the 100 level or above, excluding MTH 101
  - a minimum of five weeks of full-time, satisfactory internship in environmental sciences with a business or governmental organization
- a minimum CGPA of 2.00

#### General Education Requirements (minimum of 44 credits)

Students must successfully complete a minimum of 44 credits as follows:

- a minimum of 18 credits in courses meeting the core general education requirements:
  - history and culture of the Arab world requirement: three to six credits
  - culture in a critical perspective requirement: three to six credits
  - arts and literature requirement: three to six credits
  - human interaction and behavior requirement: six to nine credits
- natural sciences requirement: CHM 101 and CHM 102
- mathematics requirement: MTH 103
- statistics requirement: STA 201
- communication requirement: a minimum of 12 credits in 100-level or above writing (WRI)/English (ENG) courses meeting this requirement, including ENG 203 or ENG 204
- ethical understanding requirement: satisfied through ENV 491
- discipline-specific writing intensive course requirement: satisfied through ENV 491
- oral proficiency requirement: satisfied through ENV 491
- information literacy requirement: satisfied through WRI 102, and ENG 203 or ENG 204
- computer literacy requirement: satisfied through STA 201

**Major Requirements (37 credits)***Basic Mathematics and Sciences  
(11 credits)*

- BIO 101 General Biology I
- MTH 104 Calculus II
- PHY 101 General Physics I
- PHY 101L General Physics Laboratory I

*Core Requirements (26 credits)*

- CHM 215 Organic Chemistry I
- CHM 217 Organic Chemistry Laboratory I
- CHM 242 Quantitative Analysis
- CHM 243 Quantitative Analysis Laboratory
- CHM 345 Instrumental Analysis
- ENV 201 Fundamentals of Environmental Science
- ENV 311 Environmental Modeling
- ENV 411 Environmental Assessment and Management
- ENV 453 Environmental Monitoring and Analysis Techniques
- ENV 491 Senior Research Project I
- ENV 497 Internship in Environmental Science

**Concentration in Environmental Biology and Ecosystems  
(minimum of 27 credits)***Concentration Requirements  
(18 credits)*

- BIO 102 General Biology II
- BIO 251 Ecology
- BIO 260 Genetics and Molecular Biology
- BIO 335 Microbiology
- BIO 361 Evolution and Biodiversity

*Concentration Electives  
(minimum of 9 credits)*

Students must successfully complete a minimum of nine credits in courses selected from the following list:

- BIO 330 Ecosystems Management
- BIO 341 Principles of Pharmacology
- BIO 394/494 Special Topics in Biology
- BIO 421 Marine Environments
- BIO 461 Desert and Maritime Plants
- CHM 216 Organic Chemistry II
- CHM 218 Organic Chemistry Laboratory II

- CHM 221 Basic Concepts of Inorganic Chemistry
- CHM 350 Biochemistry
- CHM 394/494 approved special topics in chemistry. Consult the online course catalog or the online class schedule accessible via the AUS student information system to verify course classifications.
- ENV 252 Environmental Chemistry
- ENV 261 Physical Geography
- ENV 352 Environmental Toxicology
- ENV 353 Soil and Water Chemistry
- ENV 394/494 Special Topics in Environmental Sciences
- ENV 451 Waste Treatment
- ENV 492 Senior Research Project II
- EWE 331 Introduction to Environmental and Water Engineering
- EWE 333 Water Quality and Treatment
- UPL 302 Analysis of Spatial Phenomena

**Proposed Sequence of Study  
Bachelor of Science in Environmental Sciences (BSES)  
Concentration: Environmental Biology and Ecosystems**

FIRST YEAR (28 credits)			
Term	Course #	Course Title	Credit
Fall	BIO 101	General Biology I	4
	CHM 101	General Chemistry I	4
	MTH 103	Calculus I	3
	GER-COM	Communication	3
<b>Total</b>			<b>14</b>
Spring	BIO 102	General Biology II	4
	CHM 102	General Chemistry II	4
	MTH 104	Calculus II	3
	GER-COM	Communication	3
<b>Total</b>			<b>14</b>
SECOND YEAR (33 credits)			
Term	Course #	Course Title	Credit
Fall	CHM 215	Organic Chemistry I	3
	ENV 201	Fundamentals of Environmental Science	3
	PHY 101	General Physics I	3
	PHY 101L	General Physics Laboratory I	1
	GER-COM	Communication	3
	GER-Core	History and Culture of the Arab World	3
<b>Total</b>			<b>16</b>
Spring	BIO 251	Ecology	3
	CHM 217	Organic Chemistry Laboratory I	1
	CHM 242	Quantitative Analysis	3
	CHM 243	Quantitative Analysis Laboratory	1
	CNE	Concentration Elective	3
	GER-COM	Communication	3
<b>Total</b>			<b>17</b>

THIRD YEAR (32 credits)			
Term	Course #	Course Title	Credit
Fall	BIO 260	Genetics and Molecular Biology	4
	ENV 311	Environmental Modeling	3
	STA 201	Introduction to Statistics for Engineering and Natural Sciences	3
	CNE	Concentration Elective	3
	GER-Core	Arts and Literature	3
<b>Total</b>			<b>16</b>
Spring	BIO 335	Microbiology	4
	BIO 361	Evolution and Biodiversity	3
	CHM 345	Instrumental Analysis	3
	GER-Core	Human Interaction and Behavior	3
	FRE	Free Elective	3
<b>Total</b>			<b>16</b>
Summer	ENV 497	Internship in Environmental Science	0
FOURTH YEAR (30 credits)			
Term	Course #	Course Title	Credit
Fall	ENV 453	Environmental Monitoring and Analysis Techniques	3
	ENV 491	Senior Research Project I	3
	GER-Core	Human Interaction and Behavior	3
	FRE	Free Elective	3
	FRE	Free Elective	3
<b>Total</b>			<b>15</b>
Spring	ENV 411	Environmental Assessment and Management	3
	CNE	Concentration Elective	3
	GER-Core	Course Selected from General Education Core Requirements	3
	FRE	Free Elective	3
	FRE	Free Elective	3
<b>Total</b>			<b>15</b>



**Concentration in Environmental Chemistry and Analysis (minimum of 27 credits)**
**Concentration Requirements (15 credits)**

- CHM 221 Basic Concepts of Inorganic Chemistry
- CHM 330 Physical Chemistry I
- ENV 252 Environmental Chemistry
- ENV 353 Soil and Water Chemistry
- ENV 451 Waste Treatment

**Concentration Electives (minimum of 12 credits)**

Students must successfully complete a minimum of 12 credits in courses selected from the following list:

- BIO 335 Microbiology
- BIO 341 Principles of Pharmacology

- BIO 394/494 approved special topics in biology. Consult the online course catalog or the online class schedule accessible via the AUS student information system to verify course classifications.

- CHE 461 Air Pollution
- CHE 467 Corrosion
- CHE 472 Water and Wastewater Treatment Design
- CHM 216 Organic Chemistry II
- CHM 218 Organic Chemistry Laboratory II
- CHM 321 Chemistry of Transition Metals
- CHM 331 Physical Chemistry II
- CHM 335 Physical Chemistry Laboratory
- CHM 350 Biochemistry

- CHM 394/494 Special Topics in Chemistry
- CVE 341 Water Resources Engineering
- CVE 351 Environmental Engineering
- ENV 261 Physical Geography
- ENV 352 Environmental Toxicology
- ENV 394/494 Special Topics in Environmental Sciences
- ENV 492 Senior Research Project II
- EWE 331 Introduction to Environmental and Water Engineering
- EWE 333 Water Quality and Treatment
- UPL 302 Analysis of Spatial Phenomena

**Proposed Sequence of Study  
Bachelor of Science in Environmental Sciences (BSES)  
Concentration: Environmental Chemistry and Analysis**

FIRST YEAR (28 credits)			
Term	Course #	Course Title	Credit
Fall	BIO 101	General Biology I	4
	CHM 101	General Chemistry I	4
	MTH 103	Calculus I	3
	GER-COM	Communication	3
	Total		14
Spring	CHM 102	General Chemistry II	4
	MTH 104	Calculus II	3
	PHY 101	General Physics I	3
	PHY 101L	General Physics Laboratory I	1
	GER-COM	Communication	3
	Total		14
SECOND YEAR (32 credits)			
Term	Course #	Course Title	Credit
Fall	CHM 215	Organic Chemistry I	3
	ENV 201	Fundamentals of Environmental Science	3
	CNE	Concentration Elective	3
	GER-COM	Communication	3
	GER-Core	History and Culture of the Arab World	3
	Total		15
Spring	CHM 217	Organic Chemistry Lab I	1
	CHM 221	Basic Concepts of Inorganic Chemistry	3
	CHM 242	Quantitative Analysis	3
	CHM 243	Quantitative Analysis Laboratory	1
	CNE	Concentration Elective	3
	GER-Core	Culture in a Critical Perspective	3
	GER-COM	Communication	3
	Total		17

THIRD YEAR (30 credits)			
Term	Course #	Course Title	Credit
Fall	ENV 311	Environmental Modeling	3
	STA 201	Introduction to Statistics for Engineering and Natural Sciences	3
	CNE	Concentration Elective	3
	GER-Core	Arts and Literature	3
	GER-Core	Human Interaction and Behavior	3
	<b>Total</b>		<b>15</b>
Spring	CHM 330	Physical Chemistry I	3
	CHM 345	Instrumental Analysis	3
	ENV 252	Environmental Chemistry	3
	GER-Core	Human Interaction and Behavior	3
	FRE	Free Elective	3
<b>Total</b>			<b>15</b>
Summer	ENV 497	Internship in Environmental Science	0
FOURTH YEAR (32 credits)			
Term	Course #	Course Title	Credit
Fall	ENV 353	Soil and Water Chemistry	3
	ENV 451	Waste Treatment	3
	ENV 491	Senior Research Project I	3
	FRE	Free Elective	3
	FRE	Free Elective	3
<b>Total</b>			<b>15</b>
Spring	ENV 411	Environmental Assessment and Management	3
	ENV 453	Environmental Monitoring and Analysis Techniques	3
	CNE	Concentration Elective	2
	GER-Core	Course Selected from General Education Core Requirements	3
	FRE	Free Elective	3
	FRE	Free Elective	3
<b>Total</b>			<b>17</b>

### Double Concentration in Environmental Biology and Ecosystems, and Environmental Chemistry and Analysis

Students must fulfill the requirements of both concentrations, as detailed in the respective previous sections. Courses used to fulfill the requirements of the first concentration can double count toward the second concentration. Once the degree requirements are met, any shortage in credits may be fulfilled by free electives. Double-concentration students generally require more than 123 credits to meet graduation requirements.

#### Minor in Biology

A minor in biology trains students in the most important aspects of ecology and genetics, which makes them better qualified to enter professions that require knowledge of living organisms and the environment.

Students enrolling in the biology minor should have normally completed a minimum of 30 credits of course work and be in good academic standing.

The following rules apply:

- The minor consists of a minimum of 20 credits, including at least nine credits in courses at or above the 300 level.
- At least nine credits of the 20 credits required for the minor must be taken in residence at AUS.
- At least six credits of the nine credits at or above the 300 level must be taken in residence at AUS.
- A minimum GPA of 2.00 must be earned in courses completed to satisfy the minor.

Students seeking a minor in biology must successfully complete the following courses or their equivalent. All course prerequisites must be satisfied.

The minor is not open to environmental sciences students in the environmental biology and ecosystems concentration.

#### Minor Requirements (8 credits)

- BIO 101 General Biology I
- BIO 102 General Biology II

#### Minor Electives (minimum of 12 credits)

Students must successfully complete a minimum of 12 credits in courses selected from the following list, with a minimum of nine credits in courses at the 300 level or above:

- BIO 210 Introduction to Human Anatomy and Physiology
- BIO 251 Ecology

- BIO 260 Genetics and Molecular Biology
- BIO 310 General Physiology
- BIO 330 Ecosystems Management
- BIO 332 Cell Biology
- BIO 335 Microbiology
- BIO 341 Principles of Pharmacology
- BIO 361 Evolution and Biodiversity
- BIO 394/494 Special Topics in Biology
- BIO 421 Marine Environments
- BIO 461 Desert and Maritime Plants
- BIO 481 Cellular and Molecular Immunology
- CHM 350 Biochemistry

#### Minor in Environmental Policy

This interdisciplinary minor draws on the resources and expertise of several departments. Students enrolling in the environmental policy minor should have normally completed a minimum of 30 credits of course work and be in good academic standing.

The following rules apply:

- The minor consists of a minimum of 18 credits, including at least nine credits in courses at or above the 300 level.
- At least nine credits of the 18 credits required for the minor must be taken in residence at AUS.
- At least six credits of the nine credits at or above the 300 level must be taken in residence at AUS.
- A minimum GPA of 2.00 must be earned in courses completed to satisfy the minor.

Students seeking a minor in environmental policy must successfully complete the following courses or their equivalent. All course prerequisites must be satisfied.

#### Minor Requirements (9 credits)

- ENV 100 Principles of Environmental Science or ENV 201 Fundamentals of Environmental Science
- ENV 411 Environmental Assessment and Management or ENV 412 Concepts and Models in Environmental Management Systems
- POL 201 Introduction to Political Studies

#### Minor Electives (minimum of 9 credits)

Students must successfully complete a minimum of nine credits in courses selected from the following list, with a minimum of six credits in courses at the 300 level or above:

- ARC 374 Environmentally Sustainable Design
- BIO 330 Ecosystems Management
- ECO 404 Economics of Environmental and Natural Resources
- ENV 294/394/494 Special Topics in Environmental Sciences
- PHI 309 Ethics and the Environment
- MGT 317 Management for Sustainability
- POL 304 International Organizations
- POL 305 Public International Law
- SOC 302 Environmental Sociology
- SOC 380 Urban Sociology

#### Minor in Environmental Sciences

This minor draws on the resources and expertise of several disciplines. Students enrolling in the environmental sciences minor should have normally completed a minimum of 30 credits of course work and be in good academic standing.

The following rules apply:

- The minor consists of a minimum of 18 credits, including at least nine credits in courses at or above the 300 level.
- At least nine credits of the 18 credits required for the minor must be taken in residence at AUS.
- At least six credits of the nine credits at or above the 300 level must be taken in residence at AUS.
- A minimum GPA of 2.00 must be earned in courses completed to satisfy the minor.

The minor is not open to environmental sciences students.

#### Minor Requirements (6 credits)

- ENV 201 Fundamentals of Environmental Science
- ENV 411 Environmental Assessment and Management

#### Minor Electives (minimum of 12 credits)

Students must successfully complete a minimum of 12 credits in courses selected from the following list, with a minimum of six credits in courses at the 300 level or above:

- BIO 330 Ecosystems Management
- BIO 335 Microbiology
- CHE 461 Air Pollution
- CHE 467 Corrosion
- CHE 472 Water and Wastewater Treatment Design
- CHM 345 Instrumental Analysis
- any 200-level or above ENV course, excluding ENV 201 and ENV 411

## Department of English

Kathleen Hewett-Smith, Head

### Faculty

Khawlah Ahmed  
Naghmana Ali  
Ahmad Al-Issa  
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Nawar Al-Hassan Golley  
Cindy Gunn  
Nicholas Karavatos  
Betty Lanteigne  
Gary Linebaugh  
Lily Mabura  
Victor Parra-Guinaldo  
David Prescott  
Rana Raddawi

The mission of the AUS Department of English is based on a liberal arts approach to education that aims to prepare students academically in English language and literature. Its programs are designed to foster creative and critical abilities and skills that will enable students to use English in both their academic and professional lives.

The Department of English offers a Bachelor of Arts in English Language and Literature with concentrations in language or literature. The Department of English also offers minors in English language and English literature, in addition to a Master of Arts degree in Teaching English to Speakers of Other Languages (TESOL). For more details on the master's degree, please refer to the *AUS Graduate Catalog*.

The Department of English teaches courses in the humanities, social sciences, and academic and professional writing that satisfy the AUS General Education Program requirements. Courses in literature and language analyze global intellectual and cultural traditions, ideals and values in order to enhance self-understanding and empathy for others; explain how societies are defined in relation to culture, nationality, race, ethnicity and gender; and analyze and explain implied and expressed cultural values and attitudes in works of literature, as well as explain the development of human institutions, ideas and social structures. Literature and linguistics courses are also related to the social sciences, elucidating ideas in the following areas: sociology, psychology, history, language theory, political

science and cultural studies. Academic and professional writing courses help students develop their oral and written communication skills in English.

## Bachelor of Arts in English Language and Literature (BAELL)

The mission of the Bachelor of Arts in English Language and Literature program is to provide students with a broad knowledge of the ways in which literature explores the human experience and how language conveys meaning, preparing students for careers in such diverse fields as publishing, teaching and professional writing, as well as in the public sector and corporate world, and for graduate study. In addition, the major program in English provides relevant preparation for students interested in the future study of law and education.

### Department and Program Goals

The goals of the Bachelor of Arts in English Language and Literature are to:

- provide knowledge of the linguistic structure of English and its literary use
- enable students to understand English within its historical, theoretical and cultural context
- provide students with insights into the complexity of human thought, emotion and interaction
- teach students the research tools, critical processes and analytical skills necessary for advanced study in diverse fields

### Concentration in English Language

The goals of the concentration in English language are to:

- develop students' ability to analyze different components of language
- familiarize students with the theoretical models in linguistic study
- provide students with the skills to analyze the function and use of language
- promote an understanding of how language is used in literary texts
- develop students' linguistic research skills

### Concentration in English Literature

The goals of the concentration in English literature are to:

- provide students with the skills to analyze the styles and elements of various genres
- promote an understanding of the exchange of ideas from one culture to another

- explore the philosophical and critical theories which underlie both the understanding and the writing of literature
- explain how ideas and literary styles change from one period to another in response to technological changes, historical events and philosophical concepts
- develop students' literary research skills

### Program Outcomes

Upon graduation from the Bachelor of Arts in English Language and Literature program, students will be able to:

- analyze the structure of the English language
- demonstrate an understanding of the functions of dialogue, setting, voice, tone, atmosphere, narrative structure, imagery, rhythm and metaphor in creative prose
- explain the history and development of Modern English
- explain the interchange of ideas that led to such international literary movements as romanticism, realism, modernism, post-modernism and magic realism
- recognize the relationship between language, thought and culture
- apply and analyze various theoretical approaches to literature
- apply standard linguistic techniques for analysis and description of language and language use
- employ effective patterns of organization and research in all critical and creative work

### Concentration in English Language

Upon graduation from the Bachelor of Arts in English Language and Literature program, students with a concentration in English language will be able to:

- analyze the phonological and morphemic structure of the English language
- analyze the syntactic and semantic structure of the English language
- understand that languages are rule governed
- demonstrate knowledge of major theoretical models in linguistics
- assess the power of language in interpersonal interactions
- evaluate how power relations affect language use in different contexts
- identify the contextual factors embedded in communicative events
- explain language change
- recognize the relation between language, thought and culture

- understand the exchange of ideas from one culture to another
- explain the specific rhetorical devices (irony, allusion, connotation) used to convey meaning and evoke emotion
- demonstrate an understanding of the functions of dialogue, setting, voice, tone, atmosphere, narrative structure, imagery, rhythm and metaphor in creative prose and poetry
- analyze the influence of non-Western literary and philosophical traditions on Anglophone literary culture
- employ field work methods to investigate language use in different settings and media
- apply standard linguistic techniques for analysis and description of language
- recognize the ways in which major writers were influenced by the ideas and events of their time
- demonstrate effective use of primary and secondary sources in writing about literature
- employ effective patterns of organization in all critical and creative work
- produce a comprehensive critical study revealing in-depth knowledge of an individual author, literary movement or theoretical approach

### Admission to the Program

Admission to the program follows the university's undergraduate admission requirements.

AUS students transferring into the program must have achieved a minimum cumulative GPA of 2.00. In the event that there are more qualified AUS students transferring into the major than available spaces, students will be admitted based on academic achievement. For more details, please check with the head of the department or the college associate dean. For information on how to submit a change of major request, please refer to Fields of Study/Change of Major under the Academic Policies and Regulations section earlier in the catalog.

Students majoring in English language and literature must choose one of the following two concentrations:

- a concentration in English language
- a concentration in English literature

### Degree Requirements

To qualify for graduation with a Bachelor of Arts in English Language and Literature, students must successfully complete the following minimum requirements:

- a minimum of 120 credits, including a minimum of 36 credits in courses at the 300 level or above, as follows:
  - a minimum of 42 credits of general education requirements
  - a minimum of 18 credits of major requirements
  - a minimum of 21 credits in major electives for the language concentration and a minimum of 24 credits in major electives for the literature concentration
  - a minimum of 24 credits of concentration requirements for the language concentration and a minimum of 21 credits of concentration requirements for the literature concentration
  - a minimum of 15 credits of free electives
- a minimum CGPA of 2.00

### General Education Requirements (minimum of 42 credits)

Students must successfully complete a minimum of 42 credits as follows:

- a minimum of 18 credits in courses meeting the core general education requirements:
  - history and culture of the Arab world requirement: three to six credits
  - culture in a critical perspective requirement: three to six credits
  - arts and literature requirement: three to six credits
  - human interaction and behavior requirement: six to nine credits
- natural sciences requirement: a minimum of six credits taken from the natural sciences area
- mathematics requirement: MTH 100 or MTH 101 or MTH 103 or MTH 111
- statistics requirement: STA 202
- communication requirement: a minimum of 12 credits in 100-level or above writing (WRI)/English (ENG) courses meeting this requirement, including ENG 203 or ENG 204
- ethical understanding requirement: satisfied through ENG 490
- discipline-specific writing intensive course requirement: satisfied through ENG 490
- oral proficiency requirement: satisfied through ENG 490
- information literacy requirement: satisfied through WRI 102, and ENG 203 or ENG 204
- computer literacy requirement: satisfied through STA 202

### Major Requirements (18 credits)

- ENG 210 Introduction to Literature
- ENG 215 Contemporary World Literature
- ENG 223 Introduction to Language Study
- ENG 224 English Grammar
- ENG 226 Development of the English Language
- one course from the British literature survey sequence:
  - ENG 308 British Literature Until 1600
  - ENG 309 British Literature: 1600–1800
  - ENG 310 Nineteenth Century British Literature
  - ENG 311 Twentieth Century British Literature

### Concentration in English Literature

Upon graduation from the Bachelor of Arts in English Language and Literature program, students with a concentration in English literature will be able to:

- demonstrate an understanding of the functions of dialogue, setting, voice, tone, atmosphere, narrative structure, imagery, rhythm and metaphor in creative prose and poetry
- explain the specific rhetorical devices (irony, allusion, connotation) by which writers convey meaning and evoke emotion
- explain the ways in which the structure of a work, from the sentence level to the overall organization, expresses meaning
- analyze the syntactic and semantic structure of the English language
- explain language change
- recognize the relation between language, thought and culture
- explain the interchange of ideas that led to such international literary movements as romanticism, realism, modernism, post-modernism and magic realism
- analyze the influence of non-Western literary and philosophical traditions on Anglophone literary culture
- identify the effects of the colonial experience on the Anglophone literature of both the colonizers and the colonized
- explain the philosophies that led to the development of various literary theories
- apply various theoretical approaches to literature
- explain the difference between major literary movements and periods and their predecessors

### Major Electives (minimum of 21/24 credits)

Students in the language concentration must successfully complete a minimum of 21 credits. Students in the literature concentration must successfully complete a minimum of 24 credits.

Courses can be chosen from:

- ENG 234 Language and Society
- any 300-level and above courses in education (EDU) and English (ENG) not listed as major requirements or concentration requirements in the student's chosen concentration

- WST 250 Women's Voices Across Cultures
- any approved special topic courses at the 300-level and above. Consult the online course catalog or the online class schedule accessible via the AUS student information system to verify course classifications.

### English Language Concentration Requirements (24 credits)

- ENG 234 Language in Society or ENG 372 English and Globalization
- ENG 331 The Sound Patterns of Language

- ENG 332 The Psychology of Language
- ENG 334 Meaning in Language
- ENG 382 Language Variation in Media or  
ENG 405 Discourse Analysis
- ENG 401 Advanced English Grammar
- ENG 490 Senior Research Project
- ENG 495 Seminar in English

### Proposed Sequence of Study Bachelor of Arts in English Language and Literature (BAELL) Concentration: English Language

FIRST YEAR (30 credits)			
Term	Course #	Course Title	Credit
Fall	MTH 100	Fundamentals of Logic and Geometry	3
	WRI 101	Academic Writing I	3
	GER-Core	History and Culture of the Arab World	3
	GER-Core	Culture in a Critical Perspective	3
	GER-SCI	Natural Sciences	3
<b>Total</b>			<b>15</b>
Spring	STA 202	Introduction to Statistics for Social Sciences	3
	WRI 102	Academic Writing II	3
	GER-Core	Arts and Literature	3
	GER-SCI	Natural Sciences	3
	FRE	Free Elective	3
<b>Total</b>			<b>15</b>
SECOND YEAR (30 credits)			
Term	Course #	Course Title	Credit
Fall	ENG 203 or ENG 204	Writing about Literature or Advanced Academic Writing	3
	GER-Core	Human Interaction and Behavior	3
	GER-Core	Human Interaction and Behavior	3
	GER-Core	Course Selected from General Education Core Requirements	3
	FRE	Free Elective	3
<b>Total</b>			<b>15</b>
Spring	ENG 210	Introduction to Literature	3
	ENG 215	Contemporary World Literature	3
	ENG 223	Introduction to Language Study	3
	ENG 224	English Grammar	3
	GER-COM	Communication	3
<b>Total</b>			<b>15</b>

THIRD YEAR (30 credits)			
Term	Course #	Course Title	Credit
Fall	ENG 226	Development of the English Language	3
	ENG 234 or ENG 372	Language in Society or English and Globalization	3
	ENG 308 or ENG 309 or ENG 310 or ENG 311	British Literature Until 1600 or British Literature: 1600–1800 or Nineteenth Century British Literature or Twentieth Century British Literature	3
	MJE	Major Elective	3
	MJE	Major Elective	3
<b>Total</b>			<b>15</b>
Spring	ENG 331	The Sound Patterns of Language	3
	ENG 332	The Psychology of Language	3
	ENG 334	Meaning in Language	3
	MJE	Major Elective	3
	MJE	Major Elective	3
<b>Total</b>			<b>15</b>
FOURTH YEAR (30 credits)			
Term	Course #	Course Title	Credit
Fall	ENG 382 or ENG 405	Language Variation in Media or Discourse Analysis	3
	ENG 401	Advanced English Grammar	3
	ENG 495	Seminar in English	3
	MJE	Major Elective	3
	FRE	Free Elective	3
<b>Total</b>			<b>15</b>
Spring	ENG 490	Senior Research Project	3
	MJE	Major Elective	3
	MJE	Major Elective	3
	FRE	Free Elective	3
	FRE	Free Elective	3
<b>Total</b>			<b>15</b>

### English Literature Concentration Requirements (21 credits)

- ENG 214 Seventeenth to Nineteenth Century American Literature or  
ENG 314 Twentieth Century American Literature
- ENG 300 Introduction to Literary Theory
- ENG 303 Shakespeare's Plays or  
ENG 316 Modern Drama and Beyond

- one course from the British literature survey sequence not used as a major requirement:
  - ENG 308 British Literature Until 1600
  - ENG 309 British Literature: 1600–1800
  - ENG 310 Nineteenth Century British Literature
  - ENG 311 Twentieth Century British Literature

- ENG 410 The American Novel or  
ENG 421 Early English Novel or  
ENG 430 Modern British Novel
- ENG 490 Senior Research Project
- ENG 495 Seminar in English

**Proposed Sequence of Study**  
**Bachelor of Arts in English Language and Literature (BAELL)**  
**Concentration: English Literature**

FIRST YEAR (30 credits)			
Term	Course #	Course Title	Credit
Fall	MTH 100	Fundamentals of Logic and Geometry	3
	WRI 101	Academic Writing I	3
	GER-Core	History and Culture of the Arab World	3
	GER-Core	Culture in a Critical Perspective	3
	GER-SCI	Natural Sciences	3
<b>Total</b>			<b>15</b>
Spring	STA 202	Introduction to Statistics for Social Sciences	3
	WRI 102	Academic Writing II	3
	GER-Core	Arts and Literature	3
	GER-SCI	Natural Sciences	3
	FRE	Free Elective	3
<b>Total</b>			<b>15</b>
SECOND YEAR (30 credits)			
Term	Course #	Course Title	Credit
Fall	ENG 203 or ENG 204	Writing about Literature or Advanced Academic Writing	3
	GER-Core	Human Interaction and Behavior	3
	GER-Core	Human Interaction and Behavior	3
	GER-Core	Course Selected from General Education Core Requirements	3
	FRE	Free Elective	3
<b>Total</b>			<b>15</b>
Spring	ENG 210	Introduction to Literature	3
	ENG 215	Contemporary World Literature	3
	ENG 223	Introduction to Language Study	3
	ENG 224	English Grammar	3
	GER-COM	Communication	3
<b>Total</b>			<b>15</b>

THIRD YEAR (30 credits)			
Term	Course #	Course Title	Credit
Fall	ENG 214 or ENG 314	Seventeenth to Nineteenth Century American Literature or Twentieth Century American Literature	3
	ENG 226	Development of the English Language	3
	ENG 300	Introduction to Literary Theory	3
	ENG 308 or ENG 309 or ENG 310 or ENG 311	British Literature Until 1600 or British Literature: 1600–1800 or Nineteenth Century British Literature or Twentieth Century British Literature	3
	MJE	Major Elective	3
<b>Total</b>			<b>15</b>
Spring	ENG 303 or ENG 316	Shakespeare's Plays or Modern Drama and Beyond	3
	ENG 308 or ENG 309 or ENG 310 or ENG 311	British Literature Until 1600 or British Literature: 1600–1800 or Nineteenth Century British Literature or Twentieth Century British Literature	3
	MJE	Major Elective	3
	MJE	Major Elective	3
	MJE	Major Elective	3
<b>Total</b>			<b>15</b>
FOURTH YEAR (30 credits)			
Term	Course #	Course Title	Credit
Fall	ENG 410 or ENG 421 or ENG 430	The American Novel or Early English Novel or Modern British Novel	3
	ENG 495	Seminar in English	3
	MJE	Major Elective	3
	MJE	Major Elective	3
	FRE	Free Elective	3
<b>Total</b>			<b>15</b>
Spring	ENG 490	Senior Research Project	3
	MJE	Major Elective	3
	MJE	Major Elective	3
	FRE	Free Elective	3
	FRE	Free Elective	3
<b>Total</b>			<b>15</b>

### Minor in English Language

The minor in English language is for non English language and literature students who are interested in the nature of language, the tool of communication that makes us human. It provides training in linguistic analysis and enhances students' cross-disciplinary interests in language-related issues.

A minor in English language:

- helps students to understand the history and structure of English
- helps students to understand the relationship between society and language
- equips students with the necessary tools to compare languages across cultures in a multilingual and multicultural world

Students enrolling in the English language minor should have normally completed a minimum of 30 credits of

course work and be in good academic standing.

The following rules apply:

- The minor consists of a minimum of 18 credits, including at least nine credits in courses at or above the 300 level.
- At least six credits of the nine credits at or above the 300 level must be taken in residence at AUS.
- At least nine credits of the 18 credits required for the minor must be taken in residence at AUS.
- A minimum GPA of 2.00 must be earned in courses completed to satisfy the minor.

Students seeking a minor in English language must successfully complete the following courses or their equivalent. All course prerequisites must be satisfied.

This minor is not open to English language and literature students.

### Minor Requirements (9 credits)

- ENG 223 Introduction to Language Study
- ENG 224 English Grammar
- ENG 226 Development of the English Language or  
ENG 234 Language in Society

### Minor Electives (minimum of 9 credits)

Students must successfully complete a minimum of nine credits in courses selected from the following list:

- ENG 302 Stylistics
- ENG 331 The Sound Patterns of Language
- ENG 332 The Psychology of Language
- ENG 334 Meaning in Language
- ENG 372 English and Globalization
- ENG 382 Language Variation in Media
- ENG 385 Language and Gender

- ENG 394/494 approved special topics in linguistics. Consult the online course catalog or the online class schedule accessible via the AUS student information system to verify course classifications.
- ENG 401 Advanced English Grammar
- ENG 405 Discourse Analysis
- ENG 490 Senior Research Project
- ENG 495 Seminar in English (focus on English language)

### Minor in English Literature

The minor in English literature enables non English language and literature students to experience the ways in which literature expands our knowledge of human nature and our capacity for empathy. It also provides rigorous training in closely reading literary texts; constructing complex, sophisticated arguments; and analyzing the nuances of language.

A minor in English literature:

- increases students' awareness of the complexity and diversity of the literary culture of the English-speaking world
- increases awareness of the origins of the literary traditions and beliefs that continue to shape and reflect the global English-speaking community

Students enrolling in the English literature minor should have normally completed a minimum of 30 credits of course work and be in good academic standing.

The following rules apply:

- The minor consists of a minimum of 18 credits, including at least 12 credits in courses at or above the 300 level.
- At least nine credits of the 18 credits required for the minor must be taken in residence at AUS.
- At least nine credits of the 12 credits at or above the 300 level must be taken in residence at AUS.
- A minimum GPA of 2.00 must be earned in courses completed to satisfy the minor.

Students seeking a minor in English literature must successfully complete the following courses or their equivalent. All course prerequisites must be satisfied.

This minor is not open to English language and literature students.

### Minor Requirements (6 credits)

- ENG 210 Introduction to Literature
- ENG 215 Contemporary World Literature

### Minor Electives (minimum of 12 credits)

Students must successfully complete a minimum of 12 credits in any four English literature courses at the 300 level or above. ENG 495, focus on literature, meets this requirement. Consult the online course catalog or the online class schedule accessible via the AUS student information system to verify course classifications.

## Department of International Studies

Vernon Pedersen, Head

### Faculty

Pia-Kristina Anderson  
Pernille Arenfeldt  
Mark Aveyard  
Aaron Tylor Brand  
Arianne Conty  
Kevin Gray  
Barry Hashimoto  
Suzanne Joseph  
Anatoliy Kharkhurin  
Line Khatib  
David Lea  
Angela T. Maitner  
Matteo Salvatore  
James Sater  
Johannes Van Gorp  
Yuting Wang

The Department of International Studies offers opportunities to develop an appreciation for and fuller understanding of global issues within the context of a diverse multidisciplinary curriculum. Courses encourage students to develop a critical awareness of the ways in which global forces shape and transform regional, national, political, social, cultural and economic change.

## Bachelor of Arts in International Studies (BAIS)

Sharjah's history as an important trading center and cultural meeting place makes American University of Sharjah an especially appropriate place for international studies. The international studies program offers students the opportunity to prepare to take an active role in an increasingly complex global environment. The interdisciplinary program assists students in acquiring a broad understanding of world cultures, politics and history and prepares them for careers in government, business and with international organizations.

### Program Mission

The Bachelor of Arts in International Studies degree program seeks to

provide a foundation for assuming leadership roles in international organizations. Concentrations within the degree program encourage students to deepen their engagement with one or more of the areas introduced in the core requirements.

### Program Goals

The Bachelor of Arts in International Studies program seeks to:

- provide an introduction to the disciplines that focus on how global forces influence political, social, cultural and economic change
- enable students to think critically about global issues from a variety of disciplinary perspectives
- provide opportunities to consider the place of the Middle East and the Arab world in international affairs and the study of international relations
- Provide opportunities to develop an understanding of the roles of and a preparation for careers in governmental and non-governmental organizations
- create a challenging intellectual environment that encourages the development of the problem-solving capabilities necessary for dealing with change in a global context

### Program Outcomes

#### *Bachelor of Arts in International Studies*

Upon graduation from the Bachelor of Arts in International Studies program, students will be able to:

- demonstrate an understanding of the basic concepts, analytical perspectives and methodologies employed in the disciplines of anthropology, economics, history, geography, philosophy, sociology and political science
- employ the critical skills necessary for evaluating primary and secondary sources for their validity, accuracy and biases
- identify and explain key political, historical and cultural developments in the Arab world and the Middle East
- reflect on coursework to improve professional skills and better define career aspirations
- demonstrate the capacity for research in one of the major areas of study

#### *Concentration in International Economics*

Upon graduation from the Bachelor of Arts in International Studies program, students with a concentration in international economics will also be able to:

- demonstrate proficiency in selected modeling frameworks and quantitative skills necessary for economic analysis
- identify and analyze the trade and monetary issues raised by a country's connections with the rest of the world
- explain the major differences between standards of living in developed and developing countries

#### *Concentration in International Relations*

Upon graduation from the Bachelor of Arts in International Studies program, students with a concentration in international relations will also be able to:

- assess the impact of economic activity upon local, regional, national and international developments
- illustrate the function, range and impact of international organizations
- explain the complex and diverse origins of wars and conflicts
- describe the relationship between law, politics and legal institutions in a global context

#### Admission to the Program

Admission to the program follows the university's undergraduate admission requirements.

AUS students transferring into the program must have achieved a minimum cumulative GPA of 2.00. In the event that there are more qualified AUS students transferring into the major than available spaces, students will be admitted based on academic achievement. For more details, please check with the head of the department or the college associate dean. For information on how to submit a change of major request, please refer to Fields of Study/Change of Major under the Academic Policies and Regulations section earlier in the catalog.

Students seeking a degree in international studies must choose one of the following concentrations:

- international economics
- international relations
- a double concentration in the two areas above

**Note:** *Students who select the concentration in international economics must successfully complete MTH 101 and MTH 102, or MTH 103. Students should take the appropriate math placement test.*

#### Degree Requirements

To qualify for graduation with a Bachelor of Arts in International Studies, students must successfully

complete the following minimum requirements:

- a minimum of 120 credits as follows:
  - a minimum of 42 credits of general education requirements
  - a minimum of 39 credits in major requirements and major electives
  - a minimum of 21 credits in concentration requirements and concentration electives
  - a minimum of 18 credits of free electives
  - a six-week internship in international studies (INS 497)
- a minimum CGPA of 2.00

#### **General Education Requirements (minimum of 42 credits)**

Students must successfully complete a minimum of 42 credits as follows:

- a minimum of 18 credits in courses meeting the core general education requirements:
  - history and culture of the Arab world requirement: three to six credits
  - culture in a critical perspective requirement: three to six credits
  - arts and literature requirement: three to six credits
  - human interaction and behavior requirement: six to nine credits
- natural sciences requirement: a minimum of six credits taken from the natural sciences area
- mathematics requirement: MTH 100 or MTH 101 or MTH 103 or MTH 111
- statistics requirement: STA 202
- communication requirement: a minimum of 12 credits in 100-level or above writing (WRI)/English (ENG) courses meeting this requirement, including ENG 203 or ENG 204
- ethical understanding requirement: satisfied through PHI 201 or PHI 202 or PHI 208
- discipline-specific writing intensive course requirement: satisfied through INS 490
- oral proficiency requirement: satisfied through INS 490
- information literacy requirement: satisfied through WRI 102, and ENG 203 or ENG 204
- computer literacy requirement: satisfied through STA 202 or MTH 103

#### **Major Requirements (30 credits)**

- ANT 205 World Cultures
- ECO 201 Principles of Microeconomics
- ECO 202 Principles of Macroeconomics
- HIS 205 World History I [up to 1500] or

HIS 206 World History II [1500 to present]

- INS 322 Global Political Economy
- INS 490 Senior Research Project
- INS 497 Internship in International Studies
- PHI 201 Introduction to Philosophy or PHI 202 Introduction to Islamic Philosophy or PHI 208 Modern Philosophy
- POL 201 Introduction to Political Studies
- POL 202 Introduction to International Relations
- SOC 201 Introduction to Sociology

Students are expected to have completed at least four of the major requirements, including ECO 201 and ECO 202, by the end of the sophomore year.

#### **Major Electives (minimum of 9 credits)**

Students must successfully complete a minimum of nine credits of major electives selected in consultation with their advisor from courses at the 300 level or above. Electives may be any course from the following disciplines that is not required in the student's chosen concentration:

- anthropology
- economics
- geography
- history
- international studies
- philosophy
- political science
- psychology
- sociology

Students may also take approved interdisciplinary studies (IDS) courses at the 300 level or above. Consult the online course catalog or the online class schedule accessible via the AUS student information system to verify course classifications.

#### **Concentration in International Economics (minimum of 21 credits)**

The international economics concentration offers students a sound foundation in the principles of economics combined with specialized study in international trade, finance, political economy and economic development. The objective of the program is twofold. First, for terminal degree students, the objective is to deal with the numerous complex issues raised by a country's economic connections with the rest of the world, with special emphasis on a country that has not yet reached the status of being "developed" as defined by the standards of international economics.



Second, for students planning to pursue graduate studies, the objective is to prepare them for the more rigorous requirements of graduate programs in international economics and related subjects.

Students who select the concentration in international economics must successfully complete MTH 101 and MTH 102, or MTH 103. Students should take the appropriate math placement test.

*Concentration Requirements  
(15 credits)*

- ECO 301 Intermediate Microeconomics
- ECO 302 Intermediate Macroeconomics

- ECO 305 International Trade
- ECO 306 International Monetary Economics
- ECO 310 Development Economics

*Concentration Electives  
(minimum of 6 credits)*

Students must successfully complete a minimum of six credits in courses selected from the following list:

- ECO 315 Economics of the Middle East
- ECO 325 Public Economics
- ECO 326 Economics and the Law
- ECO 351 Introduction to Econometrics
- ECO 404 Economics of Environmental and Natural Resources

- INS 301 Globalization
- INS 413 Political Economy of the Arab World
- INS 414 Political Economy of the Asia Pacific Region
- POL 302 Law and Diplomacy
- POL 304/SOC 304 International Organizations
- POL 305 Public International Law
- any approved special topic courses at the 300 level or above. Consult the online course catalog or the online class schedule accessible via the AUS student information system to verify course classifications.

**Proposed Sequence of Study  
Bachelor of Arts in International Studies (BAIS)  
Concentration: International Economics**

FIRST YEAR (30 credits)			
Term	Course #	Course Title	Credit
Fall	ECO 201	Principles of Microeconomics	3
	MTH 101	Mathematics for Business I	3
	WRI 101	Academic Writing I	3
	GER-Core	History and Culture of the Arab World	3
	GER-SCI	Natural Sciences	3
<b>Total</b>			<b>15</b>
Spring	ANT 205	World Cultures	3
	ECO 202	Principles of Macroeconomics	3
	STA 202	Introduction to Statistics for Social Sciences	3
	WRI 102	Academic Writing II	3
	GER-SCI	Natural Sciences	3
<b>Total</b>			<b>15</b>
SECOND YEAR (30 credits)			
Term	Course #	Course Title	Credit
Fall	ENG 203 or ENG 204	Writing about Literature or Advanced Academic Writing	3
	HIS 205 or HIS 206	World History I [up to 1500] or World History II [1500 to present]	3
	MTH 102	Mathematics for Business II	3
	POL 201	Introduction to Political Studies	3
	SOC 201	Introduction to Sociology	3
<b>Total</b>			<b>15</b>
Spring	PHI 201 or PHI 202 or PHI 208	Introduction to Philosophy or Introduction to Islamic Philosophy or Modern Philosophy	3
	POL 202	Introduction to International Relations	3
	GER-COM	Communication	3
	GER-Core	Culture in a Critical Perspective	3
	FRE	Free Elective	3
<b>Total</b>			<b>15</b>

**Concentration in International Relations (minimum of 21 credits)**

Students who select the international relations concentration will examine the many ways in which the people of different cultures and nations interact with each other. This concentration provides students with an opportunity to acquire an informed perspective on

national and international policies, public international law, world trade patterns, causes and remedies for conflict between nations, and the social and cultural interactions between nations. Students who select this course of study will be prepared for careers in law and diplomacy, international organizations,

government, international business, travel and tourism, and the media.

*Concentration Requirements  
(15 credits)*

- INS 301 Globalization
- POL 302 Law and Diplomacy or POL 305 Public International Law

THIRD YEAR (30 credits)			
Term	Course #	Course Title	Credit
Fall	ECO 302	Intermediate Macroeconomics	3
	ECO 305	International Trade	3
	CNE	Concentration Elective	3
	GER-Core	Arts and Literature	3
	GER-Core	Human Interaction and Behavior	3
<b>Total</b>			<b>15</b>
Spring	ECO 301	Intermediate Microeconomics	3
	ECO 306	International Monetary Economics	3
	ECO 310	Development Economics	3
	INS 322	Global Political Economy	3
	GER-Core	Human Interaction and Behavior	3
<b>Total</b>			<b>15</b>
Summer	INS 497	Internship in International Studies	0
FOURTH YEAR (30 credits)			
Term	Course #	Course Title	Credit
Fall	INS 490	Senior Research Project	3
	CNE	Concentration Elective	3
	GER-Core	Course Selected from General Education Core Requirements	3
	FRE	Free Elective	3
	FRE	Free Elective	3
<b>Total</b>			<b>15</b>
Spring	MJE	Major Elective	3
	MJE	Major Elective	3
	FRE	Free Elective	3
	FRE	Free Elective	3
	FRE	Free Elective	3
<b>Total</b>			<b>15</b>

- POL 304/SOC 304 International Organizations
- POL 307 Wars, Conflicts and Diplomacy
- any 300-level or above ECO course

**Concentration Electives**  
(minimum of 6 credits)

Students must successfully complete a minimum of six credits in courses selected from the following list:

- ECO 306 International Monetary Economics
- ECO 310 Development Economics
- HIS 311 America and the Middle East

- INS 310 The Middle East Meets the West
- INS 325 Imperialism
- INS 330 Women and Politics
- INS 400 Ethnic Politics in the Developing World
- INS 413 Political Economy of the Arab World
- INS 414 Political Economy of the Asia Pacific Region
- INS 415 War and Peace in the Middle East
- PHI 305 Advanced Social Political Philosophy

- PHI 310 Islamic Political Philosophy
- POL 300 Comparative Politics
- POL 308 American Foreign Policy
- POL 309 The American Political System
- any approved special topic courses at the 300 level or above. Consult the online course catalog or the online class schedule accessible via the AUS student information system to verify course classifications.

**Proposed Sequence of Study**  
**Bachelor of Arts in International Studies (BAIS)**  
**Concentration: International Relations**

FIRST YEAR (30 credits)			
Term	Course #	Course Title	Credit
Fall	ECO 201	Principles of Microeconomics	3
	MTH 100 or MTH 101	Fundamentals of Logic and Geometry or Mathematics for Business I	3
	WRI 101	Academic Writing I	3
	GER-Core	History and Culture of the Arab World	3
	GER-SCI	Natural Sciences	3
<b>Total</b>			<b>15</b>
Spring	ANT 205	World Cultures	3
	ECO 202	Principles of Macroeconomics	3
	STA 202	Introduction to Statistics for Social Sciences	3
	WRI 102	Academic Writing II	3
	GER-SCI	Natural Sciences	3
<b>Total</b>			<b>15</b>
SECOND YEAR (30 credits)			
Term	Course #	Course Title	Credit
Fall	ENG 203 or ENG 204	Writing About Literature or Advanced Academic Writing	3
	HIS 205 or HIS 206	World History I [up to 1500] or World History II [1500 to present]	3
	POL 201	Introduction to Political Studies	3
	GER-Core	Culture in a Critical Perspective	3
	GER-Core	Arts and Literature	3
<b>Total</b>			<b>15</b>
Spring	PHI 201 or PHI 202 or PHI 208	Introduction to Philosophy or Introduction to Islamic Philosophy or Modern Philosophy	3
	POL 202	Introduction to International Relations	3
	SOC 201	Introduction to Sociology	3
	GER-COM	Communication	3
	FRE	Free Elective	3
<b>Total</b>			<b>15</b>

THIRD YEAR (30 credits)			
Term	Course #	Course Title	Credit
Fall	ECO	300-level or 400-level ECO course	3
	INS 301	Globalization	3
	POL 304/SOC 304	International Organizations	3
	POL 307	Wars, Conflicts and Diplomacy	3
	GER-Core	Human Interaction and Behavior	3
<b>Total</b>			<b>15</b>
Spring	INS 322	Global Political Economy	3
	POL 302 or POL 305	Law and Diplomacy or Public International Law	3
	CNE	Concentration Elective	3
	GER-Core	Human Interaction and Behavior	3
	GER-Core	Course Selected from General Education Core Requirements	3
<b>Total</b>			<b>15</b>
Summer	INS 497	Internship in International Studies	0
FOURTH YEAR (30 credits)			
Term	Course #	Course Title	Credit
Fall	INS 490	Senior Research Project	3
	CNE	Concentration Elective	3
	MJE	Major Elective	3
	FRE	Free Elective	3
	FRE	Free Elective	3
<b>Total</b>			<b>15</b>
Spring	MJE	Major Elective	3
	FRE	Free Elective	3
	FRE	Free Elective	3
	FRE	Free Elective	3
	FRE	Free Elective	3
<b>Total</b>			<b>15</b>

### Double Concentration

Students enrolled in the international studies major may pursue a double concentration. Such students must fulfill the course requirements in both concentration areas. Courses used to fulfill the requirements of the first concentration can double count toward the second concentration. Once the

degree requirements are met, any shortage of credits may be fulfilled by free electives. Double-concentration students generally require more than 120 credits to meet graduation requirements.

### Minor in American Studies

The minor in American studies seeks to give students a broad understanding of American society, culture and politics. Students completing the minor will have studied both the development and character of the United States and its international impact through courses selected across academic disciplines.

Students enrolling in the American studies minor should have normally completed a minimum of 30 credits of course work and be in good academic standing.

The following rules apply:

- The minor consists of a minimum of 18 credits, including at least nine credits in courses at or above the 300 level.
- At least nine credits of the 18 credits required for the minor must be taken in residence at AUS.
- At least six credits of the nine credits at or above the 300 level must be taken in residence at AUS.
- A minimum GPA of 2.00 must be earned in courses completed to satisfy the minor.

Students seeking a minor in American studies must successfully complete the following courses or their equivalent. All course prerequisites must be satisfied.

#### **Minor Requirements (9 credits)**

- HIS 240 Introduction to American History
- POL 208 Introduction to American Government
- SOC 220 American Society

#### **Minor Electives (minimum of 9 credits)**

Students must successfully complete a minimum of nine credits in courses selected from the following list:

- ENG 314 Twentieth Century American Literature
- ENG 410 The American Novel
- HIS 311 America and the Middle East
- POL 308 American Foreign Policy
- POL 309 The American Political System
- any approved special topic courses at the 300 level or above. Consult the online course catalog or the online class schedule accessible via the AUS student information system to verify course classifications.

#### **Minor in Governmental Studies**

The minor in governmental studies allows students to acquire more specialized training in political studies. It prepares students for graduate work in political science and international relations, as well as in careers in foreign service, international and regional organizations, and public policy making.

Students enrolling in the governmental studies minor should have normally completed a minimum of 30 credits of course work and be in good academic standing.

The following rules apply:

- The minor consists of a minimum of 18 credits, including at least nine credits in courses at or above the 300 level.
- At least nine credits of the 18 credits required for the minor must be taken in residence at AUS.
- At least six credits of the nine credits at or above the 300 level must be taken in residence at AUS.
- A minimum GPA of 2.00 must be earned in courses completed to satisfy the minor.

Students seeking a minor in governmental studies must successfully complete the following courses or their equivalent. All course prerequisites must be satisfied.

This minor is not open to international studies students.

#### **Minor Requirements (9 credits)**

- POL 201 Introduction to Political Studies
- POL 202 Introduction to International Relations
- POL 300 Comparative Politics

#### **Minor Electives (minimum of 9 credits)**

Students must successfully complete a minimum of nine credits in courses selected from the following list:

- INS 301 Globalization
- INS 322 Global Political Economy
- INS 330 Women and Politics
- PHI 303 Political Philosophy
- POL 302 Law and Diplomacy
- POL 304/SOC 304 International Organizations
- POL 305 Public International Law
- POL 307 Wars, Conflicts and Diplomacy
- POL 309 The American Political System
- any approved special topic courses at the 300 level or above. Consult the online course catalog or the online class schedule accessible via the AUS student information system to verify course classifications.

#### **Minor in History**

The minor in history enables students to encounter the academic exploration of humanity's past. Students are introduced to both ancient and modern history, and they will also investigate both global and regional history. The minor also provides students with basic comprehension of historical method by exposing them to the sustained study of primary sources and theories of

historical interpretation and by requiring them to become cognizant of independent historical research.

Students enrolling in the history minor should have normally completed a minimum of 30 credits of course work and be in good academic standing.

The following rules apply:

- The minor consists of a minimum of 18 credits, including at least nine credits in courses at or above the 300 level.
- At least nine credits of the 18 credits required for the minor must be taken in residence at AUS.
- At least six credits of the nine credits at or above the 300 level must be taken in residence at AUS.
- A minimum GPA of 2.00 must be earned in courses completed to satisfy the minor.

Students seeking a minor in history must successfully complete the following courses or their equivalent. All the course prerequisites must be satisfied.

#### **Minor Requirements (9 credits)**

- HIS 205 World History I [up to 1500]
- HIS 206 World History II [1500 to present]
- Students will take one of the following regional options:
  - HIS 204 Modern Arab History
  - HIS 210 The Making of Modern Europe
  - HIS 240 Introduction to American History

#### **Minor Electives (minimum of 9 credits)**

Students must successfully complete a minimum of nine credits in courses selected from the following list:

- any HIS courses at the 300 level or above
- INS 316 South Asian Culture and History
- INS 325 Imperialism
- INS 415 War and Peace in the Middle East
- any approved special topic courses at the 300 level or above. Consult the online course catalog or the online class schedule accessible via the AUS student information system to verify course classifications.

#### **Minor in International Studies**

The minor in international studies introduces students to the interdisciplinary exploration of social issues at the individual, local, national, international and global levels.

Theoretical and applied aspects of citizenship, civil society, governance and the domestic/international interface are explored in a variety of societal and organizational contexts.

Students enrolling in the international studies minor should have normally completed a minimum of 30 credits of course work and be in good academic standing.

The following rules apply:

- The minor consists of a minimum of 18 credits, including at least nine credits in courses at or above the 300 level.
- At least nine credits of the 18 credits required for the minor must be taken in residence at AUS.
- At least six credits of the nine credits at or above the 300 level must be taken in residence at AUS.
- A minimum GPA of 2.00 must be earned in courses completed to satisfy the minor.

Students seeking a minor in international studies must successfully complete the following courses or their equivalent. All course prerequisites must be satisfied.

This minor is not open to international studies students.

#### **Minor Requirements (9 credits)**

- ANT 205 World Cultures or GEO 201 World Cultural Geography or SOC 201 Introduction to Sociology
- HIS 205 World History I [up to 1500] or HIS 206 World History II [1500 to present] or PHI 201 Introduction to Philosophy
- POL 201 Introduction to Political Studies

#### **Minor Electives (minimum of 9 credits)**

Students must successfully complete a minimum of nine credits in courses selected from the following list:

- INS 301 Globalization
- INS 310 The Middle East Meets the West
- INS 316 South Asian Culture and History
- INS 322 Global Political Economy
- INS 330 Women and Politics
- INS 350 Moot Court
- POL 300 Comparative Politics
- POL 302 Law and Diplomacy
- POL 304/SOC 304 International Organizations
- POL 305 Public International Law

- POL 307 Wars, Conflicts and Diplomacy
- any approved special topic courses at the 300 level or above. Consult the online course catalog or the online class schedule accessible via the AUS student information system to verify course classifications.

#### **Minor in Philosophy**

The philosophy minor develops students' natural reasoning. It also introduces students to the unanswered questions of the Western, Middle Eastern and Eastern traditions of wisdom.

Students enrolling in the philosophy minor should have normally completed a minimum of 30 credits of course work and be in good academic standing.

The following rules apply:

- The minor consists of a minimum of 18 credits, including at least nine credits in courses at or above the 300 level.
- At least nine credits of the 18 credits required for the minor must be taken in residence at AUS.
- At least six credits of the nine credits at or above the 300 level must be taken in residence at AUS.
- A minimum GPA of 2.00 must be earned in courses completed to satisfy the minor.

Students seeking a minor in philosophy must successfully complete the following courses or their equivalent. All course prerequisites must be satisfied.

#### **Minor Requirements (9 credits)**

- PHI 201 Introduction to Philosophy
- PHI 202 Introduction to Islamic Philosophy
- one of the following:
  - PHI 204 Ethics for Professionals
  - PHI 206 Ethics and Information Technology
  - CMP 235 Ethics for Computing and Information Technology

#### **Minor Electives (minimum of 9 credits)**

Students must successfully complete a minimum of nine credits in courses selected from the following list:

- ARA 402 Qur'anic Studies
- INS 350 Moot Court
- PHI 303 Political Philosophy
- PHI 304 Themes in Western Thought
- PHI 305 Advanced Social Political Philosophy
- PHI 306 Philosophy of Law
- PHI 309 Ethics and the Environment

- PHI 310 Islamic Political Philosophy
- PSY 305 Cognitive Psychology
- any approved special topic courses at the 300 level or above. Consult the online course catalog or the online class schedule accessible via the AUS student information system to verify course classifications.

#### **Minor in Psychology**

The minor in psychology develops students' sense of the psychological processes underlying people's behavior. It also introduces students to the theories and practices of experimental and clinical psychology, which prepares them for graduate work in various fields. Students enrolling in the psychology minor should have normally completed a minimum of 30 credits of course work and be in good academic standing. The following rules apply:

- The minor consists of a minimum of 18 credits, including at least nine credits in courses at or above the 300 level.
- At least nine credits of the 18 credits required for the minor must be taken in residence at AUS.
- At least six credits of the nine credits at or above the 300 level must be taken in residence at AUS.
- A minimum GPA of 2.00 must be earned in courses completed to satisfy the minor.

Students seeking a minor in psychology must successfully complete the following courses or their equivalent. All course prerequisites must be satisfied.

#### **Minor Requirements (9 credits)**

- PSY 101 Introduction to Psychology
- PSY 210 Scientific Method in Psychology
- one of the following:
  - STA 201 Introduction to Statistics for Engineering and Natural Sciences
  - STA 202 Introduction to Statistics for Social Sciences
  - QBA 201 Quantitative Business Analysis
  - NGN 111 Introduction to Statistical Analysis plus one to three credits in PSY courses

#### **Minor Electives (minimum of 9 credits)**

Students must successfully complete a minimum of nine credits in PSY courses at the 300 level or above.

#### **Minor in Women's Studies**

Nawar Al-Hassan Golley, Coordinator

The minor in women's studies aspires to promote an understanding of women's achievements, contributions

and experiences in their historical and social contexts. Women's studies courses provide students with opportunities to critically analyze theoretical frameworks related to women but within multicultural and multidisciplinary contexts.

The following rules apply:

- The minor consists of a minimum of 18 credits, including at least nine credits in courses at or above the 300 level.
- At least nine credits of the 18 credits required for the minor must be taken in residence at AUS.
- At least six credits of the nine credits at or above the 300 level must be taken in residence at AUS.
- A minimum GPA of 2.00 must be earned in courses completed to satisfy the minor.

Students seeking a minor in women's studies must successfully complete the following courses or their equivalent. All course prerequisites must be satisfied.

#### **Minor Requirements (9 credits)**

- HIS 208 Women in History
- WST 240 Introduction to Women's Studies
- WST 250 Women's Voices Across Cultures

#### **Minor Electives (minimum of 9 credits)**

Students must successfully complete a minimum of nine credits in courses selected from the following list:

- ENG 385 Language and Gender
- HIS 340 History of the Family
- INS 330 Women and Politics
- MCM 392 Women and Film
- MUS 302 Women and the Performing Arts
- SOC 370 Women's Empowerment and International Development
- any WST course at the 300 level or above
- any approved special topic courses at the 300 level or above. Consult the online course catalog or the online class schedule accessible via the AUS student information system to verify course classifications.

## **Department of Mass Communication**

Mohammad Ayish, Head

#### **Faculty**

Abeer Al-Najjar  
Harris Breslow  
Suheil Dahdal  
Ana Milena Gavassa  
Joseph Gibbs  
Mahboub Hashem  
Mohammed Ibahrine  
John King  
Sreya Mitra  
Hania Nashef  
Susan Smith  
Mustafa Taha

## **Bachelor of Arts in Mass Communication (BAMC)**

The Bachelor of Arts in Mass Communication supports the AUS mission by providing students with knowledge and practice in the discipline of mass communication to serve the needs of the region and to encourage students' professional and personal growth and development.

Following international standards for similar mass communication models, the program has been adapted to the specific pedagogic and social challenges and requirements of the GCC region. The Department of Mass Communication strives to maintain close contact with its students and alumni to foster their personal and professional growth, maturity and their sense of social responsibility with particular reference to the profound social and cultural influence they will have as members of mass media industries.

#### **Program Mission**

The mission of the Department of Mass Communication is to provide students with a balanced foundation of both skills and academic knowledge of the discipline of mass communication in general and the department's specific professional concentrations: advertising, journalism and public relations. By offering academic and practical knowledge, the department's curriculum aims to develop professionally skilled students who bring a critically informed perspective to their future careers.

#### **Program Goals**

The Bachelor of Arts in Mass Communication program strives to:

- provide students with a grounding in the various perspectives found in the academic discipline of mass communication, fostering students'

critical and analytical faculties of mass media

- furnish students with theoretical and strategic knowledge required of mass media professionals
- prepare students for positions in the mass media industries that require technical and analytical proficiency
- equip graduates for competencies required for entry-level positions in mass media industries

The Bachelor of Arts in Mass Communication program offers a blend of academic and professional training through four concentrations: general mass communication, advertising, journalism and public relations. The generalist program provides an overview of the discipline in preparation for both employment and future academic pursuits. The professional programs in advertising, journalism and public relations strive to develop skills as multiplatform communicators required by specific fields.

#### **Program Outcomes**

##### *Bachelor of Arts in Mass Communication*

Upon graduation from the Bachelor of Arts in Mass Communication program, students should be able to:

- differentiate, articulate and critically analyze the dominant quantitative and qualitative research methods and paradigms found in the discipline of mass communication and to employ these research methods in their professional careers
- understand and articulate the role that the mass media play in the production of everyday life, culture and belief, and critically analyze the content of the mass media by explaining the nature of its production and effects
- employ digital technology in the production of mass media content for print, web and broadcast

##### *Concentration in Advertising*

Upon graduation from the Bachelor of Arts in Mass Communication program, students with a concentration in advertising should also be able to:

- demonstrate knowledge of the latest institutional, methodological and professional developments in the field of advertising
- skillfully employ best practices found in the field of advertising

##### *Concentration in Journalism*

Upon graduation from the Bachelor of Arts in Mass Communication program, students with a concentration in journalism should also be able to:

- demonstrate knowledge and practice of the latest institutional, methodological and professional developments in the fields of print, web and broadcast journalism
- skillfully employ best practices found in the fields of print and broadcast journalism

#### *Concentration in Public Relations*

Upon graduation from the Bachelor of Arts in Mass Communication program, students with a concentration in public relations should also be able to:

- demonstrate knowledge of the latest institutional, methodological and professional developments in the field of public relations
- skillfully employ best practices found in the field of public relations

#### **Achievement of Outcomes**

The outcomes of the Bachelor of Arts in Mass Communication program are achieved through a combination of:

- coursework related to the academic discipline of mass communication
- practicum-based courses related to the students' chosen professional concentrations
- capstone courses that assess students' cumulative knowledge in their chosen professional concentrations and academic interests
- internships/field work in students' chosen professional concentrations and/or academic interests in fulfillment of students' university internship requirements

#### **Curriculum**

The Bachelor of Arts in Mass Communication degree program offers students the opportunity to specialize in one of three professional concentrations—advertising, journalism and public relations—as well as the option of a general mass communication program. Students can also choose to specialize in a combination of any two of the professional concentrations.

#### **Advertising**

Students selecting the advertising concentration receive exposure to an integrated marketing communication approach to advertising and strategic communication. A combination of advertising, public relations and marketing courses prepare students for careers as advertising account executives, creative specialists, media planners, media sales representatives and marketing communication researchers.

#### **Journalism**

The journalism concentration prepares students for careers in newspapers, magazines, broadcasting, wire services, special interest publications and online publications. This curriculum offers students additional preparation to find careers as print and broadcast reporters, commentators, presenters, editors, producers, copywriters, scriptwriters, news/project managers, copy editors, correspondents, columnists or editorial writers.

#### **Public Relations**

Students selecting the public relations concentration receive exposure to a wide range of integrated communication methods and practices. Students are also led through an extensive examination of theoretical and pragmatic communication knowledge designed to prepare them for successful strategic management careers in corporate, government and non-profit organizations worldwide.

#### **Admission to the Program**

Admission to the program follows the university's undergraduate admission requirements.

AUS students transferring into the program must have achieved a minimum cumulative GPA of 2.50. At the discretion of the department, students who do not meet this requirement may be allowed to register for MCM 150, MCM 225 and MCM 231. Students who successfully complete MCM 150, MCM 225 and MCM 231 with an average of 2.50 will be admitted into the program. For more details, please check with the head of the department or the college associate dean. For information on how to submit a change of major request, please refer to Fields of Study/Change of Major under the Academic Policies and Regulations section earlier in the catalog.

#### **Degree Requirements**

To qualify for graduation with a Bachelor of Arts in Mass Communication, students must successfully complete the following minimum requirements:

- a minimum of 120 credits, including a minimum of 36 credits in courses at the 300 level or above, as follows:
  - a minimum of 42 credits of general education requirements
  - a minimum of 33 credits of MCM major requirements and major electives
  - a minimum of 27 credits of concentration requirements and concentration electives for students selecting a concentration, or a minimum of 27 credits of general

mass communication requirements for students who select the general mass communication program

- five weeks or 240 hours of on-the-job training (MCM 497) with a professional firm
- a minimum of 18 credits of free electives from courses at the 100 level or above
- a minimum CGPA of 2.00

#### **General Education Requirements (minimum of 42 credits)**

Students must successfully complete a minimum of 42 credits as follows:

- a minimum of 18 credits in courses meeting the core general education requirements:
  - history and culture of the Arab world requirement: three to six credits
  - culture in a critical perspective requirement: three to six credits
  - arts and literature requirement: three to six credits
  - human interaction and behavior requirement: six to nine credits
- natural sciences requirement: a minimum of six credits taken from the natural sciences area
- mathematics requirement: MTH 100 or MTH 101 or MTH 103 or MTH 111
- statistics requirement: STA 202
- communication requirement: a minimum of 12 credits in 100-level or above writing (WRI)/English (ENG) courses meeting this requirement, including ENG 203 or ENG 204, and ENG 208 or MCM 241
- ethical understanding requirement: satisfied through MCM 321
- discipline-specific writing intensive course requirement: satisfied through MCM 231
- oral proficiency requirement: satisfied through ENG 208 or MCM 241
- information literacy requirement: satisfied through WRI 102, and ENG 203 or ENG 204
- computer literacy requirement: satisfied through MCM 100

#### **Major Requirements (15 credits)**

- MCM 150 Introduction to Mass Communication Studies
- MCM 225 Theories of Mass Communication
- MCM 231 Writing for Mass Communication
- MCM 300 Mass Communication Research Methods
- MCM 321 Mass Communication Law and Ethics
- MCM 497 Mass Communication Internship

### Mass Communication Internship (MCM 497)

The internship comprises five weeks or 240 hours of on-the-job training with a professional firm. All students in the Department of Mass Communication must fulfill the internship requirement. Depending on their program concentrations, students will choose to do their internship in media companies, advertising agencies or in public relations companies to add practical training to their academic learning.

For details on internship eligibility and registration, please refer to Internship Registration in the Academic Policies and Regulations section earlier in this catalog.

### Major Electives (minimum of 18 credits)

Students must successfully complete six courses, for a minimum of 18 credits, at the 200 level or above from approved courses in ANT, DES, ECO, ENG (excluding ENG 203 and ENG 204), INS, MCM, MGT, MKT, MUM, POL, TRA or VIS. Consult the online course catalog or the online class schedule

accessible via the AUS student information system to verify course classifications.

### Concentration in Advertising (minimum of 27 credits)

Students who select the advertising concentration must successfully complete a minimum of 27 credits as follows:

#### Concentration Requirements (21 credits)

- MCM 100 Introduction to Digital Media Design
- MCM 255 Principles of Advertising
- MCM 351 Advertising Copy and Layout
- MCM 431 Strategic Communications Research
- MCM 453 Advertising Media Planning
- MCM 455 Advertising Campaigns or MCM 485 Integrated Marketing Communication Campaigns
- MKT 201 Fundamentals of Marketing

### Concentration Electives (minimum of 6 credits)

Students must successfully complete a minimum of six credits in courses selected from the following list:

- MCM 200 Intermediate Digital Media Design for Mass Communication
- MCM 265 Principles of Public Relations
- MCM 353 Direct Response Advertising
- MCM 354 The Internet and Marketing Communication
- MCM 394/494 approved special topics in mass communication. Consult the online course catalog or the online class schedule accessible via the AUS student information system to verify course classifications.
- MCM 454 Case Studies in Advertising
- MCM 463 International Public Relations
- MCM 465 Public Relations Campaigns
- MCM 490 Senior Project
- MKT 301 Consumer Behavior
- MKT 302 Marketing Research
- MKT 303 E-Commerce

## Proposed Sequence of Study Bachelor of Arts in Mass Communication (BAMC) Concentration: Advertising

FIRST YEAR (30 credits)			
Term	Course #	Course Title	Credit
Fall	MCM 100	Introduction to Digital Media Design	3
	MTH 100	Fundamentals of Logic and Geometry	3
	WRI 101	Academic Writing I	3
	GER-Core	History and Culture of the Arab World	3
	GER-SCI	Natural Sciences	3
<b>Total</b>			<b>15</b>
Spring	STA 202	Introduction to Statistics for Social Sciences	3
	WRI 102	Academic Writing II	3
	GER-Core	Culture in a Critical Perspective	3
	GER-Core	Human Interaction and Behavior	3
	GER-SCI	Natural Sciences	3
<b>Total</b>			<b>15</b>
SECOND YEAR (30 credits)			
Term	Course #	Course Title	Credit
Fall	ENG 203 or ENG 204	Writing About Literature or Advanced Academic Writing	3
	MCM 150	Introduction to Mass Communication Studies	3
	MKT 201	Fundamentals of Marketing	3
	GER-Core	Arts and Literature	3
	GER-Core	Human Interaction and Behavior	3
<b>Total</b>			<b>15</b>
Spring	MCM 225	Theories of Mass Communication	3
	MCM 231	Writing for Mass Communication	3
	MJE	Major Elective	3
	GER-Core	Course Selected from General Education Core Requirements	3
	FRE	Free Elective 3	3
<b>Total</b>			<b>15</b>

THIRD YEAR (30 credits)			
Term	Course #	Course Title	Credit
Fall	ENG 208 or MCM 241	Public Speaking or Media and Professional Presentations	3
	MCM 255	Principles of Advertising	3
	MCM 300	Mass Communication Research Methods	3
	MJE	Major Elective	3
	FRE	Free Elective	3
<b>Total</b>			<b>15</b>
Spring	MCM 321	Mass Communication Law and Ethics	3
	MCM 351	Advertising Copy and Layout	3
	CNE	Concentration Elective	3
	MJE	Major Elective	3
	FRE	Free Elective	3
<b>Total</b>			<b>15</b>
Summer	MCM 497	Mass Communication Internship	0
FOURTH YEAR (30 credits)			
Term	Course #	Course Title	Credit
Fall	MCM 431	Strategic Communications Research	3
	MCM 453	Advertising Media Planning	3
	MJE	Major Elective	3
	MJE	Major Elective	3
	FRE	Free Elective	3
<b>Total</b>			<b>15</b>
Spring	MCM 455 or MCM 485	Advertising Campaigns or Integrated Marketing Communication Campaigns	3
	CNE	Concentration Elective	3
	MJE	Major Elective	3
	FRE	Free Elective	3
	FRE	Free Elective	3
<b>Total</b>			<b>15</b>

**Concentration in Journalism  
(minimum of 27 credits)**

Students who select the journalism concentration must successfully complete a minimum of 27 credits as follows:

**Concentration Requirements  
(21 credits)**

- MCM 100 Introduction to Digital Media Design
- MCM 275 Principles of Journalism
- MCM 370 Broadcast Journalism
- MCM 371 News Writing
- MCM 470 Writing and Reporting for Broadcast News
- MCM 471 Advanced News Writing
- MCM 472 Editorial and Critical Writing

**Concentration Electives  
(minimum of 6 credits)**

Students must successfully complete a minimum of six credits in courses selected from the following list:

- ENG 393 Shakespeare on Film
- MCM 200 Intermediate Digital Media Design for Mass Communication
- MCM 277 Video Editing for Journalism
- MCM 281 Principles of Media Production and Performance
- MCM 374 Feature Writing
- MCM 375 Editing for the Print Media
- MCM 376 Writing for Magazines
- MCM 377 Photojournalism
- MCM 378 Literary Journalism
- MCM 379 Journalism in the Arab Countries

- MCM 394/494 approved special topics in mass communication. Consult the online course catalog or the online class schedule accessible via the AUS student information system to verify course classifications.

- MCM 411 Multiple Camera Studio Production
- MCM 473 Writing for Multimedia
- MCM 475 Writing and Producing for Documentaries
- MCM 480 Critical Analysis of the Mass Media
- MCM 481 International Mass Communication
- MCM 491 Print Media Project

**Proposed Sequence of Study  
Bachelor of Arts in Mass Communication (BAMC)  
Concentration: Journalism**

FIRST YEAR (30 credits)			
Term	Course #	Course Title	Credit
Fall	MCM 100	Introduction to Digital Media Design	3
	MTH 100	Fundamentals of Logic and Geometry	3
	WRI 101	Academic Writing I	3
	GER-Core	History and Culture of the Arab World	3
	GER-SCI	Natural Sciences	3
<b>Total</b>			<b>15</b>
Spring	STA 202	Introduction to Statistics for Social Sciences	3
	WRI 102	Academic Writing II	3
	GER-Core	Culture in a Critical Perspective	3
	GER-Core	Arts and Literature	3
	GER-SCI	Natural Sciences	3
<b>Total</b>			<b>15</b>
SECOND YEAR (30 credits)			
Term	Course #	Course Title	Credit
Fall	ENG 203 or ENG 204	Writing About Literature or Advanced Academic Writing	3
	MCM 150	Introduction to Mass Communication Studies	3
	MJE	Major Elective	3
	GER-Core	Human Interaction and Behavior	3
	GER-Core	Human Interaction and Behavior	3
<b>Total</b>			<b>15</b>
Spring	MCM 225	Theories of Mass Communication	3
	MCM 231	Writing for Mass Communication	3
	MJE	Major Elective	3
	GER-Core	Course Selected from General Education Core Requirements	3
	FRE	Free Elective	3
<b>Total</b>			<b>15</b>

THIRD YEAR (30 credits)			
Term	Course #	Course Title	Credit
Fall	ENG 208 or MCM 241	Public Speaking or Media and Professional Presentations	3
	MCM 275	Principles of Journalism	3
	MCM 300	Mass Communication Research Methods	3
	MJE	Major Elective	3
	FRE	Free Elective	3
<b>Total</b>			<b>15</b>
Spring	MCM 321	Mass Communication Law and Ethics	3
	MCM 370	Broadcast Journalism	3
	MCM 371	News Writing	3
	MJE	Major Elective	3
	FRE	Free Elective	3
<b>Total</b>			<b>15</b>
Summer	MCM 497	Mass Communication Internship	0
FOURTH YEAR (30 credits)			
Term	Course #	Course Title	Credit
Fall	MCM 470	Writing and Reporting for Broadcast News	3
	MCM 471	Advanced News Writing	3
	CNE	Concentration Elective	3
	MJE	Major Elective	3
	FRE	Free Elective	3
<b>Total</b>			<b>15</b>
Spring	MCM 472	Editorial and Critical Writing	3
	CNE	Concentration Elective	3
	MJE	Major Elective	3
	FRE	Free Elective	3
	FRE	Free Elective	3
<b>Total</b>			<b>15</b>



**Concentration in Public Relations  
(minimum of 27 credits)**

Students who select the public relations concentration must successfully complete a minimum of 27 credits as follows:

**Concentration Requirements  
(21 credits)**

- MCM 100 Introduction to Digital Media Design
- MCM 265 Principles of Public Relations
- MCM 361 Case Studies in Public Relations
- MCM 369 Public Relations Writing
- MCM 431 Strategic Communications Research
- MCM 465 Public Relations Campaigns or  
MCM 485 Integrated Marketing Communication Campaigns
- MCM 469 Advanced Public Relations Writing

**Concentration Electives  
(minimum of 6 credits)**

Students must successfully complete a minimum of six credits in courses selected from the following list:

- INS 301 Globalization
- MCM 200 Intermediate Digital Media Design for Mass Communication
- MCM 255 Principles of Advertising
- MCM 275 Principles of Journalism
- MCM 329 Mass Communication and Society
- MCM 360 Crisis and Conflict Management
- MCM 371 News Writing
- MCM 377 Photojournalism
- MCM 380 Persuasive Communication
- MCM 394/494 approved special topics in mass communication. Consult the online course catalog or the online class schedule accessible via the AUS

student information system to verify course classifications.

- MCM 455 Advertising Campaigns
- MCM 463 International Public Relations
- MCM 467 Public Relations for Non-Profit Organizations
- MCM 490 Senior Project
- MGT 201 Fundamentals of Management
- MKT 201 Fundamentals of Marketing

**Proposed Sequence of Study  
Bachelor of Arts in Mass Communication (BAMC)  
Concentration: Public Relations**

FIRST YEAR (30 credits)			
Term	Course #	Course Title	Credit
Fall	MCM 100	Introduction to Digital Media Design	3
	MTH 100	Fundamentals of Logic and Geometry	3
	WRI 101	Academic Writing I	3
	GER-Core	History and Culture of the Arab World	3
	GER-SCI	Natural Sciences	3
<b>Total</b>			<b>15</b>
Spring	STA 202	Introduction to Statistics for Social Sciences	3
	WRI 102	Academic Writing II	3
	GER-Core	Culture in a Critical Perspective	3
	GER-Core	Arts and Literature	3
	GER-SCI	Natural Sciences	3
<b>Total</b>			<b>15</b>
SECOND YEAR (30 credits)			
Term	Course #	Course Title	Credit
Fall	ENG 203 or ENG 204	Writing About Literature or Advanced Academic Writing	3
	MCM 150	Introduction to Mass Communication Studies	3
	CNE	Concentration Elective	3
	GER-Core	Human Interaction and Behavior	3
	GER-Core	Human Interaction and Behavior	3
<b>Total</b>			<b>15</b>
Spring	MCM 225	Theories of Mass Communication	3
	MCM 231	Writing for Mass Communication	3
	MJE	Major Elective	3
	GER-Core	Course Selected from General Education Core Requirements	3
	FRE	Free Elective	3
<b>Total</b>			<b>15</b>

THIRD YEAR (30 credits)			
Term	Course #	Course Title	Credit
Fall	ENG 208 or MCM 241	Public Speaking or Media and Professional Presentations	3
	MCM 265	Principles of Public Relations	3
	MCM 300	Mass Communication Research Methods	3
	MJE	Major Elective	3
	FRE	Free Elective	3
<b>Total</b>			<b>15</b>
Spring	MCM 321	Mass Communication Law and Ethics	3
	MCM 361	Case Studies in Public Relations	3
	MCM 369	Public Relations Writing	3
	MJE	Major Elective	3
	FRE	Free Elective	3
<b>Total</b>			<b>15</b>
Summer	MCM 497	Mass Communication Internship	0
FOURTH YEAR (30 credits)			
Term	Course #	Course Title	Credit
Fall	MCM 431	Strategic Communications Research	3
	CNE	Concentration Elective	3
	MJE	Major Elective	3
	MJE	Major Elective	3
	FRE	Free Elective	3
<b>Total</b>			<b>15</b>
Spring	MCM 465 or MCM 485	Public Relations Campaigns or Integrated Marketing Communication Campaigns	3
	MCM 469	Advanced Public Relations Writing	3
	MJE	Major Elective	3
	FRE	Free Elective	3
	FRE	Free Elective	3
<b>Total</b>			<b>15</b>

### Double Concentration

Students enrolled in the mass communication major may pursue a double concentration. Such students must fulfill the course requirements in both concentration areas. Courses used to fulfill the requirements of the first concentration can double count toward the second concentration. Once the degree requirements are met, any shortage of credits may be fulfilled by free electives. Double-concentration

students generally require more than 120 credits to meet graduation requirements.

### General Mass Communication Program (minimum of 27 credits)

Students who select the general mass communication program option must successfully complete nine courses for a minimum of 27 credits as follows:

- MCM 100 Introduction to Digital Media Design

- a minimum of 24 credits from any of the mass communication (MCM) courses not listed in the major requirements.

### Proposed Sequence of Study Bachelor of Arts in Mass Communication (BAMC) General Mass Communication

FIRST YEAR (30 credits)			
Term	Course #	Course Title	Credit
Fall	MCM 100	Introduction to Digital Media Design	3
	MTH 100	Fundamentals of Logic and Geometry	3
	WRI 101	Academic Writing I	3
	GER-Core	History and Culture of the Arab World	3
	GER-SCI	Natural Sciences	3
<b>Total</b>			<b>15</b>
Spring	STA 202	Introduction to Statistics for Social Sciences	3
	WRI 102	Academic Writing II	3
	GER-Core	Culture in a Critical Perspective	3
	GER-Core	Arts and Literature	3
	GER-SCI	Natural Sciences	3
<b>Total</b>			<b>15</b>
SECOND YEAR (30 credits)			
Term	Course #	Course Title	Credit
Fall	ENG 203 or ENG 204	Writing About Literature or Advanced Academic Writing	3
	MCM 150	Introduction to Mass Communication Studies	3
	MJE	Major Elective	3
	GER-Core	Human Interaction and Behavior	3
	GER-Core	Human Interaction and Behavior	3
<b>Total</b>			<b>15</b>
Spring	MCM 225	Theories of Mass Communication	3
	MCM 231	Writing for Mass Communication	3
	MJE	Major Elective	3
	GER-Core	Course Selected from General Education Core Requirements	3
	FRE	Free Elective	3
<b>Total</b>			<b>15</b>

THIRD YEAR (30 credits)			
Term	Course #	Course Title	Credit
Fall	ENG 208 or MCM 241	Public Speaking or Media and Professional Presentations	3
	MCM 300	Mass Communication Research Methods	3
	CNE	General Mass Communication Elective	3
	CNE	General Mass Communication Elective	3
	FRE	Free Elective	3
<b>Total</b>			<b>15</b>
Spring	MCM 321	Mass Communication Law and Ethics	3
	CNE	General Mass Communication Elective	3
	CNE	General Mass Communication Elective	3
	MJE	Major Elective	3
	FRE	Free Elective	3
<b>Total</b>			<b>15</b>
Summer	MCM 497	Mass Communication Internship	0
FOURTH YEAR (30 credits)			
Term	Course #	Course Title	Credit
Fall	CNE	General Mass Communication Elective	3
	CNE	General Mass Communication Elective	3
	MJE	Major Elective	3
	MJE	Major Elective	3
	FRE	Free Elective	3
<b>Total</b>			<b>15</b>
Spring	CNE	General Mass Communication Elective	3
	CNE	General Mass Communication Elective	3
	MJE	Major Elective	3
	FRE	Free Elective	3
	FRE	Free Elective	3
<b>Total</b>			<b>15</b>

### Minor in Mass Communication

Students applying to the mass communication minor should have normally completed a minimum of 30 credits of course work and be in good academic standing.

The following rules apply:

- The minor consists of a minimum of 18 credits, including at least nine credits in courses at or above the 300 level.
- At least nine credits of the 18 credits required for the minor must be taken in residence at AUS.

- At least six credits of the nine credits at or above the 300 level must be taken in residence at AUS.
- A minimum GPA of 2.00 must be earned in courses completed to satisfy the minor.

Students seeking a minor in mass communication must successfully complete the following courses or their equivalent. All course prerequisites must be satisfied.

This minor is not open to mass communication students.

### Minor Requirements (9 credits)

- MCM 150 Introduction to Mass Communication Studies
- MCM 225 Theories of Mass Communication
- MCM 231 Writing for Mass Communication

### Minor Electives (minimum of 9 credits)

Students must successfully complete a minimum of nine credits in MCM courses at the 300 level or above. Students may also take ENG 393 to meet this requirement.

## Department of Mathematics and Statistics

Hana Sulieiman, Head

### Faculty

Zayid AbdulHadi  
 Taher Abualrub  
 Marwan Abukhaled  
 Yusuf Abu-Muhanna  
 Ghada Alobaidi  
 Ziyad Al Sharawi  
 Mahmoud Anabtawi  
 Diana Audi  
 Ayman Badawi  
 Youssef Belhamadia  
 Dmitri Efimov  
 Rim Gouia  
 James Griffin  
 Gajath Gunatillake  
 Abdul Salam Jarrah  
 Sadok Kallel  
 Suheil Khoury  
 Saadia Khouyibaba  
 Guillaume Leduc  
 Issam Louhichi  
 Mujo Mesanovic  
 Gergely Orosi  
 Ali Saifi  
 Shou-Hsing Shih  
 Amjad Tuffaha  
 Faruk Uygul  
 Thomas Wunderli

The Department of Mathematics and Statistics seeks to develop, campus-wide, the level of mathematical skills and quantitative and logical reasoning required for individuals to make informed decisions and excel in their chosen disciplines. It also seeks to develop these same skills in the larger community. The department aims to provide students with the mathematical ability needed to fulfill future leadership roles. Innovative teaching and learning environments provide opportunities for students to develop critical thinking and general problem-solving strategies. The Department of Mathematics and Statistics specifically strives to ensure success in finding appropriate employment as well as success in graduate work for those desiring to further pursue their formal education.

### Mission Statement

The primary mission of the Department of Mathematics and Statistics is to educate students in the core competencies of mathematics and provide them with the necessary critical thinking skills. The department provides an education based on the American model, conducts research that is recognized internationally, and engages with the wider community through professional consultation, academic

collaboration and other outreach activities.

## Bachelor of Science in Mathematics (BSMTH)

The mission of the Bachelor of Science in Mathematics program is to expose students to the theoretical foundations of mathematics, to provide them with understanding of the broad outlines of modern mathematics and its applications in a variety of disciplines, to stimulate their interest in research and to prepare them for their future work.

### Program Goals

The Bachelor of Science in Mathematics program seeks to provide students with:

- a strong background in calculus-based courses, including advanced calculus and differential equations
- the skills needed to successfully produce mathematical proofs expected at the undergraduate level
- exposure to diverse areas of mathematics, such as analysis, algebra, applied mathematics, discrete mathematics, and probability and statistics
- an understanding of algorithmic foundation, modeling tools, discrete phenomena and digital information environments
- the ability to think critically and independently about problems to facilitate the development of an aptitude for mathematical reasoning
- the mathematical and computing skills necessary to describe and solve technical problems that arise in business and industry
- a solid foundation in mathematics necessary for future development and/or graduate study

### Program Outcomes

Upon completion of the Bachelor of Science in Mathematics program, graduates should be able to:

- demonstrate knowledge and understanding of diverse areas in mathematics such as analysis, algebra, discrete mathematics and applied mathematics
- construct and effectively communicate valid mathematical arguments
- demonstrate a solid grounding in the ideas and techniques of mathematics
- apply mathematical analysis and mathematical skills to problems in other disciplines
- use discrete mathematical concepts in a variety of contexts such as

algorithm development, computer programming and network development and implementation

- demonstrate the ability to identify and carry out thoughtful approaches to problem solving
- define and execute simple research tasks, and assist in more complex research tasks as required for professional work
- formulate a problem in mathematical terms from descriptions written in language specific to disciplines associated with engineering, finance and the natural sciences
- obtain the research skills necessary to adapt to change and remain current in the field and continue to learn new information, skills and concepts

### Admission to the Program

Admission to the program follows the university's undergraduate admission requirements.

AUS students transferring into the program must satisfy the following conditions:

- a minimum cumulative grade point average (CGPA) of 2.00
- a minimum grade of C (2.00) in each of MTH 104, MTH 205 and MTH 221

In the event that there are more qualified AUS students transferring into the major than available spaces, students will be admitted based on academic achievement. For more details, please check with the head of the department or the college associate dean. For information on how to submit a change of major request, please refer to Fields of Study/Change of Major under the Academic Policies and Regulations section earlier in the catalog.

### Degree Requirements

To qualify for graduation with a Bachelor of Science in Mathematics, students must successfully complete the following minimum requirements:

- a minimum of 123 credits as follows:
  - a minimum of 44 credits of general education requirements
  - a minimum of 64 credits of major requirements and major electives
  - a minimum of 15 credits of free electives
- a minimum CGPA of 2.00

### General Education Requirements (minimum of 44 credits)

Students must successfully complete a minimum of 44 credits as follows:

- a minimum of 18 credits in courses meeting the core general education requirements:
  - history and culture of the Arab world requirement: three to six credits
  - culture in a critical perspective requirement: three to six credits
  - arts and literature requirement: three to six credits
  - human interaction and behavior requirement: six to nine credits
- natural sciences requirement: any two courses from BIO 101, BIO 102, CHM 101, CHM 102, PHY 101 and PHY 101L, PHY 102 and PHY 102L
- mathematics requirement: MTH 103
- statistics requirement: STA 201
- communication requirement: a minimum of 12 credits in 100-level or above writing (WRI)/English (ENG) courses meeting this requirement, including ENG 203 or ENG 204
- ethical understanding requirement: satisfied through MTH 490

- discipline-specific writing intensive course requirement: satisfied through MTH 490
- oral proficiency requirement: satisfied through MTH 490
- information literacy requirement: satisfied through WRI 102, and ENG 203 or ENG 204
- computer literacy requirement: satisfied through MTH 103

**Major Requirements (34 credits)**

- MTH 104 Calculus II
- MTH 203 Calculus III
- MTH 205 Differential Equations
- MTH 213 Discrete Mathematics
- MTH 221 Linear Algebra
- MTH 243 Introduction to Mathematical Programming
- MTH 311 Intermediate Analysis
- MTH 312 Advanced Calculus
- MTH 320 Abstract Algebra I
- MTH 343 Numerical Analysis I
- MTH 350 Introduction to Probability
- MTH 490 Senior Project

**Major Electives (minimum of 30 credits)***Math Electives (minimum of 15 credits)*

After consulting with their academic advisors, students must successfully complete a minimum of 15 credits of major electives at the 300 level or above, with at least 6 at the 400 level, from any MTH/STA courses not listed as major requirements.

*Electives in Related Areas (maximum of 15 credits)*

With the approval of their advisors, students may complete a maximum of 15 credits from courses at the 200 level or above in areas such as sciences, engineering and computer science, accounting, economics and finance.

**Free Electives (minimum of 15 credits)**

Students must successfully complete a minimum of 15 credits of free electives from any 100-level courses or above, excluding MTH 101.

**Proposed Sequence of Study  
Bachelor of Science Degree in Mathematics (BSMTH)**

FIRST YEAR (32 credits)			
Term	Course #	Course Title	Credit
Fall	MTH 103	Calculus I	3
	WRI 101	Academic Writing I	3
	GER-SCI	Natural Sciences	4
	GER-Core	History and Culture of the Arab World	3
	FRE	Free Elective	3
<b>Total</b>			<b>16</b>
Spring	MTH 104	Calculus II	3
	STA 201	Introduction to Statistics for Engineering and Natural Sciences	3
	WRI 102	Academic Writing II	3
	GER-Core	Culture in a Critical Perspective	3
	GER-SCI	Natural Sciences	4
<b>Total</b>			<b>16</b>
SECOND YEAR (31 credits)			
Term	Course #	Course Title	Credit
Fall	ENG 203 or ENG 204	Writing About Literature or Advanced Academic Writing	3
	MTH 203	Calculus III	3
	MTH 213	Discrete Mathematics	3
	MJE	Elective in Related Areas	3
	GER-Core	Arts and Literature	3
<b>Total</b>			<b>15</b>
Spring	MTH 205	Differential Equations	3
	MTH 221	Linear Algebra	3
	MTH 243	Introduction to Mathematical Programming	1
	MJE	Math Elective	3
	GER-COM	Communication	3
FRE	Free Elective		3
<b>Total</b>			<b>16</b>

THIRD YEAR (30 credits)			
Term	Course #	Course Title	Credit
Fall	MTH 311	Intermediate Analysis	3
	MTH 350	Introduction to Probability	3
	MJE	Math Elective	3
	MJE	Elective in Related Areas	3
	GER-Core	Human Interaction and Behavior	3
<b>Total</b>			<b>15</b>
Spring	MTH 320	Abstract Algebra I	3
	MTH 343	Numerical Analysis I	3
	MJE	Math Elective	3
	MJE	Elective in Related Areas	3
	FRE	Free Elective	3
<b>Total</b>			<b>15</b>
FOURTH YEAR (30 credits)			
Term	Course #	Course Title	Credit
Fall	MTH 312	Advanced Calculus	3
	MJE	Math Elective	3
	MJE	Elective in Related Areas	3
	GER-Core	Human Interaction and Behavior	3
	FRE	Free Elective	3
<b>Total</b>			<b>15</b>
Spring	MTH 490	Senior Project	3
	MJE	Elective in Related Areas	3
	MJE	Math Elective	3
	GER-Core	Course Selected from General Education Core Requirements	3
	FRE	Free Elective	3
<b>Total</b>			<b>15</b>

### Minor in Actuarial Mathematics

Students enrolling in the actuarial mathematics minor should have normally completed a minimum of 30 credits of course work and be in good academic standing. The following rules apply:

- The minor consists of a minimum of 18 credits, including at least nine credits in courses at or above the 300 level.
- At least nine credits of the 18 credits required for the minor must be taken in residence at AUS.
- At least six credits of the nine credits at or above the 300 level must be taken in residence at AUS.
- A minimum GPA of 2.00 must be earned in courses completed to satisfy the minor.

Students seeking a minor in actuarial mathematics must successfully complete the following courses or their equivalent. All course prerequisites must be satisfied.

#### Minor Requirements (12 credits)

- MTH 102 Mathematics for Business II or  
MTH 103 Calculus I or  
MTH 111 Mathematics for Architects
- MTH 304 Mathematics of Finance
- MTH 305 Life Contingencies
- one of the following:
  - STA 201 Introduction to Statistics for Engineering and Natural Sciences
  - STA 202 Introduction to Statistics for Social Sciences
  - QBA 201 Quantitative Business Analysis
  - NGN 111 Introduction to Statistical Analysis, plus MTH 243 Introduction to Mathematical Programming or a one-credit directed study in actuarial mathematics

#### Minor Electives (minimum of 6 credits)

Students must successfully complete a minimum of six credits in courses selected from the following list:

- MTH 307 Theory of Risk
- MTH 350 Introduction to Probability or  
MTH 360 Probability and Stochastic Processes
- MTH or STA 394/494 approved special topic courses in the areas of actuarial mathematics, probability and statistics. Consult the online course catalog or the online class schedule accessible via the AUS student information system to verify course classifications.
- ECO 351 Introduction to Econometrics or

FIN 330 Investments or  
FIN 389 Advanced Financial Modeling or  
one 400-level course in FIN

### Minor in Applied and Computational Mathematics

Students enrolling in the applied and computational mathematics minor should have normally completed a minimum of 30 credits of course work and be in good academic standing.

The following rules apply:

- The minor consists of a minimum of 18 credits, including at least nine credits in courses at or above the 300 level.
- At least nine credits of the 18 credits required for the minor must be taken in residence at AUS.
- At least six credits of the nine credits at or above the 300 level must be taken in residence at AUS.
- A minimum GPA of 2.00 must be earned in courses completed to satisfy the minor.

Students seeking a minor in applied and computational mathematics must successfully complete the following courses or their equivalent. All course prerequisites must be satisfied.

This minor is not open to students majoring in mathematics.

#### Minor Requirements (12 credits)

- MTH 205 Differential Equations
- MTH 221 Linear Algebra
- MTH 343 Numerical Analysis I or  
CVE 325 Numerical Methods in Engineering or  
MCE 325 Numerical Methods in Engineering
- MTH 351 Methods of Applied Mathematics

#### Minor Electives (minimum of 6 credits)

Students must successfully complete two courses for a minimum of six credits as follows:

- a minimum of three credits in approved 300-level or above MTH and/or STA courses. Consult the online course catalog or the online class schedule accessible via the AUS student information system to verify course classifications.
- a maximum of three credits from the following list:
  - ECO 451 Advanced Econometrics
  - ECO 452 Economic Forecasting
  - ELE 311 Electromagnetics
  - ELE 455 Digital Image Processing
  - ELE 456 Pattern Recognition

- INE 323 Stochastic Processes and Simulation
- INE 415 Design of Experiments
- MCE 482 Intermediate Fluid Mechanics

### Department of Physics

Ali Alnaser, Head

#### Faculty

Shahin AbdulNabi  
Randa Asa'd  
Mehmet Egilmez  
Sami El-Khatib  
Nidhal Guessoum  
Nasser Hamdan  
Asad Hasan Jaidi  
Tariq Majeed  
Said Sakhi  
Yousef Salamin  
Isra Siry  
Raza Syed

The central aim of the Department of Physics is to provide students of engineering and other applied sciences with a solid grounding in physics, which is essential for progress in their respective fields of study, and to contribute to the Bachelor of Science in Environmental Sciences program. The department also offers courses on conceptual physics and astronomy as general science education requirements.

#### Minor in Applied Physics

The minor in applied physics offers interested science and engineering students the opportunity to further their knowledge in the areas of space physics, physics of lasers, and semiconductors. Interested students must seek the approval of the head of the Department of Physics. Students enrolling in the applied physics minor should have normally completed a minimum of 30 credits of course work and be in good academic standing.

The following rules apply:

- The minor consists of a minimum of 18 credits, including at least nine credits in courses at or above the 300 level.
- At least nine credits of the 18 credits required for the minor must be taken in residence at AUS.
- At least six credits of the nine credits at or above the 300 level must be taken in residence at AUS.
- A minimum GPA of 2.00 must be earned in courses completed to satisfy the minor.

Students seeking a minor in applied physics must successfully complete the following courses or their equivalent. All course prerequisites must be satisfied.

**Minor Requirements (9 credits)**

- PHY 101 General Physics I or PHY 102 General Physics II
- PHY 106 General Physics III or PHY 113 Introduction to Astrophysics
- PHY 201 Modern Physics

**Minor Electives (minimum of 9 credits)**

Students must successfully complete a total of nine credits of electives as follows:

*Physics Elective Courses (a minimum of 3 credits)*

- PHY 301 Energy Sources
- PHY 303 Atmospheric Physics
- PHY 305 Modern Optics and Lasers
- PHY 313 Satellites and Space Physics
- any approved 300-level or above PHY courses. Consult the online course catalog or the online class schedule accessible via the AUS student information system to verify course classifications.

*Physics-Related Elective Courses (a maximum of 6 credits)*

- CHM 330 Physical Chemistry I or CHE 214 Chemical Engineering Thermodynamics I
- CHM 332 Physical Chemistry III
- ELE 311 Electromagnetics
- MCE 311 Engineering Measurements
- MCE 344 Heat Transfer

**Department of Writing Studies**

Daniel Fredrick, Interim Head

**Faculty**

Alaanoud Abusalim  
Neslihan Bilikozen  
Randa Bou-Mehdi  
Brad Curabba  
Greg Duran  
Maria Eleftheriou  
Reem El Saadi  
Daniel Frederick  
Neena Gandhi  
Bruce Gatenby  
Christopher Horger  
Suzan Munday  
Ozgur Parlak  
Zofia Reid  
Lynne Ronesi  
Sana Sayed  
Lelania Sperrazza  
Barbara Elizabeth Stewart  
Greg Vanderpyl  
Christopher Weagle

The Department of Writing Studies (DWS) teaches students the critical thinking skills and rhetorical strategies that are the foundation of academic writing. Focusing specifically on argument, persuasion and the critique of academic texts, DWS courses prepare students for the challenges of academic writing across the university curriculum by emphasizing the writing process, peer review and critical reading skills. Students learn to express and support ideas using inductive and deductive reasoning and support strategies based on competence in library research. They also develop the critical thinking and reading abilities necessary to analyze, evaluate and critique written academic texts. These writing and critical thinking skills provide students with a foundation for success in both their academic lives and professional careers.

**Performing Arts Program**

Anthony Tassa, Coordinator

**Faculty**

Amer Didi  
Cari Earnhart  
Leopoldo Erice  
Catherine Moran  
John Perkins  
Ted Rhyner

**Program Mission**

The mission of the Performing Arts Program is to examine and promote music and theatre by providing students with opportunities to explore how the performing arts foster creativity and promote inclusiveness, diversity and understanding in an increasingly interdependent world. Through their course of study, students learn to think critically, engage creatively and collaborate effectively. Performing arts skills are life skills, leading to enhanced life options and diversified employability.

**Program Goals**

The Performing Arts Program seeks to provide students with:

- knowledge of various genres and perspectives of music and music theory
- the ability to distinguish the construction of music
- musicianship skills that can be applied to individual and ensemble performances
- an appreciation for the art and craft of theatre through production and presentation
- a thorough understanding of theatrical elements gained through performance and theoretical studies

**Minor in Music**

The minor in music aspires to promote an understanding of the role of music in relation to its cultural and social context. Music courses provide students with essential training in the performing arts and contribute to enhancing the program of liberal studies that forms the core of an AUS education.

The following rules apply:

- The minor consists of a minimum of 18 credits in music, including at least nine credits in courses at or above the 300 level.
- At least nine credits of the 18 credits required for the minor must be taken in residence at AUS.
- At least six credits, of the nine credits at or above the 300 level must be taken in residence at AUS.
- A minimum GPA of 2.00 must be earned in courses completed to satisfy the minor.

Students seeking a minor in music must successfully complete the following courses or their equivalent. All course prerequisites must be satisfied. Auditions are required for performance courses.

**Minor Requirements (9 credits)**

Students must successfully complete nine credits as follows:

- MUS 100 Music Appreciation or MUS 101 Sight Singing and Written Music Theory or MUS 102 Oud and Buzuk Class or MUS 170 Class Piano I
- MUS 200 Introduction to European Classical Music or MUS 202 Survey of World Music or MUS 203 Introduction to Arabic, Turkish and Persian Classical Music or MUS 270 Class Piano and History
- any combination of the following courses for a total of three credits:
  - MUS 252 Applied Lessons (repeatable up to three times)
  - MUS 255 Music Ensemble (repeatable up to three times)

**Minor Electives (minimum of 9 credits)**

Students must successfully complete a minimum of nine credits as follows:

- a minimum of three credits from any 300-level or above MUS course not used as minor requirements
- a maximum of 6 credits from any approved 300-level or above interdisciplinary studies (IDS) or THE courses. Consult the online course catalog or the online class schedule accessible via the AUS student

information system to verify course classifications.

### Minor in Theatre

The minor in theatre aspires to promote an understanding of the role of theatre in relation to its cultural, social and political context. Theatre courses provide students with essential training in the performing arts and related disciplines, and contribute to enhancing the program of liberal studies that forms the core of an AUS education.

The following rules apply:

- The minor consists of a minimum of 18 credits in theatre, including at least nine credits in courses at or above the 300 level.
- At least nine credits of the 18 credits required for the minor must be taken in residence at AUS.
- At least six credits of the nine credits at or above the 300 level must be taken in residence at AUS.
- A minimum GPA of 2.00 must be earned in courses completed to satisfy the minor.

Students seeking a minor in theatre must successfully complete the following courses or their equivalent. All course prerequisites must be satisfied. Auditions are required for rehearsal and performance courses.

#### Minor Requirements (9 credits)

Students must successfully complete nine credits from the following:

- THE 101 Theatre Appreciation or THE 102 Dramatic Process or THE 141 Stagecraft
- THE 230 Dramatic Literature or THE 242 Elements of Theatrical Design or THE 246 Costume Design or THE 253 Musical Theatre Production or THE 255 Voice and Movement I
- any combination of the following courses for a total of three credits:
  - THE 245 Technical Theatre Lab (repeatable up to three times)
  - THE 251 Rehearsal and Performance (repeatable up to three times)

#### Minor Electives (minimum of 9 credits)

Students must successfully complete a minimum of nine credits from the following, with a minimum of three credits from 300-level or above THE courses:

- any 300-level or above THE courses not used as minor requirements
- ENG 303 Shakespeare's Plays
- ENG 316 Modern Drama and Beyond

- ENG 393 Shakespeare on Film
- any approved 300-level or above MUS courses. Consult the online course catalog or the online class schedule accessible via the AUS student information system to verify course classifications.

### Other Minors Offered by the College of Arts and Sciences

#### Minor in Middle Eastern Studies

Imed Ben Jemaa Nsiri, Coordinator

The minor in Middle Eastern studies enables students to design their own course of study in an area of Middle Eastern studies that spans the Arab nations and Islamic civilization. The minor requires students to satisfy the Arabic heritage requirement and complete a course in Arabic language. Along with this, students, in consultation with the minor advisor, design their course of study from a host of courses across the university's undergraduate catalog.

The following rules apply:

- The minor consists of a minimum of 18 credits, including at least nine credits in courses at or above the 300 level.
- At least nine credits of the 18 credits required for the minor must be taken in residence at AUS.
- At least six credits of the nine credits at or above the 300 level must be taken in residence at AUS.
- A minimum GPA of 2.00 must be earned in courses completed to satisfy the minor.

Students seeking a minor in Middle Eastern studies must successfully complete the following courses or their equivalent. All course prerequisites must be satisfied.

#### Minor Requirements (6 credits)

##### Arabic Language Requirement (3 credits)

Students must successfully complete one course as follows:

- for native and near-native speakers of Arabic
  - ARA 308 Arabic Grammar in Use
  - ARA 309 Business Arabic
  - ARA 314 Media Arabic
  - ARA 404 Working with MSA Texts
- for non-native speakers of Arabic
  - ARA 106 Elementary Arabic II
  - ARA 203 Intermediate Arabic I
  - ARA 204 Intermediate Arabic II
  - ARA 220 Composition for Non-Native Speakers of Arabic

##### Arabic Heritage Requirement (3 credits)

Students must successfully complete one course from the following list:

- ARA 101 Introduction to Arabic Heritage I
- ARA 102 Introduction to Arabic Heritage II
- ARA 103 Arabic Music in a Historical Context

#### Minor Electives (minimum of 12 credits)

Students must successfully complete a minimum of 12 credits from at least two of the following tracks. No more than six credits can be taken in any single track and at least nine of the 12 credits must be at the 300 level or above.

##### Islamic Architecture and Urbanism Track

- ARC 225 Islamic Art and Architecture
- ARC 424 Evolution of Cities
- ARC 474 Issues in Contemporary Urban Design
- IDE 223 History and Theory of Interior Design: Global Issues
- any approved special topic course. Consult the online course catalog or the online class schedule accessible via the AUS student information system to verify course classifications.

##### Arabic Studies Track

###### Arabic Language

- ARA 340 The Social Context of Arabic
- any approved special topic course. Consult the online course catalog or the online class schedule accessible via the AUS student information system to verify course classifications.

###### Arabic Literature

- ARA 201 Arabic Literature in Translation
- ARA 206 Modern Arabic Prose
- ARA 209 Modern Arab History Through Literature
- ARA 312 Modern Arabic Literature: Prose and Poetry
- ARA 332 Women Writers from the Gulf
- ARA 350 Literature of the Arabian Gulf
- ARA 403 War and Peace in Arabic Literature and Film
- any approved special topic course. Consult the online course catalog or the online class schedule accessible via the AUS student information system to verify course classifications.

Arab/Islamic Culture and Civilization

- ARA 240 Arab-Islamic Culture and Civilization
- ARA 281 The Art of Qur'anic Recitation (Tajweed)
- ARA 302 Arab Identity and Thought
- ARA 303 Classical Arab/Islamic Culture
- ARA 380 Sufism: Readings in Islamic Mysticism
- ARA 383 Islamic Law and Jurisprudence
- ARA 385 Islamic Texts in Translation
- ARA 402 Qur'anic Studies
- PHI 310 Islamic Political Philosophy
- any approved special topic course. Consult the online course catalog or the online class schedule accessible via the AUS student information system to verify course classifications.

*History, Economics and Politics of the Middle East Track*

- ECO 315 Economics of the Middle East
- HIS 204 Modern Arab History
- HIS 307 Modern Palestinian History
- HIS 308 Ottoman History
- HIS 310 Modern Gulf History
- HIS 311 America and the Middle East
- HIS 312 Modern Iranian History
- INS 310 The Middle East Meets the West
- INS 413 Political Economy of the Arab World
- INS 415 War and Peace in the Middle East
- PHI 202 Introduction to Islamic Philosophy
- any approved special topic course. Consult the online course catalog or the online class schedule accessible via the AUS student information system to verify course classifications.

*Islamic Finance and Economics Track*

- ACC 370 Accounting in Islamic financial institutions
- ECO 315 Economics of the Middle East
- FIN 370 Fundamental of Islamic Finance
- FIN 380 Islamic Markets, Money and Financial Institutions
- FIN 385 Islamic Corporate Finance
- any approved special topic course. Consult the online course catalog or the online class schedule accessible via the AUS student information system to verify course classifications.







# College of Engineering

## Dean

Richard Schoephoerster

## Associate Deans

Hany El Kadi

Mohamed El-Tarhuni

The College of Engineering (CEN) offers bachelor of science (BS) degrees in several engineering disciplines and in computer science. These are all comprehensive curricula that emphasize quality, communication skills, application to real-world situations, interdisciplinary learning and team building. AUS College of Engineering graduates are well equipped to face the future. A degree from the AUS College of Engineering gives its holder access to a learned profession with opportunities for practice in industry, government, business, consulting and entrepreneurship. AUS engineering graduates are also well qualified for advanced studies toward a master's or doctoral degree leading to careers in research and development, engineering management and higher education teaching. Additionally, an engineering education is an excellent avenue to other professions such as law, medicine and public service.

## ABET Accreditation

The bachelor of science degrees in chemical engineering, civil engineering, computer engineering, computer science, electrical engineering and mechanical engineering offered by the College of Engineering are accredited by ABET (<http://www.abet.org>). ABET is the recognized accreditor for college and university programs in applied science, computing, engineering and technology in the United States. ABET is a federation of 35 professional and technical societies representing these fields. ABET currently accredits approximately 3,600 programs at more than 700 colleges and universities in 29 countries worldwide and is recognized by the Council for Higher Education Accreditation in Washington, DC.

These six College of Engineering undergraduate programs are the first in the region and the second outside the US to receive this prestigious accreditation. ABET accreditation demonstrates the university's continuing commitment to the quality of its programs so that CEN students are ready to practice once they graduate and employers can count on AUS graduates to meet their needs.

## Mission Statement

American University of Sharjah is a dynamic institution of higher education. As such, it offers its students an innovative educational environment. The university's degree programs are adapted to the needs of the citizenry of the United Arab Emirates and the Gulf Cooperation Council (GCC). In order to fulfill current and projected needs while maintaining an American-style curriculum, the College of Engineering has the following mission:

The College of Engineering at American University of Sharjah aspires to be the recognized leader in engineering education in Sharjah, across the UAE and the GCC, and to become a top choice by students, parents, faculty and staff who choose to contribute to engineering higher education.

The college's degree programs offer the highest level of professional and technical preparation, global preparedness and leadership development in an environment of English-language instruction and partnership between faculty and students. All programs offer state-of-the-art technology, understanding and experimentation with design and problem-solving processes, and excellent opportunities to experience real-world and research project involvement.

## Objectives and Outcomes

In order to help students be successful at AUS, the major educational objectives of the College of Engineering are to:

- assist students in achieving their potential through preparation for a successful and satisfying career in the engineering and computer science professions
- prepare well-educated graduates able to serve in regional and international practice with consideration of multicultural environments
- prepare a bachelor of science-level graduate to be successful in graduate studies in a related area
- offer undergraduate and graduate academic programs that are critical to the sustainable development of society and the quality of life in the region
- offer broad-based curricula worthy of accreditation nationally and internationally due to a thorough, balanced foundation in math, science and design principles, as well as the humanities and social sciences

The graduates of the College of Engineering are educated to be able to demonstrate the following outcomes:

- approach the system stages of problem identification, needs analysis, requirements definition, design, implementation, maintenance and phase-out using the lifecycle concept
- write, read and speak in private and public to peers, supervisors and employers in a coherent, organized fashion that demonstrates understanding of problems and solutions that are practical and implementable
- utilize in a variety of settings the fundamentals of math, science and engineering principles
- keep abreast of and utilize in their work current computer and software technologies that are relevant to the graduates' chosen fields
- achieve a recognized level of engineering practice and certification available to an engineering graduate serving in professional practice
- participate in, as well as lead, team-based activities using current technology, engineering practices and science principles
- make and implement ethical choices in all professional endeavors

## Curriculum

The curriculum for each of the college's degree programs has its own distinguishable features; however, common threads of design and problem solving have been woven into the fabric of the curricula to ensure that each student receives the very best education tailored to the needs of the Middle Eastern student and industry. All freshmen pursuing an engineering degree take the same courses to ensure a sound, broadly based preparation in general education knowledge as well as a firm understanding of the principles and practices of all engineering disciplines. The freshman year for computer science is slightly different.

The engineering and computer science programs are intended to prepare graduates for regional as well as worldwide practice. The programs are designed to satisfy the general university requirements and to meet the program criteria adopted by accreditation agencies both in the United Arab Emirates and in the United States. The degree programs emphasize learning the effective use of technology, information resources and communication methods, as well as instill in their graduates leadership

qualities anchored in moral and ethical principles. The college's faculty members provide an educational experience that is equivalent to those offered by leading state and private universities in the United States and Europe.

College of Engineering graduates will work in an international and very competitive environment. Graduates must possess English fluency in both written and spoken forms; hence, instruction and interaction between students and faculty members are conducted in English. English fluency is especially critical as more multinational corporations adopt English as the corporate language.

In various formats, the oral, written, graphical and software communication skills of a student are developed, demonstrated and assessed. This is accomplished foremost in the required laboratories, research papers, senior projects and professional training. Also, independent study one-on-one with faculty members is a valuable option available to the student. The critical use of paper and electronic forms of published literature is taught from the first semester in all curricula in the College of Engineering. Throughout the degree plan, students must use and are assessed on their ability to discover, understand and critically judge the quality of publicly available literature.

Well-equipped computer laboratories are provided for students during and after classes and laboratories. The menu of software systems available for design, analysis and synthesis tasks in classes, laboratories, senior projects and courses in other parts of campus is determined by what the faculty members teach in all of their courses. Each student must complete a team-based extensive senior project focused on a real-world problem that requires specification, design, analysis and synthesis as the problem-solving process is utilized. Faculty members serve as close advisors and monitor each student's progress. Additionally, each student must complete a summer professional training program in order to graduate. Many employers participate in this valuable experience.

### **Assessment and Evaluation of Curriculum**

The College of Engineering has developed and implemented the Course Assessment and Improvement Process (CAIP). It is a comprehensive approach to the collection of student and faculty assessments of course material, delivery and student perception of learning. The results are used to improve course and laboratory content, delivery methods, testing and practical applications at the course level, for

technical and supporting areas, as well as at the degree levels. The result is an ongoing process whereby students can be assured of improvements on a continuing basis.

### **Admission to Second Year**

#### *Engineering Programs*

The first year, which provides a base in physics, chemistry, engineering and mathematics, is common to all students in the engineering programs. Students with acceptable grades can change majors within the engineering programs with no credit loss during the first year.

Formal admission to a major at the second-year level in all engineering programs requires meeting the following conditions:

- a cumulative grade point average (CGPA) of 2.00
- a minimum grade of C- (1.70) in each of the following courses: NGN 110 Introduction to Engineering and Computing and WRI 101 Academic Writing I
- a minimum grade point average of C (2.00) and a minimum grade of C- (1.70) in at least 15 credits from the following list of required freshman-level science and mathematics courses: MTH 103, MTH 104, PHY 101, PHY 101L, PHY 102, PHY 102L, CHM 101 and NGN 111

#### *Computer Science Program*

Formal admission to the second-year level in computer science requires meeting the following conditions:

- a cumulative grade point average (CGPA) of 2.00
- a minimum grade of C- (1.70) in each of the following courses: NGN 110 Introduction to Engineering and Computing and WRI 101 Academic Writing I
- a minimum grade point average of C (2.00) and a minimum grade of C- (1.70) in MTH 103 or MTH 104 and in a four-credit science course. Students could complete PHY 101 and PHY 101L or PHY 102 and PHY 102L to meet the four credit science course requirement.

### **Graduation Requirements**

#### *Engineering Programs*

Each engineering program is designed for completion in four years, including two summer terms of study (six weeks each) and a summer professional training. Students whose academic backgrounds require the completion of preparatory courses in mathematics, English or physics will require more than four years to complete the engineering program. Even without

preparatory courses, many students opt to take additional time to complete their program.

During the final year, a senior design (capstone) project must be completed over a two-course sequence.

Practical training in an engineering environment strengthens the student's preparation for engineering practice; therefore, all students must complete a minimum of five weeks' professional training.

Except for computer engineering students, all engineering majors are required to take the Fundamentals of Engineering (FE) exam administered by the National Council of Examiners for Engineering and Surveying (NCEES) in the USA. Computer engineering students are required to take a comprehensive assessment examination (CAE).

To qualify for graduation from an engineering program, students must successfully complete the following minimum requirement:

- a minimum of 140 credits, as follows:
  - a minimum of 44 credits of general education requirements
  - a minimum of 90 credits in major requirements and major electives, which include courses in mathematics, sciences, engineering sciences and engineering design that ensure preparation for professional practice
  - a minimum of six credits of free electives
  - a professional training working in a professional environment for at least five weeks after the third year
- a minimum cumulative GPA of 2.00
- take the FE/CAE exam, as applicable

#### *Computer Science Program*

The computer science program is designed for completion in four years, including a summer professional training. Students whose academic backgrounds require the completion of preparatory courses in mathematics, English or physics will require more than four years to complete the program.

During the final year, a senior design (capstone) project must be completed over a two-course sequence. Practical training in a computer science professional environment strengthens the student's preparation for professional practice.

To qualify for graduation with the Bachelor of Science in Computer Science, students must successfully complete the following minimum requirements:

- a minimum of 130 credits, as follows:
  - a minimum of 48 credits of general education requirements
  - a minimum of 73 credits of major requirements and major electives
  - a minimum of 9 credits of free electives
  - a professional training working in a professional environment for at least five weeks after the third year
- a cumulative GPA of 2.00 or better

### Degree Programs

The College of Engineering offers the following undergraduate degree programs:

- Bachelor of Science in Chemical Engineering
- Bachelor of Science in Civil Engineering
- Bachelor of Science in Computer Engineering
- Bachelor of Science in Computer Science
- Bachelor of Science in Electrical Engineering
- Bachelor of Science in Industrial Engineering
- Bachelor of Science in Mechanical Engineering

For details on the College of Engineering graduate programs, please refer to the *AUS Graduate Catalog*.

### Minor Offerings

The College of Engineering offers the following minors:

- aerospace engineering
- biomedical engineering
- computer engineering
- computer science
- electrical engineering
- engineering management
- environmental and water engineering
- mechanical engineering
- mechatronics engineering
- petroleum engineering
- renewable energy

Details on each minor are provided later in this section.

## Department of Chemical Engineering

Naif Darwish, Head

### Faculty

Nabil Abdel-Jabbar  
Dana Abouelnasr  
Hussain Ahmed  
Sameer Al-Asheh  
Amani Al-Othman  
Rachid Chebbi  
Ghaleb Hussein  
Taleb Ibrahim  
Yassir Makkawi  
Paul Nancarrow  
Rana Sabouni  
Zarook Shareefdeen

## Bachelor of Science in Chemical Engineering (BSCHE)

The Bachelor of Science in Chemical Engineering program is accredited by the Commission for Academic Accreditation of the Ministry of Education's Higher Education Affairs Division in the United Arab Emirates, as well as the Engineering Accreditation Commission of ABET, <http://www.abet.org>.

Chemical engineers have many different responsibilities including design, analysis, research and development, supervision, production and sales. They manage the development of new technologies and products; they develop safe and environmentally benign processes that are efficient and economical to operate; and they direct the design, construction and operation of new plants, ranging from pilot plants to full-scale chemical facilities.

Chemical engineers are making unparalleled contributions in chemical and petrochemical processing, oil and gas facilities, water and energy sectors, food and pharmaceutical industries, pollution control and abatement, process automation, process control and modeling, and biochemical technology. The Department of Chemical Engineering offers a four-year program of study that prepares graduates to work in all areas of the chemical industry. Specifically, it is designed to help students in developing a basic knowledge in science, in engineering and in the fundamentals and practical knowledge of thermodynamics, fluid flow, heat transfer, mass transfer, reaction engineering, unit operation, process control, process simulation, plant design, process integration, cost estimation, pollution prevention and waste management.

### Mission Statement

The mission of the chemical engineering program at AUS is to prepare students for a technical career, to be innovative and ethically responsible, and to provide leadership in chemical engineering and related disciplines.

### Program Educational Objectives

The objectives of the chemical engineering program are to produce graduates who will:

- succeed in the chemical engineering profession through technical competence, effective communication, teamwork and leadership
- maintain a lifelong interest in learning for personal and professional development
- practice engineering in a manner that is ethically responsible and consistent with regulatory and social concerns

### Student Outcomes

Upon graduation, an AUS graduate in chemical engineering should demonstrate:

- an ability to apply knowledge of mathematics, science and engineering
- an ability to design and conduct experiments, as well as to analyze and interpret data
- an ability to design a system, component or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability and sustainability
- an ability to function on multidisciplinary teams
- an ability to identify, formulate and solve engineering problems
- an understanding of professional and ethical responsibility
- an ability to communicate effectively
- the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental and societal context
- a recognition of the need for and an ability to engage in lifelong learning
- knowledge of contemporary issues
- an ability to use the techniques, skills and modern engineering tools necessary for engineering practice

### Admission to the Program

Admission to the program follows the university's undergraduate admission requirements.

AUS students transferring into the program must be in good academic standing and must meet the

requirements set by the program. In the event that there are more qualified AUS students transferring into the major than available spaces, students will be admitted based on academic achievement. For more details, please check with the head of the department or the college associate dean. For information on how to submit a change of major request, please refer to Fields of Study/Change of Major under the Academic Policies and Regulations section earlier in the catalog.

### Degree Requirements

Students seeking the BSChE degree must successfully complete the following minimum requirements:

- a minimum of 140 credits, as follows:
  - a minimum of 44 credits in general education requirements
  - 81 credits of major requirements, including a professional training with an industrial firm for at least five weeks after the third year.
  - a minimum of nine credits of major electives
  - a minimum of six credits of free electives
- a minimum CGPA of 2.00
- take the Fundamentals of Engineering (FE) exam administered by the National Council of Examiners for Engineering and Surveying (NCEES) in the USA.

### General Education Requirements (minimum of 44 credits)

Students must successfully complete a minimum of 44 credits as follows:

- a minimum of 18 credits in courses meeting the core general education requirements:
  - history and culture of the Arab world requirement: three to six credits
  - culture in a critical perspective requirement: three to six credits
  - arts and literature requirement: three to six credits
  - human interaction and behavior requirement: six to nine credits
- natural sciences requirement: CHM 101, PHY 101 and PHY 101L
- mathematics requirement: MTH 103 and MTH 104
- statistics requirement: satisfied through NGN 111
- communication requirement: a minimum of 12 credits in 100-level or above writing (WRI)/English (ENG) courses, including ENG 204 and ENG 207
- ethical understanding requirement: satisfied through CHE 432
- discipline specific writing intensive course requirement: satisfied through CHE 206
- oral proficiency requirement: satisfied through CHE 491
- information literacy requirement: satisfied through WRI 102 and ENG 204
- computer literacy requirement: satisfied through CHE 240

### Major Requirements (81 credits)

- CHE 205 Principles of Chemical Engineering I
- CHE 206 Principles of Chemical Engineering II
- CHE 214 Chemical Engineering Thermodynamics I
- CHE 230 Materials Science
- CHE 240 Computer Methods in Chemical Engineering
- CHE 300 Fluid Mechanics
- CHE 304 Chemical Engineering Thermodynamics II
- CHE 307 Heat Transfer
- CHE 321 Chemical Reaction Engineering
- CHE 329 Mass Transfer
- CHE 332 Engineering Economy
- CHE 350 Chemical Engineering Laboratory I
- CHE 397 Professional Training in Chemical Engineering (also satisfied through NGN 497 Professional Experience in Engineering and Computing completed as a free elective)
- CHE 412 Separation Processes
- CHE 421 Chemical Process Dynamics and Control
- CHE 432 Process Design Safety and Economics
- CHE 451 Chemical Engineering Laboratory II
- CHE 452 Unit Operations and Control Laboratory
- CHE 490 Senior Design Project I
- CHE 491 Senior Design Project II
- CHM 102 General Chemistry II
- CHM 215 Organic Chemistry I
- CHM 217 Organic Chemistry Laboratory I
- CHM 331 Physical Chemistry II
- ELE 225 Electric Circuits and Devices
- MTH 203 Calculus III
- MTH 205 Differential Equations
- MTH 221 Linear Algebra
- NGN 110 Introduction to Engineering and Computing

- NGN 111 Introduction to Statistical Analysis
- PHY 102 General Physics II
- PHY 102L General Physics Laboratory II

In addition, students must successfully complete one chemistry-related course for a minimum of three credits selected from the following list:

- CHM 216 Organic Chemistry II
- CHM 242 Quantitative Analysis
- CHM 350 Biochemistry
- ENV 252 Environmental Chemistry

### Major Electives (minimum of 9 credits)

Students must successfully complete a minimum of nine credits in courses selected from the following list, with a minimum of six credits in CHE courses:

- BME 420 Biomedical Electronics I
- BME 422 Biomedical Imaging
- CHE 434 Petroleum Refining Processes
- CHE 436 Natural Gas Processing
- CHE 443 Design and Analysis of Experiments
- CHE 461 Air Pollution
- CHE 467 Corrosion
- CHE 470 Waste Management and Control in Chemical Engineering
- CHE 472 Water and Wastewater Treatment Design
- CHE 481 Fundamentals of Biomedical Engineering
- CHE 494 Special Topics in Chemical Engineering
- CHM 332 Physical Chemistry III
- CHM 345 Instrumental Analysis
- CHM 431 Biophysical Chemistry
- EGM 361 Management for Engineers
- EGM 362 Engineering Project Management
- PET 305 Fundamentals of Petroleum Operations

### Free Electives (minimum of 6 credits)

Students must successfully complete a minimum of six credits in courses at or above the 100 level, excluding MTH 101.

**Proposed Sequence of Study  
Bachelor of Science in Chemical Engineering (BSChE)**

FIRST YEAR (37 credits)			
Term	Course #	Course Title	Credit
Fall	CHM 101	General Chemistry I	4
	MTH 103	Calculus I	3
	NGN 110	Introduction to Engineering and Computing	2
	PHY 101	General Physics I	3
	PHY 101L	General Physics Laboratory I	1
	WRI 101	Academic Writing I	3
<b>Total</b>			<b>16</b>
Spring	MTH 104	Calculus II	3
	NGN 111	Introduction to Statistical Analysis	2
	PHY 102	General Physics II	3
	PHY 102L	General Physics Laboratory II	1
	WRI 102	Academic Writing II	3
	GER-Core	Human Interaction and Behavior	3
<b>Total</b>			<b>15</b>
Summer	MTH 205	Differential Equations	3
	GER-Core	History and Culture of the Arab World	3
<b>Total</b>			<b>6</b>
SECOND YEAR (39 credits)			
Term	Course #	Course Title	Credit
Fall	CHE 205	Principles of Chemical Engineering I	2
	CHE 230	Materials Science	3
	CHM 102	General Chemistry II	4
	ELE 225	Electric Circuits and Devices	3
	ENG 204	Advanced Academic Writing	3
	MTH 203	Calculus III	3
<b>Total</b>			<b>18</b>
Spring	CHE 206	Principles of Chemical Engineering II	3
	CHE 214	Chemical Engineering Thermodynamics I	3
	CHE 240	Computer Methods in Chemical Engineering	3
	CHM 215	Organic Chemistry I	3
	MTH 221	Linear Algebra	3
<b>Total</b>			<b>15</b>
Summer	ENG 207	Professional Communication for Engineers	3
	GER-Core	Culture in a Critical Perspective	3
<b>Total</b>			<b>6</b>

THIRD YEAR (32 credits)			
Term	Course #	Course Title	Credit
Fall	CHE 300	Fluid Mechanics	3
	CHE 304	Chemical Engineering Thermodynamics II	3
	CHE 307	Heat Transfer	3
	CHM 217	Organic Chemistry Laboratory I	1
	CHM/ENV	Chemistry-Related Course*	3
	GER-Core	Arts and Literature	3
	Total		16
Spring	CHE 321	Chemical Reaction Engineering	3
	CHE 329	Mass Transfer	3
	CHE 332	Engineering Economy	3
	CHE 350	Chemical Engineering Laboratory I	1
	CHM 331	Physical Chemistry II	3
	GER-Core	Human Interaction and Behavior	3
	Total		16
Summer	CHE 397	Professional Training in Chemical Engineering	0
*See list under Major Requirements			
FOURTH YEAR (32 credits)			
Term	Course #	Course Title	Credit
Fall	CHE 412	Separation Processes	3
	CHE 421	Chemical Process Dynamics and Control	3
	CHE 432	Process Design, Safety and Economics	3
	CHE 451	Chemical Engineering Laboratory II	1
	CHE 490	Senior Design Project I	1
	MJE	Major Elective	3
	FRE	Free Elective	3
Total		17	
Spring	CHE 452	Unit Operations and Control Laboratory	1
	CHE 491	Senior Design Project II	2
	MJE	Major Elective	3
	MJE	Major Elective	3
	GER-Core	Course Selected from General Education Core Requirements	3
	FRE	Free Elective	3
	Total		15

## Department of Civil Engineering

Robert Houghtalen, Head

### Faculty

Jamal Abdalla  
Akmal Abdelfatah  
Farid Abed  
Ghassan Abu-Lebdeh  
Aqeel Ahmed  
Mohamed AlHamaydeh  
Tarig Ali  
Adil Al-Tamimi  
Serter Atabay  
Mousa Attom  
Salwa Beheiry  
Magdi El-Emam  
Sameh El-Sayegh  
Kazi Parvez Fattah  
Rami Hawileh  
Zahid Khan  
Maruf Mortula  
Sami Tabsh  
Sherif Yehia

## Bachelor of Science in Civil Engineering (BSCE)

The Bachelor of Science in Civil Engineering program is accredited by the Commission for Academic Accreditation of the Ministry of Education's Higher Education Affairs Division in the United Arab Emirates, as well as the Engineering Accreditation Commission of ABET, <http://www.abet.org>.

The civil engineering program provides the necessary technical skills in mathematics, basic sciences, engineering sciences, engineering design, humanities and social sciences consistent with accreditation standards and national needs. The program provides critical learning for a broad foundation in structures, environmental engineering, geotechnical, materials, water resources, urban planning and transportation. Considerable emphasis is placed on group-based, open-ended

design projects to provide students with the necessary skills for creative teamwork and to prepare them professionally for diverse employment opportunities. Preparation for professional practice and graduate studies is accomplished through careful selection of professional and technical electives. Students are motivated to keep abreast of current technical developments, to improve communication skills, to use computer tools, to be aware of project constraints, and to develop and maintain high standards of ethics and professionalism. The civil engineering program provides an environment conducive to learning that stimulates both students and faculty.

### Mission Statement

The mission of the civil engineering program at AUS is to provide students with the highest level of technical preparation, social responsibility, leadership and lifelong learning skills

for successful careers in civil engineering. The department offers quality education based on a nationally and internationally recognized curriculum supported by well-equipped laboratories and state-of-the-art educational tools. The department provides a professional environment that fosters fairness, ethics, diversity, faculty development, quality research, and outreach with industry and public agencies.

### Program Educational Objectives

The objectives of the civil engineering program are to produce graduates who will:

- have successful careers in civil engineering and become independent thinkers, effective communicators, team members, decision makers and leaders in industry and public sectors
- understand the global, ethical and social implications of the civil engineering profession and promote public safety and environmental protection
- pursue advanced studies successfully and engage in continuing education and lifelong learning

### Student Outcomes

Upon graduation, an AUS graduate in civil engineering should demonstrate:

- an ability to apply knowledge of mathematics, science and engineering
- an ability to design and conduct experiments, as well as to analyze and interpret data
- an ability to design a system, component or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability and sustainability
- an ability to function on multidisciplinary teams
- an ability to identify, formulate and solve engineering problems
- an understanding of professional and ethical responsibility
- an ability to communicate effectively
- the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental and societal context
- a recognition of the need for and an ability to engage in lifelong learning
- knowledge of contemporary issues
- an ability to use the techniques, skills and modern engineering tools necessary for engineering practice
- an ability to explain basic concepts in management, business, public policy

and leadership, and the importance of professional licensure

### Admission to the Program

Admission to the program follows the university's undergraduate admission requirements.

AUS students transferring into the program must be in good academic standing and must meet the requirements set by the program. In the event that there are more qualified AUS students transferring into the major than available spaces, students will be admitted based on academic achievement. For more details, please check with the head of the department or the college associate dean. For information on how to submit a change of major request, please refer to Fields of Study/Change of Major under the Academic Policies and Regulations section earlier in the catalog.

### Degree Requirements

Students seeking the BSCE degree must successfully complete the following minimum requirements:

- a minimum of 140 credits, as follows:
  - a minimum of 44 credits in general education requirements
  - 84 credits of major requirements, including a professional training with an industrial firm for at least five weeks after the third year
  - a minimum of six credits of major electives
  - a minimum of six credits of free electives
- a minimum CGPA of 2.00
- take the Fundamentals of Engineering (FE) exam administered by the National Council of Examiners for Engineering and Surveying (NCEES) in the USA.

### General Education Requirements (minimum of 44 credits)

Students must successfully complete a minimum of 44 credits as follows:

- a minimum of 18 credits in courses meeting the core general education requirements:
  - history and culture of the Arab world requirement: three to six credits
  - culture in a critical perspective requirement: three to six credits
  - arts and literature requirement: three to six credits
  - human interaction and behavior requirement: six to nine credits
- natural sciences requirement: CHM 101, PHY 101 and PHY 101L
- mathematics requirement: MTH 103 and MTH 104

- statistics requirement: satisfied through NGN 111
- communication requirement: a minimum of 12 credits in 100-level or above writing (WRI)/English (ENG) courses, including ENG 204 and ENG 207
- ethical understanding requirement: satisfied through CVE 490
- discipline specific writing intensive course requirement: satisfied through CVE 491
- oral proficiency requirement: satisfied through CVE 491
- information literacy requirement: satisfied through WRI 102 and ENG 204
- computer literacy requirement: satisfied through CVE 211

### Major Requirements (84 credits)

- CVE 202 Construction Materials Laboratory
- CVE 211 Fundamentals of Graphics and Programming
- CVE 220 Statics
- CVE 221 Construction Materials and Quality Control
- CVE 223 Mechanics of Materials
- CVE 231 Geology
- CVE 240 Fluid Mechanics
- CVE 241 Elementary Surveying
- CVE 242 Field Plane Surveying
- CVE 263 Urban Transportation Planning
- CVE 267 Civil Engineering Cost Analysis
- CVE 301 Theory of Structures
- CVE 303 Geotechnical Engineering Laboratory
- CVE 304 Environmental and Water Engineering Laboratory
- CVE 310 Fundamentals of Structural Dynamics
- CVE 312 Structural Steel Design
- CVE 313 Reinforced Concrete Design
- CVE 325 Numerical Methods in Engineering
- CVE 331 Geotechnical Engineering Principles
- CVE 333 Geotechnical Engineering Design
- CVE 341 Water Resources Engineering
- CVE 351 Environmental Engineering
- CVE 363 Highway Design
- CVE 367 Project Estimating, Planning and Control
- CVE 397 Professional Training in Civil Engineering (also satisfied through NGN 497 Professional Experience in



Engineering and Computing completed as a free elective)

- CVE 490 Civil Engineering Design Project I
- CVE 491 Civil Engineering Design Project II
- MTH 203 Calculus III
- MTH 205 Differential Equations
- MTH 221 Linear Algebra
- NGN 110 Introduction to Engineering and Computing
- NGN 111 Introduction to Statistical Analysis
- PHY 102 General Physics II
- PHY 102L General Physics Laboratory II

### Major Electives (minimum of 6 credits)

Students must successfully complete a

minimum of six credits in courses selected from the following list:

- CVE 410 Computer Methods in Structural Analysis
- CVE 411 Structural Concrete Design
- CVE 414 Prestressed Concrete Design
- CVE 431 Fundamentals of Earthquake Engineering
- CVE 437 Advanced Concrete Technology
- CVE 441 Coastal Engineering
- CVE 442 Advanced Foundation Engineering
- CVE 446 Geotechnical Dam Engineering
- CVE 450 Physical and Chemical Processes in Environmental Engineering

- CVE 451 Urban Water Infrastructure Management
- CVE 452 Water Supply and Sewerage Engineering
- CVE 456 Traffic Engineering
- CVE 457 Airport Planning and Design
- CVE 463 Construction Management
- CVE 467 Building Construction Materials and Methods
- CVE 472 Geographic Information Systems
- CVE 494 Special Topics in Civil Engineering

### Free Electives (minimum of 6 credits)

Student must successfully complete a minimum of six credits in courses at or above the 100 level, excluding MTH101.

## Proposed Sequence of Study Bachelor of Science in Civil Engineering (BSCE)

FIRST YEAR (37 credits)			
Term	Course #	Course Title	Credit
Fall	CHM 101	General Chemistry I	4
	MTH 103	Calculus I	3
	NGN 110	Introduction to Engineering and Computing	2
	PHY 101	General Physics I	3
	PHY 101L	General Physics Laboratory I	1
	WRI 101	Academic Writing I	3
	<b>Total</b>		<b>16</b>
Spring	MTH 104	Calculus II	3
	NGN 111	Introduction to Statistical Analysis	2
	PHY 102	General Physics II	3
	PHY 102L	General Physics Laboratory II	1
	WRI 102	Academic Writing II	3
	FRE	Free Elective	3
	<b>Total</b>		<b>15</b>
Summer	MTH 205	Differential Equations	3
	GER-Core	History and Culture of the Arab World	3
	<b>Total</b>		<b>6</b>
SECOND YEAR (38 credits)			
Term	Course #	Course Title	Credit
Fall	CVE 211	Fundamentals of Graphics and Computer Programming	3
	CVE 220	Statics	3
	CVE 231	Geology	3
	CVE 241	Elementary Surveying	3
	CVE 242	Field Plane Surveying	1
	ENG 204	Advanced Academic Writing	3
	<b>Total</b>		<b>16</b>
Spring	CVE 202	Construction Materials Laboratory	1
	CVE 221	Construction Materials and Quality Control	3
	CVE 223	Mechanics of Materials	3
	CVE 240	Fluid Mechanics	3
	CVE 263	Urban Transportation Planning	3
	MTH 221	Linear Algebra	3
	<b>Total</b>		<b>16</b>
Summer	CVE 267	Civil Engineering Cost Analysis	3
	ENG 207	Professional Communication for Engineers	3
	<b>Total</b>		<b>6</b>

THIRD YEAR (32 credits)			
Term	Course #	Course Title	Credit
Fall	CVE 301	Theory of Structures	3
	CVE 303	Geotechnical Engineering Laboratory	1
	CVE 331	Geotechnical Engineering Principles	3
	CVE 341	Water Resources Engineering	3
	MTH 203	Calculus III	3
	GER-Core	Culture in a Critical Perspective	3
	<b>Total</b>		<b>16</b>
Spring	CVE 304	Environmental and Water Engineering Laboratory	1
	CVE 312	Structural Steel Design	3
	CVE 313	Reinforced Concrete Design	3
	CVE 325	Numerical Methods in Engineering	3
	CVE 351	Environmental Engineering	3
	GER-Core	Arts and Literature	3
	<b>Total</b>		<b>16</b>
Summer	CVE 397	Professional Training in Civil Engineering	0
FOURTH YEAR (33 credits)			
Term	Course #	Course Title	Credit
Fall	CVE 333	Geotechnical Engineering Design	3
	CVE 363	Highway Design	3
	CVE 367	Project Estimating, Planning and Control	3
	CVE 490	Civil Engineering Design Project I	1
	GER-Core	Human Interaction and Behavior	3
	FRE	Free Elective	3
	<b>Total</b>		<b>16</b>
Spring	CVE 310	Fundamentals of Structural Dynamics	3
	CVE 491	Civil Engineering Design Project II	2
	MJE	Major Elective	3
	MJE	Major Elective	3
	GER-Core	Human Interaction and Behavior	3
	GER-Core	Course Selected from General Education Core Requirements	3
	<b>Total</b>		<b>17</b>

## Department of Computer Science and Engineering

Fadi Aloul, Head

### Faculty

Raafat Aburukba  
Rana Ahmed  
Abdul-Rahman Al-Ali  
Gerassimos Barlas  
Khaled El-Fakh  
Taha Landolsi  
Tarik Ozkul  
Michel Pasquier  
Ghassan Qadah  
Assim Sagahyoon  
Tamer Shanableh  
Imran Zualkernan

## Bachelor of Science in Computer Engineering (BSCoE)

The Bachelor of Science in Computer Engineering program is accredited by the Commission for Academic Accreditation of the Ministry of Education's Higher Education Affairs Division in the United Arab Emirates, as well as the Engineering Accreditation Commission of ABET, <http://www.abet.org>.

The phenomenal growth of the computer engineering field has been fueled by rapid advances in integrated circuits, microprocessors, software and networking technologies. Many of the modern products and services used in our daily life have been developed by computer hardware and software engineers. The primary purpose of the computer engineering program is to educate students with an understanding of digital systems, programming languages, computer architecture, computer networks, computer applications in industry and software engineering. These topics bridge traditional electrical engineering and computer science curricula. Computer engineers design, build and maintain integrated computer-based systems for home, business, government and industrial use. The undergraduate program in computer engineering prepares students for a wide range of positions in business and government service, as well as higher education, and research and development roles.

The curriculum satisfies the needs of the engineering community, especially in the United Arab Emirates and the Gulf region. The program includes general education requirements and core requirements for all computer engineering students. In addition, technical and free elective courses must be completed. A summer professional training experience is required, as is a

senior design project accomplished over a two-semester period.

Required laboratory courses provide hands-on experience and support class work and the senior project. The laboratories are equipped with state-of-the-art hardware, software and networking equipment.

### Mission Statement

The mission of the computer engineering program at AUS is to educate students in the principles and modern practices of computer engineering, to prepare students to pursue a wide range of computer engineering careers, and to generate new knowledge by the pursuit of research in selected areas of computer engineering.

### Program Educational Objectives

The objectives of the computer engineering program are to produce graduates who will:

- have successful careers as computer engineers, and become effective communicators, team members and leaders in industry and public sectors
- continue their professional development through continuing education and advanced studies
- be engaged in the global, ethical and social aspects of the profession and have a positive impact on local, regional and global communities

### Student Outcomes

Upon graduation, an AUS graduate in computer engineering should demonstrate:

- an ability to apply knowledge of mathematics, science and engineering
- an ability to design and conduct experiments, as well as to analyze and interpret data
- an ability to design a system, component or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability and sustainability
- an ability to function on multidisciplinary teams
- an ability to identify, formulate and solve engineering problems
- an understanding of professional and ethical responsibility
- an ability to communicate effectively
- the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental and societal context
- a recognition of the need for and an ability to engage in lifelong learning

- knowledge of contemporary issues
- an ability to use the techniques, skills and modern engineering tools necessary for engineering practice

### Admission to the Program

Admission to the program follows the university's undergraduate admission requirements.

AUS students transferring into the program must be in good academic standing and must meet the requirements set by the program. In the event that there are more qualified AUS students transferring into the major than available spaces, students will be admitted based on academic achievement. For more details, please check with the head of the department or the college associate dean. For information on how to submit a change of major request, please refer to Fields of Study/Change of Major under the Academic Policies and Regulations section earlier in the catalog.

### Degree Requirements

Students seeking the BSCoE degree must successfully complete the following minimum requirements:

- a minimum of 140 credits, as follows:
  - a minimum of 44 credits in general education requirements
  - 78 credits of major requirements, including a professional training for at least five weeks after the third year
  - a minimum of 12 credits of major electives
  - a minimum of six credits of free electives
- a minimum CGPA of 2.00
- take a comprehensive assessment examination

### General Education Requirements (minimum of 44 credits)

Students must successfully complete a minimum of 44 credits as follows:

- a minimum of 18 credits in courses meeting the core general education requirements:
  - history and culture of the Arab world requirement: three to six credits
  - culture in a critical perspective requirement: three to six credits
  - arts and literature requirement: three to six credits
  - human interaction and behavior requirement: six to nine credits
- natural sciences requirement: CHM 101, PHY 101 and PHY 101L
- mathematics requirement: MTH 103 and MTH 104

- statistics requirement: satisfied through NGN 111
- communication requirement: a minimum of 12 credits in 100-level or above writing (WRI)/English (ENG) courses, including ENG 204 and ENG 207
- ethical understanding requirement: satisfied through COE 490
- discipline specific writing intensive course requirement: satisfied through COE 491
- oral proficiency requirement: satisfied through COE 491
- information literacy requirement: satisfied through WRI 102 and ENG 204
- computer literacy requirement: satisfied through COE 210

### Major Requirements (78 credits)

- COE 210 Programming I
- COE 211 Programming II
- COE 221 Digital Systems
- COE 241 Microcontrollers: Programming and Interfacing
- COE 311 Data Structures and Algorithms
- COE 312 Software Design for Engineers
- COE 341 Computer Architecture and Organization
- COE 370 Communications Networks
- COE 371 Computer Networks I
- COE 381 Operating Systems
- COE 397 Professional Training in Computer Engineering (also satisfied through NGN 497 Professional Experience in Engineering and Computing completed as a free elective)
- COE 410 Embedded Systems: Design and Applications
- COE 420 Software Engineering
- COE 424 Advanced Digital System Design
- COE 490 Design Project I
- COE 491 Design Project II
- ELE 211 Electric Circuits I
- ELE 241 Electronics I
- ELE 241L Electronics I Laboratory
- ELE 323 Signal Processing
- ELE 341 Electronics II
- ELE 360 Probability and Stochastic Processes
- MCE 225 Statics and Dynamics for Computer Engineers
- MTH 205 Differential Equations
- MTH 213 Discrete Mathematics
- MTH 221 Linear Algebra
- NGN 110 Introduction to Engineering and Computing
- NGN 111 Introduction to Statistical Analysis
- PHY 102 General Physics II
- PHY 102L General Physics Laboratory II

### Major Electives (minimum of 12 credits)

Students must successfully complete four three-credit courses from the following list of approved technical elective courses. At least three of the four courses should be from computer engineering (COE) courses.

- CMP 352 Human Computer Interaction
- CMP 354 Mobile Application Development
- CMP 394/494 approved special topics in Computer Science. Consult the online course catalog or the online class schedule accessible via the AUS student information system to verify course classifications.
- CMP 418 Multicore Computing
- CMP 433 Artificial Intelligence
- CMP 434 Multimedia Compression
- CMP 450 Object-Oriented Software Engineering
- CMP 451 Formal Specification Methods
- CMP 454 Software Testing and Quality Engineering
- CMP 472 Multimedia Computing
- COE 394/494 Special Topics in Computer Engineering
- COE 422 Database Systems
- COE 423 Computer Networks II
- COE 425 Modern Computer Organizations
- COE 427 Internet Computing
- COE 428 VLSI Design
- COE 431 Industrial Computer Systems
- COE 434 Wireless and Mobile Networks
- COE 444 Computer Security
- COE 445 Compiler Design
- COE 481 Real-time Industrial Networks
- COE 482 Soft Computing
- ELE 311 Electromagnetics
- ELE 432 Medical Instrumentation I
- ELE 441 Microelectronic Devices
- ELE 455 Digital Image Processing

### Free Electives (minimum of 6 credits)

Students must successfully complete a minimum of six credits in courses at or above the 100 level, excluding BIS 101 and MTH 101.

**Proposed Sequence of Study**  
**Bachelor of Science in Computer Engineering (BSCoE)**

FIRST YEAR (37 credits)			
Term	Course #	Course Title	Credit
Fall	CHM 101	General Chemistry I	4
	MTH 103	Calculus I	3
	NGN 110	Introduction to Engineering and Computing	2
	PHY 101	General Physics I	3
	PHY 101L	General Physics Laboratory I	1
	WRI 101	Academic Writing I	3
	<b>Total</b>		<b>16</b>
Spring	MTH 104	Calculus II	3
	NGN 111	Introduction to Statistical Analysis	2
	PHY 102	General Physics II	3
	PHY 102L	General Physics Laboratory II	1
	WRI 102	Academic Writing II	3
	FRE	Free Elective	3
	<b>Total</b>		<b>15</b>
Summer	MTH 205	Differential Equations	3
	GER-Core	History and Culture of the Arab World	3
	<b>Total</b>		<b>6</b>
SECOND YEAR (38 credits)			
Term	Course #	Course Title	Credit
Fall	COE 210	Programming I	3
	COE 221	Digital Systems	4
	ELE 211	Electric Circuits I	3
	ENG 204	Advanced Academic Writing	3
	MCE 225	Statics and Dynamics for Computer Engineers	2
	<b>Total</b>		<b>15</b>
Spring	COE 211	Programming II	3
	COE 241	Microcontrollers: Programming and Interfacing	4
	MTH 213	Discrete Mathematics	3
	MTH 221	Linear Algebra	3
	GER-Core	Culture in a Critical Perspective	3
	<b>Total</b>		<b>16</b>
Summer	ELE 241	Electronics I	3
	ELE 241L	Electronics I Laboratory	1
	ENG 207	Professional Communication for Engineers	3
	<b>Total</b>		<b>7</b>

THIRD YEAR (32 credits)			
Term	Course #	Course Title	Credit
Fall	COE 311	Data Structures and Algorithms	3
	COE 312	Software Design for Engineers	2
	COE 370	Communications Networks	3
	ELE 323	Signal Processing	3
	ELE 341	Electronics II	3
	GER-Core	Arts and Literature	3
	<b>Total</b>		<b>17</b>
Spring	COE 341	Computer Architecture and Organization	3
	COE 371	Computer Networks I	3
	COE 381	Operating Systems	3
	ELE 360	Probability and Stochastic Processes	3
	GER-Core	Human Interaction and Behavior	3
	<b>Total</b>		<b>15</b>
Summer	COE 397	Professional Training in Computer Engineering	0
FOURTH YEAR (33 credits)			
Term	Course #	Course Title	Credit
Fall	COE 410	Embedded Systems: Design and Applications	3
	COE 420	Software Engineering	3
	COE 424	Advanced Digital System Design	3
	COE 490	Design Project I	1
	MJE	Major Elective	3
	GER-Core	Human Interaction and Behavior	3
	<b>Total</b>		<b>16</b>
Spring	COE 491	Design Project II	2
	MJE	Major Elective	3
	MJE	Major Elective	3
	MJE	Major Elective	3
	GER-Core	Course Selected from General Education Core Requirements	3
	FRE	Free Elective	3
	<b>Total</b>		<b>17</b>

## Bachelor of Science in Computer Science (BSCS)

The Bachelor of Science in Computer Science program is accredited by the Commission for Academic Accreditation of the Ministry of Education's Higher Education Affairs Division in the United Arab Emirates, as well as the Computing Accreditation Commission of ABET, <http://www.abet.org>.

The program is designed to meet the growing needs for computer science experts in the rapidly evolving 21st century economy. It provides graduates with a strong computer science base that will enable them to capitalize on increasing career opportunities in the information technology sector, especially software-related fields; to expand the limits of their knowledge by pursuing further graduate studies; and

to explore innovative approaches to computer-related problems. A computer science degree from AUS provides the graduate with a highly demanded level of expertise, great mobility and flexibility, and a wide range of career choices in the broad software and information technology industry.

The program includes general education requirements and core requirements. In addition, technical and free elective courses are required. A senior design project is also completed in close coordination with a faculty advisor over a two-course sequence. A summer professional training experience is required.

### Mission Statement

The mission of the computer science program at AUS is to deliver a modern curriculum that will equip graduates with strong theoretical and practical

backgrounds to enable them to excel in the workplace and to be lifelong learners.

### Program Educational Objectives

The objectives of the computer science program are to produce graduates who will:

- have successful careers in the field of computer science
- be effective communicators, team members and leaders that add value to employers and businesses regionally and globally
- stay current in emerging technologies through training, self-learning and/or graduate studies
- be engaged in the ethical, legal and social issues faced in their workplace and contribute positively to the community

## Student Outcomes

Upon graduation, an AUS graduate in computer science should demonstrate:

- an ability to apply knowledge of computing and mathematics appropriate to the discipline
- an ability to analyze a problem, and identify and define the computing requirements appropriate to its solution
- an ability to design, implement and evaluate a computer-based system, process, component or program to meet desired needs
- an ability to function effectively on teams to accomplish a common goal
- an understanding of professional, ethical, legal, security and social issues and responsibilities
- an ability to communicate effectively with a range of audiences
- an ability to analyze the local and global impact of computing on individuals, organizations and society
- recognition of the need for and an ability to engage in continuing professional development
- an ability to use current techniques, skills and tools necessary for computing practice
- an ability to apply mathematical foundations, algorithmic principles and computer science theory in the modeling and design of computer-based systems in a way that demonstrates comprehension of the tradeoffs involved in design choices
- an ability to apply design and development principles in the construction of software systems of varying complexity

## Admission to the Program

Admission to the program follows the university's undergraduate admission requirements.

AUS students transferring into the program must be in good academic standing and must meet the requirements set by the program. In the event that there are more qualified AUS students transferring into the major than available spaces, students will be admitted based on academic achievement. For more details, please check with the head of the department or the college associate dean. For information on how to submit a change of major request, please refer to Fields of Study/Change of Major under the Academic Policies and Regulations section earlier in the catalog.

## Degree Requirements

Students seeking the BSCS degree must successfully complete the following minimum requirements:

- a minimum of 130 credits, as follows:
  - a minimum of 48 credits in general education requirements
  - 61 credits of major requirements, including a professional training for at least five weeks
  - a minimum of 12 credits of major electives
  - a minimum of nine credits of free electives
- a minimum CGPA of 2.00

### General Education Requirements (minimum of 48 credits)

Students must successfully complete a minimum of 48 credits as follows:

- a minimum of 18 credits in courses meeting the core general education requirements:
  - history and culture of the Arab world requirement: three to six credits
  - culture in a critical perspective requirement: three to six credits
  - arts and literature requirement: three to six credits
  - human interaction and behavior requirement: six to nine credits
- natural sciences requirement: a minimum of 12 credits from CHM, BIO or PHY. Two out of the three courses must be in the same area.
- mathematics requirement: MTH 103
- statistics requirement: STA 201
- communication requirement: a minimum of 12 credits in 100-level or above writing (WRI)/English (ENG) courses, including ENG 204 and ENG 207
- ethical understanding requirement: satisfied through CMP 235
- discipline specific writing intensive course requirement: satisfied through CMP 490
- oral proficiency requirement: satisfied through CMP 490
- information literacy requirement: satisfied through WRI 102 and ENG 204
- computer literacy requirement: satisfied through CMP 120

### Major Requirements (61 credits)

- CMP 120 Introduction to Computer Science I
- CMP 210 Digital Systems
- CMP 213 Discrete Structures
- CMP 220 Introduction to Computer Science II
- CMP 235 Ethics for Computing and Information Technology
- CMP 240 Introduction to Computer Systems

- CMP 256 GUI Design and Programming
- CMP 305 Data Structures and Algorithms
- CMP 310 Operating Systems
- CMP 320 Database Systems
- CMP 321 Programming Languages
- CMP 340 Design and Analysis of Algorithms
- CMP 350 Software Engineering
- CMP 397 Professional Training in Computer Science (also satisfied through NGN 497 Professional Experience in Engineering and Computing completed as a free elective)
- CMP 416 Internet and Network Computing
- CMP 490 Project in Computer Science I
- CMP 491 Project in Computer Science II
- COE 371 Computer Networks I
- MTH 104 Calculus II
- MTH 221 Linear Algebra
- MTH 343 Numerical Analysis I
- NGN 110 Introduction to Engineering and Computing
- STA 201 Introduction to Statistics for Engineering and Natural Sciences

### Major Electives (minimum of 12 credits)

Students must successfully complete a minimum of 12 credits in courses selected from the following list, with a minimum of nine credits from computer science (CMP) courses:

- CMP 352 Human Computer Interaction
- CMP 354 Mobile Application Development
- CMP 394/494 Special Topics in Computer Science
- CMP 418 Multicore Computing
- CMP 433 Artificial Intelligence
- CMP 435 Computer Security
- CMP 450 Object-oriented Software Engineering
- CMP 451 Formal Specification Methods
- CMP 452 Compiler Construction
- CMP 454 Software Testing and Quality Engineering
- CMP 472 Multimedia Computing
- COE 341 Computer Architecture and Organization
- COE 370 Communications Networks
- COE 394/494 approved special topics in Computer Engineering. Consult the online course catalog or the online class schedule accessible via the AUS

- student information system to verify course classifications.
- COE 423 Computer Networks II
- COE 425 Modern Computer Organizations
- COE 434 Wireless and Mobile Networks
- COE 482 Soft Computing

### Free Electives (minimum of 9 credits)

Students must successfully complete a minimum of nine credits of in courses at or above the 100 level, excluding BIS 101 and MTH 101.

### Proposed Sequence of Study Bachelor of Science Degree in Computer Science (BSCS)

FIRST YEAR (31 credits)			
Term	Course #	Course Title	Credit
Fall	MTH 103	Calculus I	3
	NGN 110	Introduction to Engineering and Computing	2
	WRI 101	Academic Writing I	3
	GER-Core	History and Culture of the Arab World	3
	GER-SCI	Natural Sciences	4
<b>Total</b>			<b>15</b>
Spring	CMP 120	Introduction to Computer Science I	3
	MTH 104	Calculus II	3
	WRI 102	Academic Writing II	3
	GER-Core	Culture in a Critical Perspective	3
	GER-SCI	Natural Sciences	4
<b>Total</b>			<b>16</b>
SECOND YEAR (35 credits)			
Term	Course #	Course Title	Credit
Fall	CMP 210	Digital Systems	4
	CMP 213	Discrete Structures	3
	CMP 220	Introduction to Computer Science II	3
	ENG 204	Advanced Academic Writing	3
	MTH 221	Linear Algebra	3
<b>Total</b>			<b>16</b>
Spring	CMP 235	Ethics for Computing and Information Technology	3
	CMP 256	GUI Design and Programming	3
	CMP 305	Data Structures and Algorithms	3
	STA 201	Introduction to Statistics for Engineering and Natural Sciences	3
	GER-Core	Arts and Literature	3
	GER-SCI	Natural Sciences	4
<b>Total</b>			<b>19</b>

THIRD YEAR (34 credits)			
Term	Course #	Course Title	Credit
Fall	CMP 240	Introduction to Computer Systems	4
	CMP 320	Database Systems	3
	CMP 321	Programming Languages	3
	CMP 340	Design and Analysis of Algorithms	3
	ENG 207	Professional Communication for Engineers	3
	GER-Core	Human Interaction and Behavior	3
<b>Total</b>			<b>19</b>
Spring	CMP 310	Operating Systems	3
	MTH 343	Numerical Analysis I	3
	CMP 350	Software Engineering	3
	COE 371	Computer Networks I	3
	GER-Core	Human Interaction and Behavior	3
<b>Total</b>			<b>15</b>
Summer	CMP 397	Professional Training in Computer Science	0
FOURTH YEAR (30 credits)			
Term	Course #	Course Title	Credit
Fall	CMP 416	Internet and Network Computing	3
	CMP 490	Project in Computer Science I	1
	MJE	Major Elective	3
	MJE	Major Elective	3
	FRE	Free Elective	3
	FRE	Free Elective	3
<b>Total</b>			<b>16</b>
Spring	CMP 491	Project in Computer Science II	2
	MJE	Major Elective	3
	GER-Core	Course Selected from General Education Core Requirements	3
	MJE	Major Elective	3
	FRE	Free Elective	3
<b>Total</b>			<b>14</b>

### Minor in Computer Engineering

Students enrolling in the computer engineering minor should have completed a minimum of 60 credits of course work and be in good academic standing.

The following rules apply:

- The minor consists of a minimum of 20 credits, including at least 10 credits in courses at or above the 300 level in computer engineering.
- At least 10 credits of the minor must be taken in residence at AUS.
- At least seven credits of the 10 credits at or above the 300 level must be taken in residence at AUS.
- A minimum GPA of 2.00 must be earned in the courses completed to satisfy the minor.

Students seeking a minor in computer engineering must successfully complete the following courses or their equivalent. All course prerequisites must be satisfied.

#### Minor Requirements (11 credits)

- COE 221 Digital Systems
- COE 241 Microcontrollers: Programming and Interfacing
- ELE 341 Electronics II

#### Minor Electives (minimum of 9 credits)

Students must successfully complete a minimum of nine credits from any 300-level or above COE courses, except COE 490 and COE 491.

### Minor in Computer Science

Students enrolling in the computer science minor should have normally

completed a minimum of 60 credits of course work and be in good academic standing.

The following rules apply:

- The minor consists of a minimum of 18 credits, including at least nine credits in courses at or above the 300 level in computer science.
- At least nine credits of the 18 credits required for the minor must be taken in residence at AUS.
- At least six credits of the nine credits at or above the 300 level must be taken in residence at AUS.
- A minimum GPA of 2.00 must be earned in courses completed to satisfy the minor.

Students seeking a minor in computer science must successfully complete the

following courses or their equivalent. All course prerequisites must be satisfied.

### Minor Requirements (9/12 credits)

- Computer engineering students: CMP 305, CMP 310 and CMP 350
- All other students: CMP 120, CMP 220, CMP 305 and MTH 213

### Minor Electives (minimum of 6/9 credits)

- Computer engineering students: Students must successfully complete a minimum of nine credits from any 300-level or above CMP courses not cross-listed with COE courses and excluding CMP 490 and CMP 491.
- All other students: Students must successfully complete a minimum of six credits from any 300-level or above CMP courses, excluding CMP 490 and CMP 491. Students may also take COE 370 to meet this requirement.

## Department of Electrical Engineering

Nasser Qaddoumi, Head

### Faculty

Lutfi Albasha  
 Hasan Al-Nashash  
 Khaled Assaleh  
 Maher Bakri-Kassem  
 Rached Dhaouadi  
 Ayman El-Hag  
 Mohamed El-Tarhuni  
 Qualid Hammi  
 Mohamed Hassan  
 Mahmoud Ibrahim Ismail  
 Hasan Mir  
 Shayok Mukhopadhyay  
 Ahmed Osman-Ahmed  
 Habib-ur Rehman  
 Mostafa Shaaban  
 Usman Tariq  
 Amer Zakaria

## Bachelor of Science in Electrical Engineering (BSEE)

The Bachelor of Science in Electrical Engineering program is accredited by the Commission for Academic Accreditation of the Ministry of Education's Higher Education Affairs Division in the United Arab Emirates, as well as the Engineering Accreditation Commission of ABET, <http://www.abet.org>.

The electrical engineering curriculum is a four-year program leading to a Bachelor of Science in Electrical Engineering (BSEE). The program is based on a solid foundation of science and mathematics needed to understand

advanced engineering topics and applications. The curriculum has been designed with the aim of providing breadth and depth of knowledge and significant design experience across the key areas of electrical engineering that evolve with society's needs. The Department of Electrical Engineering provides access to state-of-the-art resources in communications, control and instrumentation, digital signal processing, microelectronics, electromagnetics and microwaves, electric drives, power systems and biomedical electronics.

Faculty members are committed to helping students develop the intellectual, technological and personal skills that allow them to excel in both academia and electrical engineering careers. AUS electrical engineering graduates should be able to employ their knowledge, analysis and design skills to realize engineering systems and advance the frontiers of science and technology.

### Mission Statement

The mission of the electrical engineering program at AUS is to promote and maintain excellence in teaching and learning to equip students with strong core competencies in electrical engineering and empower them with the skills required for successful professional careers. The electrical engineering program promotes and enhances faculty expertise in research and development towards providing technical solutions for social challenges and community advancement through outreach activities and networking with regional and international organizations.

### Program Educational Objectives

The objectives of the electrical engineering program are to produce graduates who will:

- be a successful engineer as a member or a leader of a team that comprises a diverse group of professionals
- possess effective communication skills and continue to improve technical and non-technical competencies through engagement in professional activities, projects and/or graduate studies
- be a holistic citizen demonstrating social, ethical and professional responsibilities

### Student Outcomes

Upon graduation, an AUS graduate in electrical engineering should demonstrate:

- an ability to apply knowledge of mathematics, science and engineering

- an ability to design and conduct experiments, as well as to analyze and interpret data
- an ability to design a system, component or process to meet the desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability and sustainability
- an ability to function on multidisciplinary teams
- an ability to identify, formulate and solve engineering problems
- an understanding of professional and ethical responsibilities
- an ability to communicate effectively
- the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental and societal context
- a recognition of the need for and an ability to engage in lifelong learning
- knowledge of contemporary issues
- an ability to use the techniques, skills and modern engineering tools necessary for engineering practice

### Admission to the Program

Admission to the program follows the university's undergraduate admission requirements.

AUS students transferring into the program must be in good academic standing and must meet the requirements set by the program. In the event that there are more qualified AUS students transferring into the major than available spaces, students will be admitted based on academic achievement. For more details, please check with the head of the department or the college associate dean. For information on how to submit a change of major request, please refer to Fields of Study/Change of Major under the Academic Policies and Regulations section earlier in the catalog.

### Degree Requirements

Students seeking the BSEE degree must successfully complete the following minimum requirements:

- a minimum of 140 credits, as follows:
  - a minimum of 44 credits in general education requirements
  - 77 credits of major requirements, including a professional training for at least five weeks
  - a minimum of 13 credits of major electives
  - a minimum of six credits of free electives
- a minimum CGPA of 2.00

- take the Fundamentals of Engineering (FE) exam administered by the National Council of Examiners for Engineering and Surveying (NCEES) in the USA

### General Education Requirements (minimum of 44 credits)

Students must successfully complete a minimum of 44 credits as follows:

- a minimum of 18 credits in courses meeting the core general education requirements:
  - history and culture of the Arab world requirement: three to six credits
  - culture in a critical perspective requirement: three to six credits
  - arts and literature requirement: three to six credits
  - human interaction and behavior requirement: six to nine credits
- natural sciences requirement: CHM 101, PHY 101 and PHY 101L
- mathematics requirement: MTH 103 and MTH 104
- statistics requirement: satisfied through NGN 111
- communication requirement: a minimum of 12 credits in 100-level or above writing (WRI)/English (ENG) courses, including ENG 204 and ENG 207
- ethical understanding requirement: satisfied through ELE 490
- discipline specific writing intensive course requirement: satisfied through ELE 491
- oral proficiency requirement: satisfied through ELE 491
- information literacy requirement: satisfied through WRI 102 and ENG 204
- computer literacy requirement: satisfied through COE 210

### Major Requirements (77 credits)

- COE 210 Programming I
- COE 221 Digital Systems
- COE 241 Microcontrollers: Programming and Interfacing
- ELE 211 Electric Circuits I
- ELE 212 Electric Circuits II
- ELE 241 Electronics I
- ELE 241L Electronics I Laboratory
- ELE 311 Electromagnetics
- ELE 321 Signals and Systems
- ELE 324 Digital Signal Processing
- ELE 332L Measurements and Instrumentation Laboratory
- ELE 341 Electronics II
- ELE 341L Electronics II Laboratory

- ELE 351 Electrical Energy Conversion
- ELE 353 Control Systems I
- ELE 353L Control Systems I Laboratory
- ELE 360 Probability and Stochastic Processes
- ELE 361 Communications
- ELE 361L Communications Laboratory
- ELE 371 Power Systems Analysis
- ELE 371L Electric Machines and Power Systems Laboratory
- ELE 397 Professional Training in Electrical Engineering (also satisfied through NGN 497 Professional Experience in Engineering and Computing completed as a free elective)
- ELE 490 Electrical Engineering Design Project I
- ELE 491 Electrical Engineering Design Project II
- MCE 224 Engineering Mechanics—Statics and Dynamics
- MTH 203 Calculus III
- MTH 205 Differential Equations
- MTH 221 Linear Algebra
- NGN 110 Introduction to Engineering and Computing
- NGN 111 Introduction to Statistical Analysis
- PHY 102 General Physics II
- PHY 102L General Physics Laboratory II

### Major Electives (minimum of 13 credits)

Students must successfully complete a minimum of 13 credits, including a one-credit laboratory, in courses selected from the following list of approved major electives. Students may choose to complete one course from the non-ELE courses on the list.

- BME 410 Biomedical Systems Modeling I
- BME 430 Biomechanics
- COE 370 Communications Networks
- COE 371 Computer Networks I
- COE 410 Embedded Systems: Design and Applications
- COE 428 VLSI Design
- ELE 432 Medical Instrumentation
- ELE 439L Medical Electronics Systems Laboratory
- ELE 440 Radio Transceivers Design and Analysis
- ELE 441 Microelectronic Devices
- ELE 442 Photovoltaic Semiconductors
- ELE 444 Control Systems II
- ELE 451 Wireless Communications

- ELE 452 Digital Communications
- ELE 453 Microwave Engineering
- ELE 454 Antennas and Wave Propagation
- ELE 455 Digital Image Processing
- ELE 456 Pattern Recognition
- ELE 457 Satellite Communications
- ELE 458 Multimedia Communications and Networking
- ELE 458L Communications Systems Laboratory
- ELE 459 Introduction to Radar Systems
- ELE 471 Digital Control Systems
- ELE 473 Industrial Instrumentation and Control
- ELE 476L Instrumentation and Control Systems Laboratory
- ELE 478L Design Laboratory
- ELE 481 Power System Protection
- ELE 482 Electric Power Distribution Systems
- ELE 485 Power Electronics
- ELE 486 Electric Drives
- ELE 487 Power Conversion in Renewable Energy Systems
- ELE 488L Power Engineering Laboratory
- ELE 494 Special Topics in Electrical Engineering
- MCE 451 Renewable Energy Systems
- MCE 464 Introduction to Robotics

### Free Electives (minimum of 6 credits)

Students must successfully complete a minimum of six credits in courses at or above the 100 level, excluding MTH 101.



**Proposed Sequence of Study  
Bachelor of Science in Electrical Engineering (BSEE)**

FIRST YEAR (37 credits)			
Term	Course #	Course Title	Credit
Fall	CHM 101	General Chemistry I	4
	MTH 103	Calculus I	3
	NGN 110	Introduction to Engineering and Computing	2
	PHY 101	General Physics I	3
	PHY 101L	General Physics Laboratory I	1
	WRI 101	Academic Writing I	3
<b>Total</b>			<b>16</b>
Spring	MTH 104	Calculus II	3
	NGN 111	Introduction to Statistical Analysis	2
	PHY 102	General Physics II	3
	PHY 102L	General Physics Laboratory II	1
	WRI 102	Academic Writing II	3
	FRE	Free Elective	3
<b>Total</b>			<b>15</b>
Summer	MTH 205	Differential Equations	3
	GER-Core	History and Culture of the Arab World	3
<b>Total</b>			<b>6</b>
SECOND YEAR (39 credits)			
Term	Course #	Course Title	Credit
Fall	COE 210	Programming I	3
	ENG 204	Advanced Academic Writing	3
	ELE 211	Electric Circuits I	3
	MTH 203	Calculus III	3
	MTH 221	Linear Algebra	3
<b>Total</b>			<b>15</b>
Spring	COE 221	Digital Systems	4
	ELE 212	Electric Circuits II	3
	ELE 241	Electronics I	3
	ELE 241L	Electronics I Laboratory	1
	MCE 224	Engineering Mechanics—Statics and Dynamics	3
	GER-Core	Culture in a Critical Perspective	3
<b>Total</b>			<b>17</b>
Summer	COE 241	Microcontrollers: Programming and Interfacing	4
	ENG 207	Professional Communication for Engineers	3
<b>Total</b>			<b>7</b>

THIRD YEAR (34 credits)			
Term	Course #	Course Title	Credit
Fall	ELE 311	Electromagnetics	3
	ELE 321	Signals and Systems	3
	ELE 341	Electronics II	3
	ELE 341L	Electronics II Laboratory	1
	ELE 351	Electrical Energy Conversion	3
	ELE 353	Control Systems I	3
<b>Total</b>			<b>16</b>
Spring	ELE 324	Digital Signal Processing	3
	ELE 332L	Measurements and Instrumentation Laboratory	1
	ELE 353L	Control Systems I Laboratory	1
	ELE 360	Probability and Stochastic Processes	3
	ELE 361	Communications	3
	ELE 371	Power Systems Analysis	3
Summer	ELE 371L	Electric Machines and Power Systems Laboratory	1
	GER-Core	Arts and Literature	3
<b>Total</b>			<b>18</b>
Summer	ELE 397	Professional Training in Electrical Engineering	0
<b>Total</b>			<b>18</b>
FOURTH YEAR (30 credits)			
Term	Course #	Course Title	Credit
Fall	ELE 361L	Communications Laboratory	1
	ELE 490	Electrical Engineering Design Project I	2
	MJE	Major Elective	3
	MJE	Major Elective	3
	MJE	Major Elective	3
Spring	GER-Core	Human Interaction and Behavior	3
	<b>Total</b>		<b>15</b>
Spring	ELE 491	Electrical Engineering Design Project II	2
	MJE	Major Elective	3
	MJE	Major Elective Laboratory	1
	GER-Core	Human Interaction and Behavior	3
	GER-Core	Course Selected from General Education Core Requirements	3
	FRE	Free Elective	3
<b>Total</b>			<b>15</b>

### Minor in Electrical Engineering

Students enrolling in the electrical engineering minor should have normally completed a minimum of 60 credits of course work and be in good academic standing.

The following rules apply:

- The minor consists of a minimum of 20 credits, including at least 10 credits in courses at or above the 300 level in electrical engineering.
- At least 10 credits of the minor must be taken in residence at AUS.
- At least seven credits of the 10 credits at or above the 300 level must be taken in residence at AUS.
- A minimum GPA of 2.00 must be earned in courses completed to satisfy the minor.

Students seeking a minor in electrical engineering must successfully complete the following courses or their equivalent. All course prerequisites must be satisfied.

#### Minor Requirements (10 credits)

- ELE 212 Electric Circuits II
- ELE 241 Electronics I
- ELE 241L Electronics I Laboratory
- ELE 351 Electrical Energy Conversion

#### Minor Electives (minimum of 10 credits)

Students must successfully complete a minimum of 10 credits as follows:

- three 300-level or above ELE courses, excluding ELE 490 and ELE 491, with at least three credits in a 400-level ELE course
- any 300-level ELE laboratory

### Department of Industrial Engineering

Moncer Hariga, Head

#### Faculty

Rami Afif As'ad  
Mahmoud Ismail Awad  
Zied Bahroun  
Leland T. Blank  
Hazim El-Baz  
Noha Hassan  
Malik Ndiaye  
Mojahid Osman  
Abdulrahim Shamayleh

### Bachelor of Science in Industrial Engineering (BSIE)

The industrial engineering program is initially accredited by the UAE Ministry

of Education's Higher Education Affairs Division.

The industrial engineering curriculum is a four-year program leading to a Bachelor of Science in Industrial Engineering (BSIE). The program is designed with the aim of graduating engineers with the knowledge and skills necessary to function as professional engineers in a working environment where cost effectiveness, high productivity, continuous quality and reliability improvements, waste reduction, and efficient resource utilization are critical success factors for organizations. These skills will help industrial engineering graduates to build successful careers in several engineering professions such as facility design and planning; production planning, scheduling and control; quality control; warehousing and inventory control; supply chain and logistics engineering; and maintenance engineering. Furthermore, industrial engineering graduates have the abilities to work in manufacturing as well service-oriented organizations such as banks, health care, utilities and transportation services. They are able to immediately deliver significant business improvements and economic savings to their company of employment.

### **Mission Statement**

The mission of the industrial engineering program at AUS is to promote and maintain excellence in teaching and learning to equip students with strong core competencies in industrial engineering and empower them with the skills required for successful professional careers. The industrial engineering program promotes and enhances faculty expertise in research and development toward providing technical solutions for social challenges and community advancement through outreach activities and networking with regional and international organizations.

### **Program Educational Objectives**

The objectives of the industrial engineering program are to produce graduates who will:

- have successful careers as industrial engineers, especially in the fields of logistics and supply chain engineering, as well as quality and maintenance engineering
- think independently and communicate effectively as team members and team leaders
- practice engineering considering global, ethical and social factors
- continue their professional development through further education and advanced studies

### **Student Outcomes**

Upon graduation, an AUS graduate in industrial engineering should demonstrate:

- an ability to apply knowledge of mathematics, science and engineering
- an ability to design and conduct experiments, as well as to analyze and interpret data
- an ability to design a system, component or process to meet the desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability and sustainability
- an ability to function on multidisciplinary teams
- an ability to identify, formulate and solve engineering problems
- an understanding of professional and ethical responsibilities
- an ability to communicate effectively
- the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental and societal context
- a recognition of the need for and an ability to engage in lifelong learning
- a knowledge of contemporary issues
- an ability to use the techniques, skills and modern engineering tools necessary for engineering practice

### **Admission to the Program**

Admission to the program follows the university's undergraduate admission requirements.

AUS students transferring into the program must be in good academic standing and must meet the requirements set by the program. In the event that there are more qualified AUS students transferring into the major than available spaces, students will be admitted based on academic achievement. For more details, please check with the head of the department or the college associate dean. For information on how to submit a change of major request, please refer to Fields of Study/Change of Major under the Academic Policies and Regulations section earlier in the catalog.

### **Degree Requirements**

Students seeking the BSIE degree must successfully complete the following minimum requirements:

- a minimum of 140 credits, as follows:
  - a minimum of 44 credits in general education requirements
  - 78 credits of major requirements, including a professional training for at least five weeks

- a minimum of 12 credits of major electives
- a minimum of six credits of free electives
- a minimum CGPA of 2.00
- take the Fundamentals of Engineering (FE) exam administered by the National Council of Examiners for Engineering and Surveying (NCEES) in the USA

### **General Education Requirements (minimum of 44 credits)**

Students must successfully complete a minimum of 44 credits as follows:

- a minimum of 18 credits in courses meeting the core general education requirements:
  - history and culture of the Arab world requirement: three to six credits
  - culture in a critical perspective requirement: three to six credits
  - arts and literature requirement: three to six credits
  - human interaction and behavior requirement: six to nine credits
- natural sciences requirement: CHM 101, PHY 101 and PHY 101L
- mathematics requirement: MTH 103 and MTH 104
- statistics requirement: satisfied through NGN 111
- communication requirement: a minimum of 12 credits in 100-level or above writing (WRI)/English (ENG) courses, including ENG 204 and ENG 207
- ethical understanding requirement: satisfied through INE 490
- discipline-specific writing intensive course requirement: satisfied through INE 491
- oral proficiency requirement: satisfied through INE 491
- information literacy requirement: satisfied through WRI 102 and ENG 204
- computer literacy requirement: satisfied through COE 210

### **Major Requirements (78 credits)**

- COE 210 Programming I
- EGM 361 Management for Engineers
- EGM 364 Engineering Economy
- ELE 225 Electric Circuit and Devices
- INE 222 Operations Research I
- INE 311 Quality Engineering
- INE 322 Operations Research II
- INE 323 Stochastic Processes and Simulation
- INE 331 Analysis of Production Systems
- INE 332 Analysis of Supply Chains

- INE 333 Facility Design and Operations
- INE 397 Professional Training in Industrial Engineering (also satisfied through NGN 497 Professional Experience in Engineering and Computing completed as a free elective)
- INE 413 Maintenance Engineering
- INE 431 Industrial Scheduling
- INE 439 Fundamentals of Manufacturing Systems
- INE 490 Senior Design Project I
- INE 491 Senior Design Project II
- MCE 216L Introduction to Engineering Drawing and Workshop
- MCE 224 Engineering Mechanics—Statics and Dynamics
- MCE 230 Materials Science
- MCE 331 Manufacturing Processes

- MGT 403 Entrepreneurship
- MIS 201 Fundamentals of Management Information Systems
- MTH 203 Calculus III
- MTH 205 Differential Equations
- MTH 221 Linear Algebra
- NGN 110 Introduction to Engineering and Computing
- NGN 111 Introduction to Statistical Analysis
- PHY 102 General Physics II
- PHY 102L General Physics Laboratory II

#### Major Electives (minimum of 12 credits)

Students must successfully complete four courses for a minimum of 12 credits from the following list. Three of the four courses must be from INE courses.

- FIN 430 Financial Forecasting
- INE 415 Design of Experiments
- INE 416 Reliability Engineering
- INE 417 Six Sigma Methodology
- INE 425 Decision Analysis
- INE 433 Logistics Engineering
- INE 435 Warehousing Systems
- INE 450 Safety Engineering
- INE 494 Special Topics in Industrial Engineering
- MGT 315 Enterprise Resource Planning

#### Free Electives (minimum of 6 credits)

Students must successfully complete a minimum of six credits in courses at or above the 100 level, excluding MTH 101.

### Proposed Sequence of Study Bachelor of Science in Industrial Engineering (BSIE)

FIRST YEAR (37 credits)			
Term	Course #	Course Title	Credit
Fall	CHM 101	General Chemistry I	4
	MTH 103	Calculus I	3
	NGN 110	Introduction to Engineering and Computing	2
	PHY 101	General Physics I	3
	PHY 101L	General Physics Laboratory I	1
	WRI 101	Academic Writing I	3
	Total		
Spring	MTH 104	Calculus II	3
	NGN 111	Introduction to Statistical Analysis	2
	PHY 102	General Physics II	3
	PHY 102L	General Physics Laboratory II	1
	WRI 102	Academic Writing II	3
	GER-Core	History and Culture of the Arab World	3
	Total		
Summer	MTH 205	Differential Equations	3
	GER-Core	Culture in a Critical Perspective	3
	Total		
SECOND YEAR (37 credits)			
Term	Course #	Course Title	Credit
Fall	COE 210	Programming I	3
	EGM 361	Management for Engineers	3
	ENG 204	Advanced Academic Writing	3
	MCE 216L	Introduction to Engineering Drawing and Workshop	1
	MCE 224	Engineering Mechanics—Statics and Dynamics	3
	MTH 221	Linear Algebra	3
	Total		
Spring	ELE 225	Electric Circuit and Devices	3
	INE 222	Operations Research I	3
	MCE 230	Materials Science	3
	MIS 201	Fundamentals of Management Information Systems	3
	MTH 203	Calculus III	3
	Total		
Summer	ENG 207	Professional Communication for Engineers	3
	GER-Core	Arts and Literature	3
Total			6

THIRD YEAR (33 credits)			
Term	Course #	Course Title	Credits
Fall	EGM 364	Engineering Economy	3
	INE 322	Operations Research II	3
	INE 331	Analysis of Production Systems	3
	MCE 331	Manufacturing Processes	3
	GER-Core	Human Interaction and Behavior	3
	FRE	Free Elective	3
	Total		18
Spring	INE 311	Quality Engineering	3
	INE 323	Stochastic Processes and Simulation	3
	INE 332	Analysis of Supply Chains	3
	INE 333	Facility Design and Operations	3
	INE 439	Fundamentals of Manufacturing Systems	3
	Total		15
Summer	INE 397	Professional Training in Industrial Engineering	0
FOURTH YEAR (33 credits)			
Term	Course #	Course Title	Credits
Fall	INE 413	Maintenance Engineering	3
	INE 431	Industrial Scheduling	3
	INE 490	Senior Design Project I	1
	MJE	Major Elective	3
	MJE	Major Elective	3
	GER-Core	Human Interaction and Behavior	3
Total		16	
Spring	INE 491	Senior Design Project II	2
	MGT 403	Entrepreneurship	3
	MJE	Major Elective	3
	MJE	Major Elective	3
	GER-Core	Course Selected from General Education Core Requirements	3
	FRE	Free Elective	3
	Total		17

## Department of Mechanical Engineering

Mamoun Abdel-Hafez, Head

### Faculty

Bassam Abu-Nabah  
Wael Abuzaid  
Saad Ahmed  
Maen Alkhader  
Basil Darras  
Hany El Kadi  
Mohamed Gadalla  
Thomas Gally  
Mohammad Jaradat  
Jin Lee  
Mohammad Nazzal  
Mehmet Fatih Orhan  
Imran Qureshi  
Lotfi Romdhane

### Bachelor of Science in Mechanical Engineering (BSME)

The Bachelor of Science in Mechanical Engineering program is accredited by the Commission for Academic Accreditation of the Ministry of Education's Higher Education Affairs Division in the United Arab Emirates, as well as the Engineering Accreditation Commission of ABET, <http://www.abet.org>.

Mechanical engineering provides an excellent broad education for today's technological world. Mechanical engineers model, analyze, test and manufacture engines that power ground and aerospace vehicles. They also design, operate and modify power plants that convert the energy in fuels, wind and sunlight into electricity and other forms of energy, and they construct intelligent machines and robots in industry. Mechanical engineers also build prototypes of conventional, electric and sports vehicles, develop energy management systems for industry, design and manufacture smart products, and develop new engineering materials that are used in manufacturing high-tech products. Mechanical engineers use computers extensively in their everyday operation; they develop computer control systems for automobiles and industrial processes and design computer interfaces to mechanical and energy systems. Mechanical engineers also develop alternative energy sources such as solar, fuel cells, wind and alternative fuels. They are heavily involved in new technologies such as MEMS, nanosystems and biotechnologies. In short, the mechanical engineer is a vital backbone element of the engineering profession.

The BSME curriculum produces high-quality graduates whose work is notable for its breadth and technical excellence. Graduates have the ability to work logically, accurately and efficiently; to gather and use information effectively; and to continue enhancing their careers through lifelong learning. The program stresses the effective use of technology, information resources and engineering tools. It prepares graduates to work in a broad range of areas related to the mechanical engineering profession. The program instills leadership qualities based on moral and ethical principles coupled with sound and rational judgment. Finally, the program is designed to prepare interested students for graduate studies in mechanical engineering and other areas of professional practice.

### Mission Statement

The mission of the mechanical engineering program at AUS is to educate the engineers of tomorrow by integrating classroom theory and hands-on experience, emphasizing the process of learning and critical thinking, conducting cutting-edge research, and serving the engineering profession, industry and society at large. The mechanical engineering program fosters lifelong learning, ethics and professional development, and embraces diversity among its faculty and student body.

### Program Educational Objectives

The objectives of the mechanical engineering program are to produce graduates who will:

- actively embrace leadership roles in the practice of mechanical engineering, conduct research and development to advance technology and foster innovation, and apply their engineering problem-solving skills as needed in the workplace
- actively participate in on-going professional development, updating and adapting their core knowledge, and acquiring new knowledge and skills to pursue new career opportunities
- serve the engineering profession and support sustainable development

### Student Outcomes

Upon graduation, an AUS graduate in mechanical engineering should demonstrate:

- an ability to apply knowledge of mathematics, science and engineering
- an ability to design and conduct experiments, as well as to analyze and interpret data
- an ability to design a system, component or process to meet

desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability and sustainability

- an ability to function on multidisciplinary teams
- an ability to identify, formulate and solve engineering problems
- an understanding of professional and ethical responsibility
- an ability to communicate effectively
- the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental and societal context
- a recognition of the need for and an ability to engage in lifelong learning
- knowledge of contemporary issues
- an ability to use the techniques, skills and modern engineering tools necessary for engineering practice

### Admission to the Program

Admission to the program follows the university's undergraduate admission requirements.

AUS students transferring into the program must be in good academic standing and must meet the requirements set by the program. In the event that there are more qualified AUS students transferring into the major than available spaces, students will be admitted based on academic achievement. For more details, please check with the head of the department or the college associate dean. For information on how to submit a change of major request, please refer to Fields of Study/Change of Major under the Academic Policies and Regulations section earlier in the catalog.

### Degree Requirements

Students seeking the BSME degree must successfully complete the following minimum requirements:

- a minimum of 140 credits, as follows:
  - a minimum of 44 credits in general education requirements
  - 78 credits of major requirements, including a professional training for at least five weeks
  - a minimum of 12 credits of major electives
  - a minimum of six credits of free electives
- a minimum CGPA of 2.00
- take the Fundamentals of Engineering (FE) exam administered by the National Council of Examiners for Engineering and Surveying (NCEES) in the USA

### General Education Requirements (minimum of 44 credits)

Students must successfully complete a minimum of 44 credits as follows:

- a minimum of 18 credits in courses meeting the core general education requirements:
  - history and culture of the Arab world requirement: three to six credits
  - culture in a critical perspective requirement: three to six credits
  - arts and literature requirement: three to six credits
  - human interaction and behavior requirement: six to nine credits
- natural sciences requirement: CHM 101, PHY 101 and PHY 101L
- mathematics requirement: MTH 103 and MTH 104
- statistics requirement: satisfied through NGN 111
- communication requirement: a minimum of 12 credits in 100-level or above writing (WRI)/English (ENG) courses, including ENG 204 and ENG 207
- ethical understanding requirement: satisfied through MCE 490
- discipline specific writing intensive course requirement: satisfied through MCE 491
- oral proficiency requirement: satisfied through MCE 490
- information literacy requirement: satisfied through WRI 102 and ENG 204
- computer literacy requirement: satisfied through MCE 226L

### Major Requirements (78 credits)

- ELE 225 Electric Circuits and Devices
- MCE 216L Introduction to Engineering Drawing and Workshop
- MCE 220 Statics
- MCE 222 Dynamics
- MCE 223 Mechanics of Materials
- MCE 226L Computer Applications in Mechanical Engineering I
- MCE 230 Materials Science
- MCE 236L Solid Modeling
- MCE 240 Fluid Mechanics
- MCE 241 Thermodynamics I
- MCE 311 Engineering Measurements
- MCE 321 Mechanical Design I
- MCE 322 Mechanical Design II
- MCE 325 Numerical Methods in Engineering
- MCE 326L Computer Applications in Mechanical Engineering II
- MCE 328 Dynamic Systems

- MCE 331 Manufacturing Processes
- MCE 332L Materials and Manufacturing Processes Laboratory
- MCE 341 Thermodynamics II
- MCE 344 Heat Transfer
- MCE 345L Thermofluids Laboratory
- MCE 397 Professional Training in Mechanical Engineering (also satisfied through NGN 497 Professional Experience in Engineering and Computing completed as a free elective)
- MCE 410 Control Systems
- MCE 415L Dynamics and Control Systems Laboratory
- MCE 482 Intermediate Fluid Mechanics
- MCE 490 Design Project I
- MCE 491 Design Project II
- MTH 203 Calculus III
- MTH 205 Differential Equations
- MTH 221 Linear Algebra
- NGN 110 Introduction to Engineering and Computing
- NGN 111 Introduction to Statistical Analysis
- PHY 102 General Physics II
- PHY 102L General Physics Laboratory II

### Major Electives (minimum of 12 credits)

Students must successfully complete four technical elective courses for a minimum of 12 credits in the major areas of mechanical engineering. Two courses (minimum of six credits) should be from the applied mechanics area and two courses (minimum of six credits) should be from the thermofluids area.

#### *Applied Mechanics*

- ASE 415 Aircraft Stability and Control
- BME 430 Biomechanics
- INE 439 Fundamentals of Manufacturing Systems
- MCE 416 Kinematics and Dynamics of Machinery
- MCE 418 Vehicle Dynamics
- MCE 423 Mechanical Vibrations
- MCE 434 Fundamentals of Computer-Aided Design and Manufacturing
- MCE 435 Advanced Mechanics of Materials
- MCE 439 Computer Integrated Manufacturing
- MCE 464 Introduction to Robotics
- MCE 466 Introduction to Mechatronics
- MCE 473 Applied Finite Element Analysis
- MCE 477 Composite Materials

- MCE 494 approved special topics in Mechanical Engineering. Consult the online course catalog or the online class schedule accessible via the AUS student information system to verify course classifications.

#### *Thermofluids*

- ASE 450 Applied Aerodynamics
- MCE 445 Energy Systems
- MCE 446 Refrigeration and Air Conditioning
- MCE 447 Internal Combustion Engines
- MCE 450 Energy Conservation and Management
- MCE 451 Renewable Energy Systems
- MCE 452 Fuel Cells and Hydrogen Systems
- MCE 473 Applied Finite Element Analysis
- MCE 485 Hydraulics of Pipeline Systems
- MCE 487 Turbomachines
- MCE 488 Introduction to Computational Fluid Dynamics
- MCE 494 approved special topics in Mechanical Engineering. Consult the online course catalog or the online class schedule accessible via the AUS student information system to verify course classifications.

### Free Electives (minimum of 6 credits)

Students must successfully complete a minimum of six credits in courses at or above the 100 level, excluding MTH 101.

**Proposed Sequence of Study  
Bachelor of Science in Mechanical Engineering (BSME)**

<b>FIRST YEAR (37 credits)</b>			
<b>Term</b>	<b>Course #</b>	<b>Course Title</b>	<b>Credit</b>
Fall	CHM 101	General Chemistry I	4
	MTH 103	Calculus I	3
	NGN 110	Introduction to Engineering and Computing	2
	PHY 101	General Physics I	3
	PHY 101L	General Physics Laboratory I	1
	WRI 101	Academic Writing I	3
	<b>Total</b>		<b>16</b>
Spring	MTH 104	Calculus II	3
	NGN 111	Introduction to Statistical Analysis	2
	PHY 102	General Physics II	3
	PHY 102L	General Physics Laboratory II	1
	WRI 102	Academic Writing II	3
	FRE	Free Elective	3
	<b>Total</b>		<b>15</b>
Summer	MTH 205	Differential Equations	3
	GER-Core	History and Culture of the Arab World	3
	<b>Total</b>		<b>6</b>
<b>SECOND YEAR (39 credits)</b>			
<b>Term</b>	<b>Course #</b>	<b>Course Title</b>	<b>Credit</b>
Fall	ENG 204	Advanced Academic Writing	3
	MCE 216L	Introduction to Engineering Drawing and Workshop	1
	MCE 220	Statics	3
	MCE 230	Materials Science	3
	MCE 241	Thermodynamics I	3
	MTH 221	Linear Algebra	3
	<b>Total</b>		<b>16</b>
Spring	ELE 225	Electric Circuits and Devices	3
	MCE 222	Dynamics	3
	MCE 223	Mechanics of Materials	3
	MCE 226L	Computer Applications in Mechanical Engineering I	1
	MCE 236L	Solid Modeling	1
	MCE 240	Fluid Mechanics	3
	MTH 203	Calculus III	3
	<b>Total</b>		<b>17</b>
Summer	ENG 207	Professional Communication for Engineers	3
	GER-Core	Culture in a Critical Perspective	3
	<b>Total</b>		<b>6</b>

<b>THIRD YEAR (33 credits)</b>			
<b>Term</b>	<b>Course #</b>	<b>Course Title</b>	<b>Credit</b>
Fall	MCE 311	Engineering Measurements	3
	MCE 321	Mechanical Design I	3
	MCE 326L	Computer Applications in Mechanical Engineering II	1
	MCE 331	Manufacturing Processes	3
	MCE 332L	Materials and Manufacturing Processes Laboratory	1
	MCE 341	Thermodynamics II	3
	GER-Core	Arts and Literature	3
	<b>Total</b>		<b>17</b>
Spring	MCE 322	Mechanical Design II	3
	MCE 325	Numerical Methods in Engineering	3
	MCE 328	Dynamic Systems	3
	MCE 344	Heat Transfer	3
	MCE 345L	Thermofluids Laboratory	1
	FRE	Free Elective	3
	<b>Total</b>		<b>16</b>
Summer	MCE 397	Professional Training in Mechanical Engineering	0
<b>FOURTH YEAR (31 credits)</b>			
<b>Term</b>	<b>Course #</b>	<b>Course Title</b>	<b>Credit</b>
Fall	MCE 410	Control Systems	3
	MCE 482	Intermediate Fluid Mechanics	3
	MCE 490	Design Project I	1
	MJE	Major Elective	3
	MJE	Major Elective	3
	GER-Core	Human Interaction and Behavior	3
	<b>Total</b>		<b>16</b>
Spring	MCE 415L	Dynamics and Control Systems Laboratory	1
	MCE 491	Design Project II	2
	MJE	Major Elective	3
	MJE	Major Elective	3
	GER-Core	Human Interaction and Behavior	3
	GER-Core	Course Selected from General Education Core Requirements	3
	<b>Total</b>		<b>15</b>

### Minor in Mechanical Engineering

Students enrolling in the mechanical engineering minor should have normally completed a minimum of 60 credits of course work and be in good academic standing.

The following rules apply:

- The minor consists of a minimum of 18 credits, including at least nine credits in courses at or above the 300 level in mechanical engineering.
- At least nine credits of the 18 credits required for the minor must be taken in residence at AUS.
- At least six credits of the nine credits at or above the 300 level must be taken in residence at AUS.

- A minimum GPA of 2.00 must be earned in courses completed to satisfy the minor.

Students seeking a minor in mechanical engineering must successfully complete the following courses or their equivalent. All course prerequisites must be satisfied.

#### Minor Requirements (9 credits)

Student must successfully complete the requirements of one of the following two options:

##### Option 1

- MCE 222 Dynamics or MCE 224 Engineering Mechanics—Statics and Dynamics
- MCE 223 Mechanics of Materials

- MCE 240 Fluid Mechanics or MCE 241 Thermodynamics I

##### Option 2

- MCE 223 Mechanics of Materials or MCE 222 Dynamics or MCE 224 Engineering Mechanics—Statics and Dynamics
- MCE 240 Fluid Mechanics
- MCE 241 Thermodynamics I

#### Minor Electives (minimum of 9 credits)

Students must successfully complete any three 300-level or above MCE courses, excluding MCE 490 and MCE 491.

## Other Minors Offered by the College of Engineering

### Minor in Aerospace Engineering

Saad Ahmed, Coordinator

Aerospace engineering deals with the analysis, design and performance of flight vehicles such as transport and military aircraft, helicopters, missiles and launch vehicles (rockets), and spacecraft such as the space shuttle. Aerospace engineering comprises several disciplines, namely aerodynamics, flight dynamics and control, avionics and navigation, aerospace propulsion, aerospace structures and materials, and aerospace manufacturing among others. Aerospace engineers apply their knowledge and skills to the design of aircraft components (e.g., wings and fuselages), systems (e.g., control systems) or spacecraft components and systems. This minor focuses on aeronautical engineering.

The following rules apply:

- The minor consists of a minimum of 18 credits, including at least nine credits in courses at or above the 300 level.
- At least nine credits of the 18 credits required for the minor must be taken in residence at AUS.
- At least six credits of the nine credits at or above the 300 level must be taken in residence at AUS.
- A minimum GPA of 2.00 must be earned in courses completed to satisfy the minor.

Students seeking a minor in aerospace engineering must successfully complete the following courses or their equivalent. All course prerequisites must be satisfied.

#### Minor Requirements (12 credits)

- ASE 415 Aircraft Stability and Control
- ASE 450 Applied Aerodynamics
- MCE 435 Advanced Mechanics of Materials or  
MCE 477 Composite Materials
- MCE 482 Intermediate Fluid Mechanics

#### Minor Electives (minimum of 6 credits)

Students must successfully complete a minimum of six credits in courses selected from the following list:

- ASE 454 Thermal Design Issues for Aerospace Systems
- ASE 470 Aircraft Structure
- ASE 475 Aircraft Design
- ASE 494 Special Topics in Aerospace Engineering

- MCE 473 Applied Finite Element Analysis
- MCE 487 Turbomachines
- MCE 488 Introduction to Computational Fluid Dynamics
- either of the following two courses not used as a minor requirement:
  - MCE 435 Advanced Mechanics of Materials
  - MCE 477 Composite Materials

### Minor in Biomedical Engineering

Hasan Al-Nashash, Coordinator

Biomedical engineering is a multidisciplinary field that combines principles of physics, chemistry and biology with engineering sciences to study and advance knowledge in biology, physiology and human health. A biomedical engineer can develop diagnostic instruments, novel materials, drug delivery systems or informatics, for example. The main objective for a biomedical engineer is to improve the quality of life for patients, and to help in the advancement of health professions.

Students enrolling in the biomedical engineering minor should have normally completed a minimum of 60 credits of course work and be in good academic standing.

The following rules apply:

- The minor consists of a minimum of 18 credits, including at least nine credits in courses at or above the 300 level.
- At least nine credits of the 18 credits required for the minor must be taken in residence at AUS.
- At least six credits of the nine credits at or above the 300 level must be taken in residence at AUS.
- A minimum GPA of 2.00 must be earned in courses completed to satisfy the minor.

Students seeking a minor in biomedical engineering must successfully complete the following courses or their equivalent. All course prerequisites must be satisfied.

#### Minor Requirements (14 credits)

- BIO 101 General Biology I
- BIO 210 Introduction to Human Anatomy and Physiology
- BME 210 Biomedical Ethics
- Two courses from the following:
  - BME 410 Biomedical Systems Modeling I or  
CHE 481 Fundamentals of Biomedical Engineering
  - BME 420 Biomedical Electronics I or  
ELE 432 Medical Instrumentation I
  - BME 430 Biomechanics

### Minor Electives (minimum of 4 credits)

Students must successfully complete a minimum of four credits in courses selected from the following list:

- BME 411 Biomedical Systems Modeling II
- BME 421 Biomedical Electronics II
- BME 422 Biomedical Imaging
- BME 424L Biomedical Electronics Laboratory or  
ELE 439L Medical Electronics Systems Laboratory
- BME 431 Biomaterials
- BME 432 Biothermofluids
- BME 440 Bioinformatics
- BME 494 Special Topics in Biomedical Engineering
- COE 410 Embedded Systems: Design and Applications
- ELE 455 Digital Image Processing
- ELE 456 Pattern Recognition
- one course from the following list not used as a minor requirement:
  - BME 410 Biomedical Systems Modeling I or  
CHE 481 Fundamentals of Biomedical Engineering
  - BME 420 Biomedical Electronics I or  
ELE 432 Medical Instrumentation I
  - BME 430 Biomechanics

### Minor in Engineering Management

Hazim El-Baz, Coordinator

The engineering management minor provides students the opportunity to learn how to manage major engineering projects. The content of the courses offered in the minor is a unique blend of engineering tools and business management skills.

Students enrolling in the engineering management minor should have normally completed a minimum of 60 credits of course work and be in good academic standing.

The following rules apply:

- The minor consists of a minimum of 18 credits, including at least nine credits in courses at or above the 300 level in engineering management.
- At least nine credits of the 18 credits required for the minor must be taken in residence at AUS.
- At least six credits of the nine credits at or above the 300 level must be taken in residence at AUS.
- A minimum GPA of 2.00 must be earned in courses completed to satisfy the minor.

Students seeking a minor in engineering management must

successfully complete the following courses or their equivalent. All course prerequisites must be satisfied.

#### **Minor Requirements (12 credits)**

- ECO 201 Principles of Microeconomics
- EGM 361 Management for Engineers
- EGM 362 Engineering Project Management
- EGM 364 Engineering Economy (for non-chemical and civil engineering students) or CHE 332 Engineering Economy or CVE 367 Project Estimating, Planning and Control

#### **Minor Electives (minimum of 6 credits)**

Students must successfully complete a minimum of six credits in courses selected from the following list:

- ACC 201 Fundamentals of Financial Accounting
- CHE 470 Waste Management and Control in Chemical Engineering
- COE 420 Software Engineering
- CVE 451 Urban Water Infrastructure Management
- CVE 463 Construction Management
- ECO 202 Principles of Macroeconomics
- EGM 494 Special Topics in Engineering Management
- FIN 201 Fundamentals of Financial Management
- MCE 450 Energy Conservation and Management

#### **Minor in Environmental and Water Engineering**

Md. Maruf Mortula, Coordinator

Environmental and water engineering is an interdisciplinary field that combines principles of chemistry and biology with engineering science to study the engineered approaches to protecting water and environment. Environmental and water engineering can include water supply and sewerage systems, water and wastewater treatment, waste management, water quality in coastal areas and environmental resources management. The main objective of an environmental and water engineer is to learn the skills and technologies needed to protect our water and environmental resources.

Students enrolling in the environmental and water engineering minor should have normally completed a minimum of 60 credits and be in good academic standing.

The following rules will apply:

- The minor consists of a minimum of 18 credits, including at least 12

credits in courses at or above the 300 level.

- At least nine credits of the 18 credits required for the minor must be taken in residence at AUS.
- At least six credits of the 12 credits at or above the 300 level must be taken in residence at AUS.
- A minimum GPA of 2.00 must be earned in courses completed to satisfy the minor.

Students seeking a minor in environmental and water engineering must successfully complete the following courses or their equivalent. All course prerequisites must be satisfied.

#### **Minor Requirements (12 credits)**

- EWE 331 Introduction to Water and Environmental Engineering
- EWE 333 Water Quality and Treatment
- any two courses from the following list:
  - CHE 472 Water and Wastewater Treatment Design
  - CVE 341 Water Resources Engineering
  - CVE 351 Environmental Engineering
  - ENV 252 Environmental Chemistry

#### **Minor Electives (minimum of 6 credits)**

Students must successfully complete a minimum of six credits in courses selected from the following list:

- CHE 461 Air Pollution
- CHE 470 Waste Management and Control in Chemical Engineering
- CVE 441 Coastal Engineering
- CVE 446 Geotechnical Dam Engineering
- CVE 450 Physical and Chemical Processes in Environmental Engineering
- CVE 451 Urban Water Infrastructure Management
- CVE 452 Water Supply and Sewerage Engineering
- CVE 472 Geographic Information Systems
- ENV 352 Environmental Toxicology
- ENV 353 Soil and Water Chemistry
- ENV 451 Waste Treatment
- MCE 482 Intermediate Fluid Mechanics
- MCE 485 Hydraulics of Pipeline Systems
- MCE 488 Introduction to Computational Fluid Dynamics
- any approved 300-level or 400-level special topics course. Consult the

online course catalog or the online class schedule accessible via the AUS student information system to verify course classifications.

#### **Minor in Mechatronics Engineering**

Lotfi Romdhane, Coordinator

Mechatronics is the synergistic combination of mechanical engineering, electronics and electrical engineering with computer science and control systems engineering. Modern devices contain mechanical, electrical and computer systems working in harmony to achieve higher levels of functionality than previously imaginable. For example, the automobile has evolved beyond a mechanical system with electrical components to an integrated system of electro-mechanical devices, embedded microprocessors, network communications and intelligent software. To develop these advanced systems, a new breed of engineer is needed who not only has a strong foundation in engineering design, but also feels comfortable working across the traditional engineering disciplines of manufacturing, mechanical, electrical and computer engineering.

Students enrolling in the mechatronics engineering minor should have normally completed a minimum of 60 credits of course work and be in good academic standing.

The mechatronics minor is restricted to computer, electrical and mechanical engineering students. Students in other majors interested in this minor should contact the College of Engineering Associate Dean to investigate the possibility of pursuing this minor.

The following rules apply:

- The minor consists of a minimum of 18 credits for electrical engineering and computer engineering students and 20 credits for mechanical engineering students, including at least nine and 10 credits respectively in courses at or above the 300 level.
- At least nine credits of the 18 credits (or 10 credits out of the 20 credits, as applicable) required for the minor must be taken in residence at AUS.
- At least six credits of the credits at or above the 300 level must be taken in residence at AUS.
- A minimum GPA of 2.00 must be earned in courses completed to satisfy the minor.

Students seeking a minor in mechatronics engineering must successfully complete the following courses or their equivalent. All course prerequisites must be satisfied.



**Minor Requirements  
(15/17 credits)**

- Computer engineering students: ELE 212, ELE 351, ELE 353, MCE 223 or MCE 240, and MCE 464
- Electrical engineering students: COE 410, ELE 473 or ELE 486, ELE 476L, MCE 216L, MCE 223 or MCE 240, MCE 236L and MCE 464
- Mechanical engineering students: COE 221, COE 241, ELE 341, ELE 351 and MCE 466

**Minor Electives  
(minimum of 3 credits)**

Students must successfully complete a minimum of three credits in courses selected from the following list and not used as minor requirements:

- COE 431 Industrial Computer Systems
- COE 482 Soft Computing
- ELE 444 Control Systems II
- ELE 473 Industrial Instrumentation and Control
- ELE 486 Electric Drives
- MCE 416 Kinematics and Dynamics of Machinery
- MCE 466 Introduction to Mechatronics

**Minor in Petroleum Engineering**

Hussain Ahmed, Coordinator

Petroleum engineering is a field that develops the means to extract oil and gas from underground reservoirs. The petroleum engineering minor prepares chemical, mechanical, civil and other engineering students for employment in the upstream petroleum industry. The petroleum engineering minor provides students with knowledge of drilling, production and reservoir engineering areas including formation evaluation and enhanced oil recovery methods.

Students enrolling in the petroleum engineering minor should have normally completed a minimum of 60 credits and be in good academic standing.

The following rules apply:

- The minor consists of a minimum of 18 credits, including at least nine credits in courses at or above the 300 level.
- At least nine credits of the 18 credits required for the minor must be taken in residence at AUS.
- At least six credits of the nine credits at or above the 300 level must be taken in residence at AUS.
- A minimum GPA of 2.00 must be earned in courses completed to satisfy the minor.

Students seeking a minor in petroleum engineering must successfully complete the following courses or their equivalent. All course prerequisites must be satisfied. Students pursuing a minor in petroleum engineering are encouraged to take their summer professional training in the petroleum industry.

**Minor Requirements (12 credits)**

Students minoring in petroleum engineering must successfully complete a minimum of 12 credits in courses selected from the following list:

- PET 305 Fundamentals of Petroleum Operations
- PET 365 Petroleum Reservoir Engineering
- PET 375 Petroleum Drilling and Production
- PET 385 Formation Evaluation
- PET 414 Enhanced Oil Recovery

**Minor Electives  
(minimum of 6 credits)**

Students must successfully complete a minimum of six credits in courses selected from the following list:

- CHE 434 Petroleum Refining Processes
- CHE 436 Natural Gas Processing
- CHE 467 Corrosion
- CVE 331 Geotechnical Engineering Principles
- CVE 341 Water Resources Engineering
- MCE 485 Hydraulics of Pipeline Systems
- MCE 487 Turbomachines
- any approved 300-level or 400-level special topics course. Consult the online course catalog or the online class schedule accessible via the AUS student information system to verify course classifications.

**Minor in Renewable Energy**

Mohamed Gadalla, Coordinator

Renewable energy is a multidisciplinary area that integrates different fields including electrical engineering and mechanical engineering. The minor provides students with an opportunity to acquire skills that would enhance their preparation for joining the related industry. The renewable energy minor will expose students to solar and wind energy sources and electrical energy conversion.

Students enrolling in the renewable energy minor should have normally completed a minimum of 60 credits of course work and be in good academic standing.

The following rules apply:

- The minor consists of a minimum of 21 credits, including at least 18 credits in courses at or above the 300 level.
- At least 12 credits of the 21 credits required for the minor must be taken in residence at AUS.
- At least 12 credits of the 18 credits at or above the 300 level must be taken in residence at AUS.
- A minimum GPA of 2.00 must be earned in courses completed to satisfy the minor.

Students seeking a minor in renewable energy must successfully complete the following courses or their equivalent. All course prerequisites must be satisfied.

**Minor Requirements (15 credits)**

Students are required to successfully complete 15 credits from the following:

- ELE 351 Electrical Energy Conversion
- ELE 442 Photovoltaic Semiconductors
- ELE 487 Power Conversion in Renewable Energy Systems
- MCE 241 Thermodynamics I
- MCE 341 Thermodynamics II
- MCE 451 Renewable Energy Systems

**Minor Electives  
(minimum of 6 credits)**

Students must successfully complete a minimum of six credits in courses selected from the following list and not used as minor requirements, with a minimum of three credits outside their major:

- ELE 482 Electric Power Distribution
- ELE 485 Power Electronics
- ELE 486 Electric Drives
- MCE 451 Renewable Energy Systems
- any approved 400-level special topics course related to renewable energy. Consult the online course catalog or the online class schedule accessible via the AUS student information system to verify course classifications.

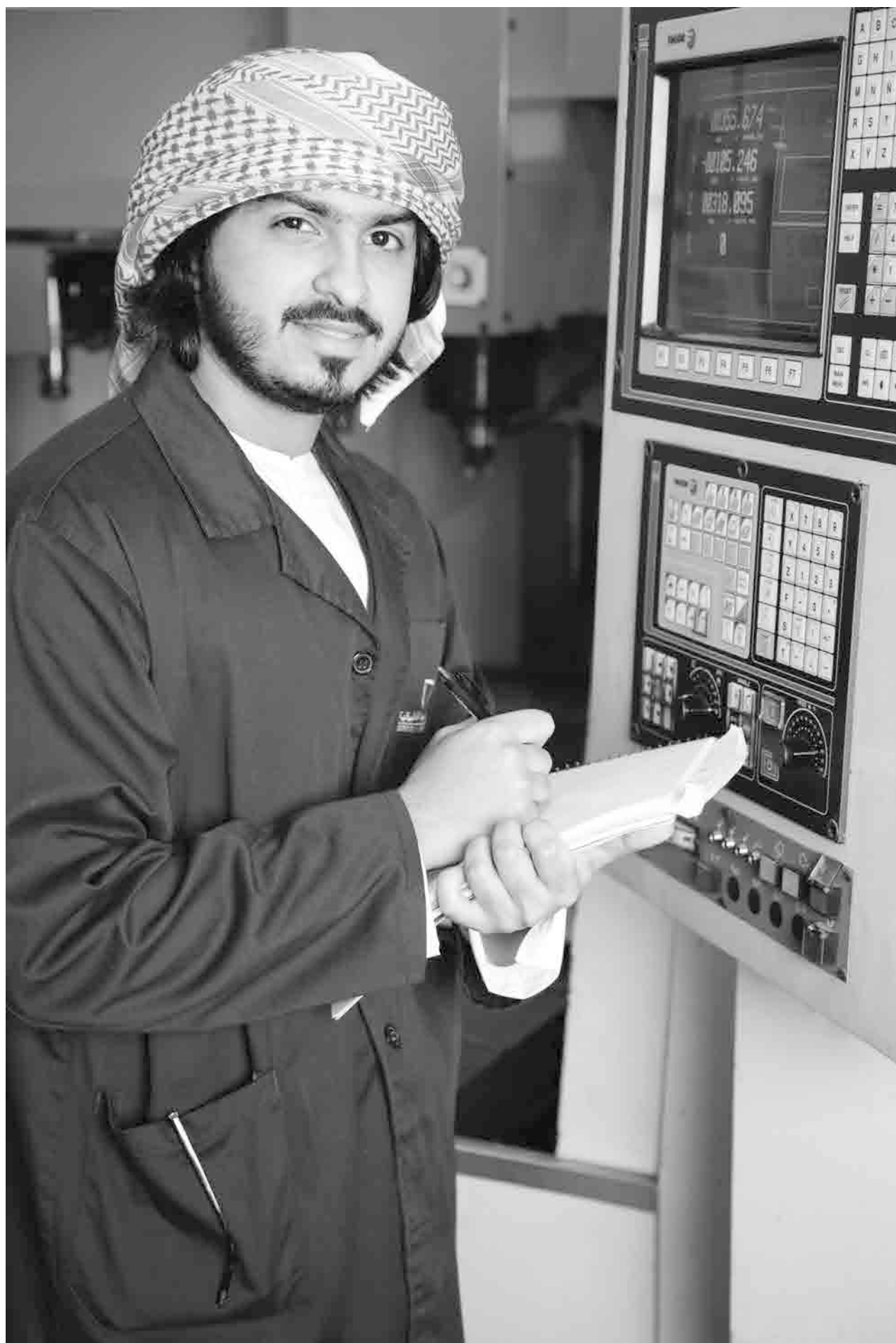
**Cisco Regional Networking Academy**

The Cisco Regional Networking Academy in the College of Engineering is an Instructor Training Center (ITC), responsible for training academy instructors from other institutions in the UAE and across the region. The academy follows an e-learning model that delivers web-based educational content, online testing and performance tracking combined with comprehensive practical training on actual networks. The comprehensive program trains participants to design, build and maintain computer networks and

prepares them for industry-standard certifications, including Cisco Certified Network Associate (CCNA™) and Cisco Certified Network Professional (CCNP™). Furthermore, the academy offers courses in fundamentals of network security and IT essentials. For more details, please visit [www.aus.edu/engr/cisco/](http://www.aus.edu/engr/cisco/) or email [ciscoacademy@aus.edu](mailto:ciscoacademy@aus.edu).

## HP Institute

The HP Institute in the College of Engineering provides students and professionals with the needed technology skills and business context to prepare the participants for a successful IT career in today's technology-driven world. The institute offers the participants certifications in four essential IT segments: Connected Devices, Networks, Servers and Storage, and Cloud. The complete learning solution includes courseware based on industry standards, lectures given by certified instructors, hands-on labs using the latest HP equipment, practice tests and certification exams that go beyond simple concepts and product knowledge. For more details, please visit [www.aus.edu/hpi](http://www.aus.edu/hpi) or email [hpi@aus.edu](mailto:hpi@aus.edu).





# School of Business Administration

## Interim Dean

Jörg Bley

## Interim Associate Dean

Mohsen Saad

As its mission, American University of Sharjah's School of Business Administration (SBA) prepares tomorrow's global business leaders and contributes to lifelong learning by offering high-quality educational programs patterned after the American model. The school embraces multicultural diversity and seeks to provide regional and global perspectives through programs focused on building core competencies to serve the needs of students, the business community and society. Backed by a faculty committed to discipline-based, applied and pedagogical scholarship, SBA's programs promote critical thinking, creativity, ethical behavior and social responsibility in the development of management and leadership skills.

Today's business professionals must have competence in many disciplines, an understanding of a variety of relationships, and the ability to analyze evolving business, economic and governmental trends. Regardless of the specialty area, SBA students must be effective leaders who can organize and motivate people to serve the goals of their organizations. Effectively adapting business practices to emerging conditions, such as the accelerating growth of technology, communications and the globalization of the business world, demands a thorough grasp of current business and economic processes, theory and applications. Through its pedagogy, the School of Business Administration:

- prepares individuals to identify, analyze and understand the interrelationships among business organizations and governments in the UAE, the Gulf States and throughout the world
- develops individuals who can lead organizations toward economic success with an awareness of social and environmental responsibility in the global marketplace of the 21st century
- prepares individuals to integrate information resources and technology to enable them to anticipate and manage change
- advances students' knowledge of current issues and practices affecting business organizations, international

and domestic institutions, and governments

- develops an awareness of societal and environmental needs and concerns as they relate to ethical, professional and socially responsible business practices

Furthermore, the School of Business Administration provides its students with a solid business education core that emphasizes the following teaching methodologies:

- utilizing the latest American business methods, techniques and technologies to provide cutting-edge business education
- integrating multidisciplinary approaches to teaching and learning, utilizing the latest business and economic theories coupled with real-world business data analysis and presentations
- integrating multimedia and computer-based instruction throughout the foundation business curriculum to assist students in learning the latest techniques in business and management

## AACSB Accreditation

The Bachelor of Science in Business Administration (BSBA) offered by the School of Business Administration is accredited by the Association to Advance Collegiate Schools of Business (AACSB). AACSB accreditation is an internationally recognized professional designation for business and accounting programs and is the hallmark of excellence in business education.

## Degree Programs

SBA offers the following undergraduate degree programs:

- Bachelor of Arts in Economics
- Bachelor of Science in Business Administration (BSBA) with majors in
  - accounting
  - economics
  - finance
  - management
  - management information systems
  - marketing

SBA students enrolled in the BSBA program may pursue only one major within the BSBA program.

For details on the graduate programs, please refer to the *AUS Graduate Catalog*.

## Minor Offerings

SBA offers the following minors:

- accounting
- economics
- finance
- international business
- management
- management information systems
- marketing
- supply chain management

Details on each minor are provided in the catalog section of the department offering the minor.

Minors are open to students from outside SBA and to SBA students pursuing majors in disciplines other than the discipline of the minor. SBA students may pursue only one minor offered within SBA.

To apply to an SBA minor program, students should have successfully completed a minimum of 60 credits and be in good academic standing. Interested students must obtain approval from the head of the department housing the minor and request a meeting with an advisor to review the specific requirements of the minor.

## Special Notes

To ensure active and well-supported student participation in its e-learning programs, SBA requires students entering the BSBA program to purchase and use laptops specified by the university.

Students taking any course in SBA may be required to use the Texas Instrument BAII Plus calculator or any non-programmable calculator in exams, quizzes or any other form of evaluation. No other calculator models will be allowed. If a student does not have the required model for an evaluation, the student will have to take the evaluation without a calculator.

Additional fees may be charged for certain courses that require supplementary materials or support by the school.

## Bachelor of Science in Business Administration (BSBA)

The Bachelor of Science in Business Administration program provides students with a 39-credit-hour core curriculum that offers a broad knowledge of business functions while

emphasizing their application in a global business environment. Imbedded in this core curriculum is a 12-week business internship requirement that provides students with the opportunity to experience the corporate world for the first time, apply the knowledge gained throughout their business program, and to plot a possible career path. In addition to the business core, the student must complete a minimum of 24 credits in a professional area constituting a major. The major allows each student to obtain in-depth knowledge in accounting, economics, finance, management, management information systems or marketing. Students must also meet the minimum university requirements in general education courses, as well as complete a minimum of 15 credits in free electives. With an appropriate choice of courses, students can benefit from their free electives to complete a minor.

Students in the BSBA program complete a common two-year program in which they fulfill most of the general education and essential core courses requirements. To qualify for matriculation into their major of choice, students must satisfy a set of matriculation requirements, as detailed in Choice of Major later in this section of the catalog.

### Program Objectives and Outcomes

SBA prepares undergraduate students for careers in business and for further education by providing an American-style curriculum that applies global business perspectives to the historical and cultural context of the Gulf Region. Graduates from the BSBA program are expected to accomplish the following objectives:

- *Breadth of knowledge across business functions*

Students will be able to apply the basic principles of economics, accounting and finance, management, information systems, marketing and operations in the context of a global economy.

- *Understanding of ethical and social responsibility*

Students will apply concepts and theories of ethics and social responsibility to practical business dilemmas, recognizing the implications of management decisions for the interests of key internal and external stakeholders.

- *Teamwork, interpersonal communication and leadership skills*

Students will demonstrate competency in teamwork, presentation, writing and leadership skills through participation in group projects requiring industry

analysis and using the latest business communication tools.

- *Critical thinking, analytical and problem-solving skills*

Students will evaluate business situations and critique managerial decisions, using financial statements, statistical tools, and other appropriate methods to organize, analyze and present data.

- *Proficiency in a chosen business discipline*

Students will use broad knowledge of a specific business discipline, applying concepts, theories and models appropriate to their fields of study.

### Admission to the Program

Admission to the BSBA program follows the university's undergraduate admission requirements. Due to the quantitative emphasis of the business program, new students are required to take the business school mathematics placement examination, in addition to the English language placement test.

AUS students transferring into the program must have a minimum cumulative GPA of 2.50 and permission of the associate dean. Further conditions could apply. For information, please check with the head of the department housing the major.

### Degree Requirements

To qualify for graduation with a Bachelor of Science in Business Administration degree, students must successfully complete the following minimum requirements:

- a minimum of 123 credits, including a minimum of 36 credits in courses at the 300 level or above, as follows:
  - a minimum of 45 credits of general education requirements
  - 39 credits of core requirements
  - a minimum of 24 credits of major requirements and major electives with a minimum GPA of 2.00
  - a minimum of 15 credits of free electives
- a cumulative GPA of 2.00 or better

### General Education Requirements (minimum of 45 credits)

Students in the BSBA program must successfully complete a minimum of 45 credits as follows:

- a minimum of 18 credits in courses meeting the following requirements:
  - history and culture of the Arab world requirement: three to six credits
  - culture in a critical perspective requirement: three to six credits

- arts and literature requirement: three to six credits

- human interaction and behavior requirement: six to nine credits, including ECO 201 and ECO 202

- natural sciences requirement: a minimum of six credits taken from the natural sciences area
- mathematics requirement: MTH 101, and MTH 102 or MTH 103
- statistics requirement: satisfied through QBA 201
- communication requirement: a minimum of 12 credits in 100-level or above writing (WRI)/English (ENG) courses meeting this requirement, including ENG 204 and ENG 208
- ethical understanding requirement: satisfied through MGT 360
- discipline-specific writing intensive course requirement: satisfied through MGT 406
- oral proficiency requirement: satisfied through MGT 406
- information literacy requirement: satisfied through WRI 102 and ENG 204
- computer literacy requirement: BIS 101

### Core Requirements (39 credits)

Students in the BSBA program must successfully complete the following business core courses:

- ACC 201 Fundamentals of Financial Accounting
- ACC 202 Fundamentals of Managerial Accounting
- BLW 301 Business Law
- BUS 497 Business Practicum
- ENG 225 Writing for Business
- FIN 201 Fundamentals of Financial Management
- MGT 201 Fundamentals of Management
- MGT 360 Business Ethics and Social Responsibility
- MGT 406 Business Policy and Strategy
- MIS 201 Fundamentals of Management Information Systems
- MKT 201 Fundamentals of Marketing
- QBA 201 Quantitative Business Analysis
- SCM 202 Operations Management

### Major Requirements and Major Electives (minimum of 24 credits)

A total of 24 credits of course work must be successfully completed in one of the following majors: accounting, economics, finance, management, management information systems or marketing. Required and elective

courses for each major are listed within the corresponding major sections that follow. Students must successfully complete these courses with a minimum combined GPA of 2.00.

### Free Electives (minimum of 15 credits)

BSBA students must successfully complete a minimum of 15 credits of free electives, excluding MTH 100. With a proper selection of courses, students can benefit from the free electives to complete a minor.

### Internship

Students in the BSBA program must successfully complete a 12-week (480

contact hour) internship approved by SBA, normally in the summer preceding their senior year. BUS 497 fulfills this requirement. For details on internship eligibility and registration, please refer to Internship Registration under Registration and Course Information in the Academic Policies and Regulations section of the catalog.

### Proposed Sequence of Study

Newly admitted BSBA students are expected to follow the recommended sequence of study for their chosen major. Students who do not follow the recommended sequence of study should expect that their program will require more than four years to complete.

All BSBA students complete a common first-year and common second-year program, followed by the sequence of study for their chosen major in their third and fourth years. The program is structured so that most general education requirements are completed in the freshman year, and the essential courses of the business core are completed in the sophomore year. Major courses and elective/minor courses are completed in the junior year and senior year of study. Students are expected to successfully complete all the general education and business core requirements (except for MGT 406) before they progress into their senior year.

## Proposed Sequence of Study Bachelor of Science in Business Administration (BSBA) Common Two Years

FIRST YEAR (30 credits)			
Term	Course #	Course Title	Credit
Fall	BIS 101	Business Information Systems	3
	ECO 201	Principles of Microeconomics	3
	MTH 101	Mathematics for Business I	3
	WRI 101	Academic Writing I	3
	GER-SCI	Natural Sciences	3
<b>Total</b>			<b>15</b>
Spring	ECO 202	Principles of Macroeconomics	3
	MTH 102	Mathematics for Business II	3
	WRI 102	Academic Writing II	3
	GER-Core	History and Culture of the Arab World	3
	GER-SCI	Natural Sciences	3
<b>Total</b>			<b>15</b>

SECOND YEAR (30 credits)			
Term	Course #	Course Title	Credit
Fall	ACC 201	Fundamentals of Financial Accounting	3
	ENG 204	Advanced Academic Writing	3
	MGT 201	Fundamentals of Management	3
	QBA 201	Quantitative Business Analysis	3
	GER-Core	Culture in a Critical Perspective	3
<b>Total</b>			<b>15</b>
Spring	ACC 202	Fundamentals of Managerial Accounting	3
	FIN 201	Fundamentals of Financial Management	3
	MIS 201	Fundamentals of Management Information Systems	3
	MKT 201	Fundamentals of Marketing	3
	GER-Core	Arts and Literature	3
<b>Total</b>			<b>15</b>

### Choice of Major

Prior to starting their major courses, BSBA students must declare their choice of major. A Change of Major Form must be submitted to the office of the SBA associate dean for approval by the last day of the 12th week of classes of the semester in which the student will complete 60 credits. The approved form must be filed with the Office of the Registrar by the end of the add and drop period of the semester in which it will be effective. Students must meet the following minimum requirements:

- a cumulative GPA of 2.00 or above
- successful completion of at least 60 credits at the end of the semester in which the choice of major is declared, with 21 credits completed from business core courses
- passing of BIS 101
- passing of the 200-level business core course introductory to the intended major. Students with an intended major in economics complete ECO 201 as the introductory 200-level course.

- credits may not include preparatory 00X courses or Achievement Academy/Bridge Program courses

Further conditions could be required by the different departments.

Students are strongly advised to register for 300- and 400-level courses in their SBA major field of study after having completed the above requirements.

### Major in Accounting

This major prepares its graduates for positions in industry, public accounting, government and not-for-profit organizations, as well as for graduate study. The program provides students with a foundation in the primary areas of the accounting discipline including cost accounting, financial accounting, accounting information systems, assurance services, federal income taxes and related business areas. Students are also provided with an opportunity to develop their communication skills, integrate and advance their technological skills, and to use critical thinking to analyze

ambiguous situations and provide relevant business alternatives. In addition, the accounting major helps prepare students to obtain professional certifications such as Certified Public Accountant (CPA), Certified Management Accountant (CMA) and Certified Internal Auditor (CIA).

Students must successfully complete courses taken as major requirements and major electives with a minimum combined GPA of 2.00.

### Major Requirements (18 credits)

- ACC 301 Intermediate Financial Accounting I
- ACC 302 Intermediate Financial Accounting II
- ACC 303 Cost Accounting
- ACC 305 Income Tax I
- ACC 360 Accounting Information Systems
- ACC 410 Auditing

**Major Electives  
(minimum of 6 credits)**

Students must successfully complete a minimum of six credits in 300-level or

above ACC courses not listed as major requirements and that require at a minimum ACC 301 as a prerequisite.

**Proposed Sequence of Study (third year and above)  
Bachelor of Science in Business Administration (BSBA)  
Accounting Major**

THIRD YEAR (33 credits)			
Term	Course #	Course Title	Credit
Fall	ACC 301	Intermediate Financial Accounting I	3
	BLW 301	Business Law	3
	ENG 208	Public Speaking	3
	SCM 202	Operations Management	3
	FRE	Free Elective/Minor	3
<b>Total</b>			<b>15</b>
Spring	ACC 302	Intermediate Financial Accounting II	3
	ACC 303	Cost Accounting	3
	ENG 225	Writing for Business	3
	MGT 360	Business Ethics and Social Responsibility	3
	GER-Core	Course Selected from General Education Core Requirements	3
<b>Total</b>			<b>15</b>
Summer	BUS 497	Business Practicum	3

FOURTH YEAR (30 credits)			
Term	Course #	Course Title	Credit
Fall	ACC 305	Income Tax I	3
	ACC 360	Accounting Information Systems	3
	MJE	Major Elective	3
	FRE	Free Elective/Minor	3
	FRE	Free Elective/Minor	3
<b>Total</b>			<b>15</b>
Spring	ACC 410	Auditing	3
	MGT 406	Business Policy and Strategy	3
	MJE	Major Elective	3
	FRE	Free Elective/Minor	3
	FRE	Free Elective/Minor	3
<b>Total</b>			<b>15</b>

**Notes on course selection and progress**

- Students are expected to successfully complete all the general education and business core requirements (except for MGT 406) before they progress into their senior year.
- Students who do not follow the recommended sequence of study should expect that their program will require more than four years to complete.

**Major in Economics**

This major provides students with the theoretical foundation to apply economics to decision making and public policy in businesses and other organizations. From the common core of the intermediate theory courses in micro- and macroeconomics, students can branch out into several application areas in economics (such as international economics, industrial organization, money and banking) or

pursue more advanced courses (such as managerial economics, econometrics or the senior economics seminar).

Students must successfully complete courses taken as major requirements and major electives with a minimum combined GPA of 2.00.

**Major Requirements (15 credits)**

- ECO 301 Intermediate Microeconomics
- ECO 302 Intermediate Macroeconomics

- ECO 330 Money and Banking
- ECO 351 Introduction to Econometrics
- ECO 401 Managerial Economics

**Major Electives  
(minimum of 9 credits)**

Students must successfully complete a minimum of nine credits in 300-level or above ECO courses not listed as major requirements.

**Proposed Sequence of Study (third year and above)  
Bachelor of Science in Business Administration (BSBA)  
Economics Major**

THIRD YEAR (33 credits)			
Term	Course #	Course Title	Credit
Fall	BLW 301	Business Law	3
	ECO 301	Intermediate Microeconomics	3
	ENG 208	Public Speaking	3
	SCM 202	Operations Management	3
	FRE	Free Elective/Minor	3
<b>Total</b>			<b>15</b>
Spring	ECO 302	Intermediate Macroeconomics	3
	ECO 351	Introduction to Econometrics	3
	ENG 225	Writing for Business	3
	MGT 360	Business Ethics and Social Responsibility	3
	GER-Core	Course Selected from General Education Core Requirements	3
<b>Total</b>			<b>15</b>
Summer	BUS 497	Business Practicum	3

FOURTH YEAR (30 credits)			
Term	Course #	Course Title	Credit
Fall	ECO 330	Money and Banking	3
	ECO 401	Managerial Economics	3
	MJE	Major Elective	3
	FRE	Free Elective/Minor	3
	FRE	Free Elective/Minor	3
<b>Total</b>			<b>15</b>
Spring	MGT 406	Business Policy and Strategy	3
	MJE	Major Elective	3
	MJE	Major Elective	3
	FRE	Free Elective/Minor	3
	FRE	Free Elective/Minor	3
<b>Total</b>			<b>15</b>

**Notes on course selection and progress**

- Students are expected to successfully complete all the general education and business core requirements (except for MGT 406) before they progress into their senior year.
- Students who do not follow the recommended sequence of study should expect that their program will require more than four years to complete.



## Major in Finance

This major offers students an integrative approach to the fields of banking and finance. Students will develop the analytical skills and theoretical framework necessary to analyze and understand the financial and banking sectors. Furthermore, this major provides the essential tools for understanding investments, capital markets, financial management and financial institutions.

Students majoring in finance can structure their program to obtain the knowledge needed to take the first level of the CFA exam upon graduation. The Department of Finance is an educational partner with the Chartered Financial Analysts (CFA) organization in the US.

Students must successfully complete courses taken as major requirements and major electives with a minimum combined GPA of 2.00.

### Major Requirements (15 credits)

- FIN 310 Analysis of Financial Statements
- FIN 320 Banking
- FIN 330 Investments
- FIN 401 International Finance
- FIN 450 Case Studies in Corporate Finance

### Major Electives (minimum of 9 credits)

Students must successfully complete a minimum of nine credits in courses selected from the following:

- ACC 301 Intermediate Financial Accounting I
- ECO 340 Economics of Real Estate or FIN 304 Real Estate Investing
- ECO 351 Introduction to Econometrics
- MTH 307 Theory of Risk
- any 300-level or above FIN courses not listed as major requirements.
- any approved special topic courses at the 300 level or above. Consult the online course catalog or the online class schedule accessible via the AUS student information system to verify course classifications.

Students who wish to pursue a CFA designation after graduation should take FIN 402 as a major elective.

### Proposed Sequence of Study (third year and above) Bachelor of Science in Business Administration (BSBA) Finance Major

THIRD YEAR (33 credits)			
Term	Course #	Course Title	Credit
Fall	BLW 301	Business Law	3
	ENG 208	Public Speaking	3
	FIN 310	Analysis of Financial Statements	3
	FIN 330	Investments	3
	SCM 202	Operations Management	3
	<b>Total</b>		<b>15</b>
Spring	ENG 225	Writing for Business	3
	FIN 320	Banking	3
	FIN 402	Futures and Options (recommended)	3
	MGT 360	Business Ethics and Social Responsibility	3
	GER-Core	Course Selected from General Education Core Requirements	3
	<b>Total</b>		<b>15</b>
Summer	BUS 497	Business Practicum	3

FOURTH YEAR (30 credits)			
Term	Course #	Course Title	Credit
Fall	FIN 401	International Finance	3
	MJE	Major Elective	3
	MJE	Major Elective	3
	FRE	Free Elective/Minor	3
	FRE	Free Elective/Minor	3
	<b>Total</b>		<b>15</b>
Spring	FIN 450	Case Studies in Corporate Finance	3
	MGT 406	Business Policy and Strategy	3
	FRE	Free Elective/Minor	3
	FRE	Free Elective/Minor	3
	FRE	Free Elective/Minor	3
	<b>Total</b>		<b>15</b>

### Notes on course selection and progress

- Students are expected to successfully complete all the general education and business core requirements (except for MGT 406) before they progress into their senior year.
- Students who do not follow the recommended sequence of study should expect that their program will require more than four years to complete.

## Major in Management

This major is designed to prepare students for positions of leadership and responsibility in modern organizations. Management is approached as a professional career that embodies knowledge and concern for the ethical, human and global aspects of organizations, emphasizing a thorough grounding in a common body of knowledge as the basis for making sound decisions and meeting future challenges. The curriculum explicitly focuses on developing communication, leadership and problem-solving skills. In addition, the internship requirement allows students to develop insight and experience in the real world of business. Equipped with the intellectual tools and practical experience necessary to diagnose and resolve

organizational challenges, and with effective communication skills, management students will be ready to excel in a wide variety of business settings.

Students must successfully complete courses taken as major requirements and major electives with a minimum combined GPA of 2.00.

### Major Requirements (15 credits)

- MGT 301 Organizational Behavior
- MGT 302 Managing Human Resources
- MGT 305 International Business
- MGT 380 Project Management
- MGT 403 Entrepreneurship

### Major Electives (minimum of 9 credits)

Students must successfully complete a minimum of nine credits in courses selected from the following:

- BLW 303 Legal Issues in Management
- MIS 312 Business Intelligence
- SCM 310 Management of the Supply Chain
- SCM 311 Logistics Management
- any 300-level or above MGT courses not listed as major requirements
- any approved special topic courses at the 300 level or above. Consult the online course catalog or the online class schedule accessible via the AUS student information system to verify course classifications.

**Proposed Sequence of Study (third year and above)**  
**Bachelor of Science in Business Administration (BSBA)**  
**Management Major**

THIRD YEAR (33 credits)				FOURTH YEAR (30 credits)			
Term	Course #	Course Title	Credit	Term	Course #	Course Title	Credit
Fall	BLW 301	Business Law	3	Fall	MGT 305	International Business	3
	ENG 208	Public Speaking	3		MGT 403	Entrepreneurship	3
	MGT 301	Organizational Behavior	3		MJE	Major Elective	3
	SCM 202	Operations Management	3		FRE	Free Elective/Minor	3
	FRE	Free Elective/Minor	3		FRE	Free Elective/Minor	3
<b>Total</b>			<b>15</b>	<b>Total</b>			<b>15</b>
Spring	ENG 225	Writing for Business	3	Spring	MGT 380	Project Management	3
	MGT 302	Managing Human Resources	3		MGT 406	Business Policy and Strategy	3
	MGT 360	Business Ethics and Social Responsibility	3		MJE	Major Elective	3
	MJE	Major Elective	3		FRE	Free Elective/Minor	3
	GER-Core	Course Selected from General Education Core Requirements	3		FRE	Free Elective/Minor	3
<b>Total</b>			<b>15</b>	<b>Total</b>			<b>15</b>
Summer	BUS 497	Business Practicum	3				

**Notes on course selection and progress**

- Students are expected to successfully complete all the general education and business core requirements (except for MGT 406) before they progress into their senior year.
- Students who do not follow the recommended sequence of study should expect that their program will require more than four years to complete.

### Major in Management Information Systems

Managers and non-managers alike depend upon information for enhancing their business processes and decision making. To be useful, information must be understandable, timely, accurate, thorough, focused, secure and distributed to the appropriate individuals. Accomplishing all these tasks is the challenge of managers of information systems. In this major, students will acquire professional skills in the areas of hardware and software, databases, business operations, decision-making management, systems development and operation, networks, communications and other skills needed by professionals working in the expanding field of information technology management.

Students must successfully complete courses taken as major requirements and major electives with a minimum combined GPA of 2.00.

**Major Requirements (15 credits)**

- MGT 380 Project Management or EGM 362 Engineering Project Management
- MIS 301 Fundamentals of Database Management or CMP 320 Database Systems or COE 422 Database Systems
- MIS 303 Introduction to Systems Analysis and Design or CMP 350 Software Engineering or COE 420 Software Engineering
- MIS 305 E-Commerce
- MIS 405 Information Systems Strategy

**Major Electives (minimum of 9 credits)**

Students must successfully complete a minimum of nine credits in courses selected from the following:

- FIN 375 Trading and Financial Markets

- MGT 315 Enterprise Resource Planning
- SCM 310 Management of the Supply Chain
- any 300-level or above MIS courses not listed as major requirements
- any approved special topic courses at the 300 level or above. Consult the online course catalog or the online class schedule accessible via the AUS student information system to verify course classifications.

**Proposed Sequence of Study (third year and above)**  
**Bachelor of Science in Business Administration (BSBA)**  
**Management Information Systems Major**

THIRD YEAR (33 credits)				FOURTH YEAR (30 credits)			
Term	Course #	Course Title	Credit	Term	Course #	Course Title	Credit
Fall	ENG 208	Public Speaking	3	Fall	BLW 301	Business Law	3
	MIS 301 or CMP 320 or COE 422	Fundamentals of Database Management Database Systems Database Systems	3		MIS 305	E-Commerce	3
	MIS 303 or CMP 350 or COE 420	Introduction to Systems Analysis and Design Software Engineering Software Engineering	3		MJE	Major Elective	3
	SCM 202	Operations Management	3		FRE	Free Elective/Minor	3
	FRE	Free Elective/Minor	3		FRE	Free Elective/Minor	3
<b>Total</b>			<b>15</b>	<b>Total</b>			<b>15</b>
Spring	ENG 225	Writing for Business	3	Spring	MGT 406	Business Policy and Strategy	3
	MGT 360	Business Ethics and Social Responsibility	3		MIS 405	Information Systems Strategy	3
	MGT 380 or EGM 362	Project Management Engineering Project Management	3		MJE	Major Elective	3
	MJE	Major Elective	3		FRE	Free Elective/Minor	3
	GER-Core	Course Selected from General Education Core Requirements	3		FRE	Free Elective/Minor	3
<b>Total</b>			<b>15</b>	<b>Total</b>			<b>15</b>
Summer	BUS 497	Business Practicum	3				

**Notes on course selection and progress**

- Students are expected to successfully complete all the general education and business core requirements (except for MGT 406) before they progress into their senior year.
- Students who do not follow the recommended sequence of study should expect that their program will require more than four years to complete.

**Major in Marketing**

Students in this major study the role of marketing in modern organizations. The role of the marketer as the key connection between the product or service provider and the consumer requires a thorough understanding of marketing research and statistical techniques to make informed decisions about the design and development of marketing strategies. These strategies will encompass product and branding concepts, promotion and communication with customers, pricing and distribution. Additionally, the field of study will stress practical applications of marketing concepts in areas such as consumer behavior, sales management and retailing.

Students are allowed to custom design their major by choosing from an array of marketing electives.

Students must successfully complete courses taken as major requirements and major electives with a minimum combined GPA of 2.00.

**Major Requirements (15 credits)**

- MKT 301 Consumer Behavior
- MKT 302 Marketing Research
- MKT 307 B2B Marketing and Negotiations
- MKT 309 International Marketing
- MKT 401 Marketing Strategy

**Major Electives (minimum of 9 credits)**

Students must successfully complete a minimum of nine credits in courses selected from the following:

- MIS 312 Business Intelligence
- SCM 320 Quality Management and Service Organizations
- any 300-level or above MKT courses not listed as major requirements
- any approved special topic courses at the 300 level or above. Consult the online course catalog or the online class schedule accessible via the AUS student information system to verify course classifications.

**Proposed Sequence of Study (third year and above)**  
**Bachelor of Science in Business Administration (BSBA)**  
**Marketing Major**

THIRD YEAR (33 credits)				FOURTH YEAR (30 credits)			
Term	Course #	Course Title	Credit	Term	Course #	Course Title	Credit
Fall	BLW 301	Business Law	3	Fall	MKT 307	B2B Marketing and Negotiations	3
	ENG 208	Public Speaking	3		MKT 309	International Marketing	3
	MKT 301	Consumer Behavior	3		MJE	Major Elective	3
	SCM 202	Operations Management	3		FRE	Free Elective/Minor	3
	FRE	Free Elective/Minor	3		FRE	Free Elective/Minor	3
<b>Total</b>			<b>15</b>	<b>Total</b>			<b>15</b>
Spring	ENG 225	Writing for Business	3	Spring	MGT 406	Business Policy and Strategy	3
	MGT 360	Business Ethics and Social Responsibility	3		MKT 401	Marketing Strategy	3
	MKT 302	Marketing Research	3		MJE	Major Elective	3
	MJE	Major Elective	3		FRE	Free Elective/Minor	3
	GER-Core	Course Selected from General Education	3		FRE	Free Elective/Minor	3
<b>Total</b>			<b>15</b>	<b>Total</b>			<b>15</b>
Summer	BUS 497	Business Practicum	3				

**Notes on course selection and progress**

- Students are expected to successfully complete all the general education and business core requirements (except for MGT 406) before they progress into their senior year.
- Students who do not follow the recommended sequence of study should expect that their program will require more than four years to complete.

## Department of Accounting

Taisier Zoubi, Head

### Faculty

Abed Al-Nasser Abdallah

Yass Alkafaji

Mustafa Ciftci

Musa Darayseh

Allan Graham

Karen Hawa

Mahmoud Hossain

Ashraf Khallaf

Mohamed Feras Salama

Jeannette Vinke

The Department of Accounting aims to educate and prepare students for successful careers in the field of accounting. Students learn to compile, present, analyze, interpret and apply accounting and financial data in the decision-making process. Students pursuing the accounting major learn specific competencies to work in accounting and management in either the private or public sector.

AUS accounting graduates have the background needed for further study toward the Certified Public Accountant (CPA), Certified Management Accountant (CMA) and Certified Internal Auditor (CIA) professional designations.

The Department of Accounting also offers a Master of Science degree in Accounting. For details, please refer to the *AUS Graduate Catalog*.

### BSBA-Major in Accounting

Faculty members from the Department of Accounting provide instruction in the Bachelor of Science in Business Administration (BSBA) program. For more information on the accounting major within the BSBA program, please see the previous section on the BSBA.

### Minor in Accounting

This minor provides graduates with a basic background in financial and managerial accounting. It is a complementary field of study for students majoring in finance or MIS. It is also an attractive choice for other students who wish to obtain the accounting background needed in the business world, or to begin graduate study toward a professional designation such as a CPA or CMA.

Students applying to this minor should have successfully completed a minimum of 60 credits and be in good academic standing.

The following rules apply:

- The minor consists of a minimum of 18 credits, including at least nine credits in courses at or above the 300 level in accounting.

- At least nine credits of the 18 credits required for the minor must be taken in residence at AUS.
- At least six credits of the nine credits at or above the 300 level must be taken in residence at AUS.
- A minimum GPA of 2.00 must be earned in courses completed to satisfy the minor.

Students seeking a minor in accounting must successfully complete the following courses or their equivalent. All course prerequisites must be satisfied.

### Minor Requirements (9 credits)

- ACC 301 Intermediate Financial Accounting I
- ACC 302 Intermediate Financial Accounting II
- ACC 303 Cost Accounting

### Minor Electives (minimum of 9 credits)

Students must successfully complete a minimum of nine credits in 300-level or above ACC courses not listed as requirements for the minor.

## Department of Economics

Ismail Genc, Head

### Faculty

Bassam Abu Al-Foul

Mohammad Arzaghi

Hamid Baghestani

Henry Chappell

Liliana Danila

Hashem Dezhbakhsh

Emin Gahramanov

Khusrav Gaibulloev

Ilker Kaya

Ozgur Kaya

Samer Kherfi

Adrian Lopes

Jay Squalli

Dina Tasneem

Hugo Toledo

Ajalavat Viriyavipart

Javed Younas

The Bachelor of Arts (BA) in Economics is designed to give students an in-depth understanding of how individuals acting as consumers, as business managers, as participating citizens within a society and as government agents make decisions. Students who graduate with a BA degree in economics will have the knowledge and analytical skills required to understand and solve complex business and social problems.

Like the BA in economics, the BSBA in economics is designed to provide students with an understanding of how people make choices in all aspects of human activity. The BSBA, however,

provides greater focus on the choices people make in a business context. Students with the BSBA major in economics will acquire the analytical tools required to become successful managers of firms or not-for-profit organizations.

## Bachelor of Arts in Economics (BAE)

Economics encompasses a diverse range of fields including international trade, finance, development and growth, urban and regional economics, industrial organization, labor economics, banking and monetary economics, natural resources and environmental economics. All, however, are approached with the same set of analytical tools that characterize the economic way of thinking.

Indeed, the economics discipline is distinguished by a small set of powerful ideas that can be applied to a variety of problems from a wide range of topics. These fundamental ideas are incentives, equilibrium and efficiency. From an observation, economists model a real-world situation and test the model empirically to arrive at the model's implications, and use those implications and make recommendations for policy and institutional reform. While economists do not attempt to establish society's goals, they do examine the consequences of different ways of pursuing them. Economic principles, when applied, can lead to outcomes that benefit all of society.

An economics degree provides students with skills that are valuable for a number of careers in which critical thinking and careful decision making are required. The economics program provides a firm foundation for a career in public policy analysis, banking, finance, market analysis and business management.

The purpose of the Bachelor of Arts in Economics degree program is to provide students with strong undergraduate training in the theory and application of economics built upon the foundation of education in the liberal arts and science. The program aims to prepare students for rewarding employment in business and government, nationally or internationally, and, if they choose, for graduate study in business, law, economics and other advanced professional degrees at internationally recognized universities.

These functions of the economics program unite in a single mission: the delivery of an American-standard undergraduate economics program offering qualifications that are readily

recognized and understood internationally by employers and graduate programs.

The commitment to an American standard is achieved by benchmarking the content of economics courses to peer institutions and remaining current as the discipline evolves. Success requires faculty members who have sound training in the major specializations in economics and who actively pursue research.

### Program Goals

Economics students learn to think creatively about the economic concerns facing the world today. Students learn to apply a variety of theoretical perspectives to issues of economic efficiency, economic growth, globalization, wealth and poverty, individual freedom, discrimination, cultural values and environmental concerns. The strategic objectives of the economics program are to:

- maintain a high-quality curriculum that remains current as the discipline evolves
- promote value-added research and intellectual contributions
- develop in students a competence in critical thinking, communication and information technology
- develop in students a sense of awareness of the broad applications of economics in everyday life

### Program Outcomes

The Bachelor of Arts in Economics program provides a solid knowledge of economic theory and policy to prepare students for diverse career opportunities in public and private sectors and for future studies in economics and related fields. Upon successful completion of the program, economics majors will be able to:

- identify the role of supply and demand in a market economy, the role of prices, and the necessary conditions for market economies to function effectively
- demonstrate a working understanding of the economic role of government, fiscal and monetary policy, and market structures
- identify policy options and assess the likelihood they would improve economic growth and efficiency
- apply economic theory to a range of economic and social issues
- assess the benefits of international trade and globalization
- assess the significance of national and international events on the economy

- conduct an independent research project including literature review, data gathering, and data analysis
- communicate effectively orally and in writing

### Distinctive Features of the Program

Students pursuing the Bachelor of Arts in Economics at AUS learn about contemporary economics and its place within the wider social sphere. Students' understanding of economic principles helps them to analyze economic trends and government responses to them.

Students have the opportunity to develop good analytical and problem-solving skills.

By exploring economic theories that help explain human behavior, AUS students learn to develop their own arguments and to assess their own values regarding the issues discussed in class.

### Admission to the Program

Admission to the program follows the university's undergraduate admission requirements.

Formal admission to the program requires meeting the following minimum requirements:

- successful completion of 60 credits in undergraduate course work. Credits may not include preparatory 00X courses or Achievement Academy/Bridge Program courses
- a cumulative GPA of 2.00 or above
- successful completion of ECO 201 and ECO 202

To be eligible for formal admission consideration, BAE students who meet the above requirements must submit a Change of Major form to the office of the SBA Associate Dean by the last day of the 12th week of classes of the semester in which the student will complete 60 credits. The approved form must be filed with the Office of the Registrar by the end of the add and drop period of the semester in which it will be effective.

AUS students transferring into the program must have a minimum cumulative GPA of 2.50 and permission of the associate dean. Further conditions could apply. For information, please check with the head of the department.

### Degree Requirements

To qualify for graduation with a Bachelor of Arts in Economics degree, students must successfully complete the following minimum requirements:

- a minimum of 120 credits, including:
  - a minimum of 45 credits of general education requirements
  - 30 credits of major requirements with a 2.00 minimum GPA
  - a minimum of 33 credits of major electives
  - a minimum of 12 credits of free electives

- a cumulative GPA of 2.00 or better

### General Education Requirements (minimum of 45 credits)

Students in the BAE program must successfully complete a minimum of 45 credits as follows:

- a minimum of 18 credits in courses meeting the following requirements:
  - history and culture of the Arab world requirement: three to six credits
  - culture in a critical perspective requirement: three to six credits
  - arts and literature requirement: three to six credits
  - human interaction and behavior requirement: six to nine credits
- natural sciences requirement: a minimum of six credits taken from the natural sciences area
- mathematics requirement: MTH 101, and MTH 102 or MTH 103
- statistics requirement: satisfied through QBA 201
- communication requirement: a minimum of 12 credits in 100-level or above writing (WRI)/English (ENG) courses meeting this requirement, including ENG 204 and ENG 208
- ethical understanding requirement: satisfied through ECO 495
- discipline-specific writing intensive course requirement: satisfied through ECO 495
- oral proficiency requirement: satisfied through ECO 495
- information literacy requirement: satisfied through WRI 102 and ENG 204
- computer literacy requirement: BIS 101

### Major Requirements (30 credits)

Students must successfully complete the following required courses with a 2.00 minimum GPA:

- ECO 201 Principles of Microeconomics
- ECO 202 Principles of Macroeconomics
- ECO 301 Intermediate Microeconomics
- ECO 302 Intermediate Macroeconomics
- ECO 305 International Trade

- ECO 310 Development Economics
- ECO 351 Introduction to Econometrics
- ECO 451 Advanced Econometrics
- ECO 495 Senior Seminar in Economics
- QBA 201 Quantitative Business Analysis

### Major Electives (minimum of 33 credits)

#### Economics Courses (minimum of 18 credits)

Students must successfully complete a minimum of 18 credits from ECO courses at the 300-level or above not listed under the major requirements.

#### Related Courses (minimum of 15 credits)

Students must successfully complete a minimum of 15 credits in courses

selected from the fields listed below. Consult the online course catalog or the online class schedule accessible via the AUS student information system to verify course classifications.

Students may choose to satisfy part or all of the related courses requirement by completing a minor in one of the related fields listed below. A student pursuing the Bachelor of Arts in Economics may not minor in economics.

- accounting
- anthropology
- computer science
- economics (any course at the 300 level or above)
- finance
- history (any course at the 200 level or above)

- international studies
- management
- management information systems
- marketing
- mathematics (any course other than MTH 100 and MTH 111)
- political science
- psychology
- statistics (any course other than STA 201 or STA 202)
- supply chain management

### Free Electives (minimum of 12 credits)

Students must successfully complete a minimum of 12 credits of free electives, excluding MTH 100.

### Proposed Sequence of Study Bachelor of Arts in Economics (BAE)

FIRST YEAR (30 credits)			
Term	Course #	Course Title	Credit
Fall	BIS 101	Business Information Systems	3
	ECO 201	Principles of Microeconomics	3
	MTH 101	Mathematics for Business I	3
	WRI 101	Academic Writing I	3
	GER-SCI	Natural Sciences	3
	<b>Total</b>		<b>15</b>
Spring	ECO 202	Principles of Macroeconomics	3
	MTH 102	Mathematics for Business II	3
	QBA 201	Quantitative Business Analysis	3
	WRI 102	Academic Writing II	3
	GER-SCI	Natural Sciences	3
	<b>Total</b>		<b>15</b>
SECOND YEAR (30 credits)			
Term	Course #	Course Title	Credit
Fall	ECO 302	Intermediate Macroeconomics	3
	ECO 310	Development Economics	3
	ENG 204	Advanced Academic Writing	3
	GER-Core	History and Culture of the Arab World	3
	GER-Core	Culture in a Critical Perspective	3
	<b>Total</b>		<b>15</b>
Spring	ECO 301	Intermediate Microeconomics	3
	ENG 208	Public Speaking	3
	MJE	Economics Course	3
	MJE	Related Course	3
	GER-Core	Arts and Literature	3
	<b>Total</b>		<b>15</b>

THIRD YEAR (30 credits)			
Term	Course #	Course Title	Credit
Fall	ECO 305	International Trade	3
	ECO 351	Introduction to Econometrics	3
	MJE	Related Course	3
	GER-Core	Human Interaction and Behavior	3
	GER-Core	Human Interaction and Behavior	3
	<b>Total</b>		<b>15</b>
Spring	ECO 451	Advanced Econometrics	3
	MJE	Related Course	3
	MJE	Economics Course	3
	GER-Core	Course Selected from General Education Core Requirements	3
	FRE	Free Elective	3
	<b>Total</b>		<b>15</b>
FOURTH YEAR (30 credits)			
Term	Course #	Course Title	Credit
Fall	ECO 495	Senior Seminar in Economics	3
	MJE	Economics Course	3
	MJE	Economics Course	3
	MJE	Related Course	3
	FRE	Free Elective	3
	<b>Total</b>		<b>15</b>
Spring	MJE	Economics Course	3
	MJE	Economics Course	3
	MJE	Related Course	3
	FRE	Free Elective	3
	FRE	Free Elective	3
	<b>Total</b>		<b>15</b>

**Note:** Students who do not follow the recommended sequence of study should expect that their program will require more than four years to complete.

### BSBA-Major in Economics

Faculty members from the Department of Economics provide instruction in the Bachelor of Science in Business Administration (BSBA) program. For more information on the economics major within the BSBA program, please see the previous section on the BSBA.

### Minor in Economics

This minor complements the program of students in other majors and is designed to help them develop a basic understanding of the principles and applications of economics. By pursuing this minor, students will develop an understanding of microeconomic and

macroeconomic theory, the role of markets, and the effects of government regulation and policy on economic behavior.

Students applying to this minor should have successfully completed a minimum of 60 credits and be in good academic standing.

The following rules apply:

- The minor consists of a minimum of 18 credits at or above the 300 level in economics.
- At least nine credits of the 18 credits required for the minor must be taken in residence at AUS.
- At least six credits of the nine credits at or above the 300 level must be taken in residence at AUS.
- A minimum GPA of 2.00 must be earned in courses completed to satisfy the minor.

Students seeking a minor in economics must successfully complete the following courses or their equivalent. All course prerequisites must be satisfied.

#### **Minor Requirements (6 credits)**

- ECO 301 Intermediate Microeconomics
- ECO 302 Intermediate Macroeconomics

#### **Minor Electives (minimum of 12 credits)**

Students must successfully complete a minimum of 12 credits in courses selected from the following:

- FIN 330 Investments
- FIN 370 Fundamentals of Islamic Finance
- any 300-level or above ECO courses not listed as minor requirements.

Students should consult with their advisors when choosing their minor electives.

### **Department of Finance**

Narjess Boubakri, Head

#### **Faculty**

Iness Aguir  
Osamah Al Khazali  
Jörg Bley  
Ujjal Chatterjee  
Abdelaziz Chazi  
Daniel Dupuis  
Ali Mirzaei  
Mohsen Saad  
Anis Samet  
Sam Tibbs  
Zaher Zantout

The Department of Finance aims to educate and prepare students for successful careers in the field of finance. Studying finance at AUS provides students with the intellectual tools to succeed in careers in financial management, banking, investments, real estate and other sectors of the global financial world.

The Department of Finance has partnered with the CFA Institute and

has incorporated the Chartered Financial Analyst (CFA) Level I curriculum in its course offerings.

#### **BSBA–Major in Finance**

Faculty members from the Department of Finance provide instruction in the Bachelor of Science in Business Administration (BSBA) program. For more information on the finance major within the BSBA program, please see the previous section on the BSBA.

#### **Minor in Finance**

This minor provides a basic background in the fields of banking and finance. It is a complementary field of study for students majoring in accounting, economics or marketing. It is also an attractive choice for other students who wish to obtain the finance background needed in the business world, or to begin graduate study toward a professional designation such as the CFA.

Students applying to this minor should have successfully completed a minimum of 60 credits and be in good academic standing.

The following rules apply:

- The minor consists of a minimum of 18 credits, including at least nine credits in courses at or above the 300 level in finance.
- At least nine credits of the 18 credits required for the minor must be taken in residence at AUS.
- At least six credits of the nine credits at or above the 300 level must be taken in residence at AUS.
- A minimum GPA of 2.00 must be earned in courses completed to satisfy the minor.

Students seeking a minor in finance must successfully complete the following courses or their equivalent. All course prerequisites must be satisfied.

#### **Minor Requirements (9 credits)**

- FIN 320 Banking
- FIN 330 Investments
- FIN 450 Case Studies in Corporate Finance

#### **Minor Electives (minimum of 9 credits)**

Students must successfully complete a minimum of nine credits in courses selected from the following:

- ACC 301 Intermediate Financial Accounting I
- ECO 340 Economics of Real Estate or FIN 304 Real Estate Investing
- ECO 351 Introduction to Econometrics
- MTH 307 Theory of Risk

- any approved 300 level or above FIN courses. Consult the online course catalog or the online class schedule accessible via the AUS student information system to verify course classifications.

Students who wish to pursue a CFA designation after graduation should take FIN 402 as a minor elective.

### **Department of Management**

Patrick McClelland, Head

#### **Faculty**

Cynthia Baker  
Rodrigo Basco  
Omar Belkhodja  
Virginia Bodolica  
Tor Brodtkorb  
Ahmad El-Assadi  
Alaa Hamade  
John E. Katsos  
Linzi Kemp  
Ali Khawaja  
Andrew Klein  
Justin O'Brien  
Daniel Simonet  
Martin Spraggon-Hernandez  
Joseph Wallis  
Marie-France Waxin  
Fang Zhao

The Department of Management aims to educate and prepare students for successful careers at the managerial level in the private, public and non-profit sectors. Students learn the leadership and management skills and techniques that are essential to help corporations and organizations achieve their goals and objectives, and the methods used by policy makers to shape and improve communities and people's lives.

The department offers a BSBA major in management. With its balanced emphasis on developing both "hard" and "soft" skills and an appreciation of the challenges posed by cultural diversity and a global marketplace, the courses offered by this department provide a solid foundation for either entry-level managerial positions or graduate study in MBA or business-subject PhD programs.

#### **BSBA–Major in Management**

Faculty members from the Department of Management provide instruction in the Bachelor of Science in Business Administration (BSBA) program. For more information on the management major within the BSBA program, please see the previous section on the BSBA.

### Minor in International Business

This minor is designed to provide interested students with the tools, theory and practical knowledge required to function in an international business environment and to prepare students for an entry-level position at a multinational corporation. Emphasis is on essential international business knowledge, supplemented by courses from other disciplines such as economics and international relations.

Students applying to this minor should have successfully completed a minimum of 60 credits and be in good academic standing.

The following rules apply:

- The minor consists of a minimum of 18 credits, including at least nine credits in courses at or above the 300 level in the international business discipline.
- At least nine credits of the 18 credits required for the minor must be taken in residence at AUS.
- At least six credits of the nine credits at or above the 300 level must be taken in residence at AUS.
- A minimum GPA of 2.00 must be earned in courses completed to satisfy the minor.

Students seeking a minor in international business must successfully complete the following courses or their equivalent. All course prerequisites must be satisfied.

#### Minor Requirements (12 credits)

- ECO 305 International Trade
- MGT 301 Organizational Behavior
- MGT 305 International Business
- MGT 306 Cross-Cultural Management

#### Minor Electives (minimum of 6 credits)

Students must successfully complete a minimum of six credits as follows:

- three credits from the following courses:
  - ACC 420 International Accounting Standards
  - ECO 321 Comparative Economic Systems
  - FIN 401 International Finance
  - MKT 309 International Marketing
  - SCM 311 Logistics Management
- three credits from the following courses:
  - ECO 310 Development Economics
  - ECO 315 Economics of the Middle East
  - ECO 394/494 or MGT 394/494 approved special topic course in ECO or MGT. Consult the online

course catalog or the online class schedule accessible via the AUS student information system to verify course classifications.

- MIS 305 E-Commerce

### Minor in Management

This minor is designed for students outside the major in management or outside the School of Business Administration who desire to increase their networking skills, expand their business knowledge, increase their career opportunities, improve their readiness for corporate life and support their candidacy for an MBA or other graduate programs.

Students applying to this minor should have successfully completed a minimum of 60 credits and be in good academic standing.

The following rules apply:

- The minor consists of a minimum of 18 credits, including at least nine credits in courses at or above the 300 level in management.
- At least nine credits of the 18 credits required for the minor must be taken in residence at AUS.
- At least six credits of the nine credits at or above the 300 level must be taken in residence at AUS.
- A minimum GPA of 2.00 must be earned in courses completed to satisfy the minor.

Students seeking a minor in management must successfully complete the following courses or their equivalent. All course prerequisites must be satisfied.

#### Minor Requirements (9 credits)

- MGT 301 Organizational Behavior
- MGT 305 International Business
- MGT 403 Entrepreneurship

#### Minor Electives (minimum of 9 credits)

Students must successfully complete a minimum of nine credits in courses selected from the following:

- BLW 303 Legal Issues in Management
- MIS 312 Business Intelligence
- SCM 311 Logistics Management
- any approved 300-level or above MGT courses. Consult the online course catalog or the online class schedule accessible via the AUS student information system to verify course classifications.

### Department of Marketing and Information Systems

M. Sajid Khan, Head

#### Faculty

Norita Ahmad  
Nicholas Ashill  
Jeffrey Baker  
Madhumita Banerjee  
Jean Boisvert  
Parkash Chathoth  
Abdelkader Daghfous  
Narasimhaiah Gorla  
Mehmet Gumus  
Linda McLoughlin  
Kichan Nam  
Robert Earl Naumann  
Rania Semaan  
Deepak Sirdeshmukh  
A. Paul Williams  
Xiaobo Xu

The Department of Marketing and Information Systems aims to educate and prepare students for successful business careers at the managerial level in the private and public sectors. Students can tailor their education to prepare for a career in marketing, management information systems and supply chain management. The department offers a BSBA major in management information systems (MIS) and a BSBA major in marketing.

In the marketing major students learn the marketing skills of developing branding, pricing, promotions and distribution channel strategies which are essential to help organizations achieve their goals and objectives. The field of marketing stresses the practical application of concepts in areas such as consumer behavior, organizational buying behavior, service quality and delivery, electronic marketing, retailing, logistics/supply chain, and international marketing.

In the MIS major, students learn about information and communication technologies, business processes, logistics and scientific principles directed to the design, implementation and management of information systems. The field of MIS stresses the practical application of computer technologies in areas such as business programming, software development, data communications and networking, database management, systems analysis and design, knowledge management and e-business. The knowledge gained in this program enables graduates to harness the power of technology as a source of competitive advantage.



### BSBA–Major in Management Information Systems

Faculty members from the Department of Marketing and Information Systems provide instruction in the Bachelor of Science in Business Administration (BSBA) program. For more information on the MIS major within the BSBA program, please see the previous section on the BSBA.

### BSBA–Major in Marketing

Faculty members from the Department of Marketing and Information Systems provide instruction in the Bachelor of Science in Business Administration (BSBA) program. For more information on the marketing major within the BSBA program, please see the previous section on the BSBA.

### Minor in Management Information Systems

The minor in management information systems (MIS) prepares graduates for professional careers that rely on the application of information technology to business processes and managerial decision making. An understanding of the principles of data storage, analysis, communication and networking offers students from a variety of business, technical and social science disciplines the skills necessary to stay in step with rapid changes in the role of IT in the world economy.

Students applying to this minor should have successfully completed a minimum of 60 credits and be in good academic standing.

The following rules apply:

- The minor consists of a minimum of 18 credits, including at least nine credits in courses at or above the 300 level in MIS.
- At least nine credits of the 18 credits required for the minor must be taken in residence at AUS.
- At least six credits of the nine credits at or above the 300 level must be taken in residence at AUS.
- A minimum GPA of 2.00 must be earned in courses completed to satisfy the minor.

Students seeking a minor in MIS must successfully complete the following courses or their equivalent. All course prerequisites must be satisfied.

#### Minor Requirements (6 credits)

- MIS 301 Fundamentals of Database Management or  
CMP 320 Database Systems or  
COE 422 Database Systems
- MIS 303 Introduction to Systems Analysis and Design or

CMP 350 Software Engineering or  
COE 420 Software Engineering

#### Minor Electives (minimum of 12 credits)

Students must successfully complete a minimum of 12 credits in courses selected from the following:

- MGT 315 Enterprise Resource Planning
- MGT 380 Project Management or  
EGM 362 Engineering Project Management
- SCM 310 Management of the Supply Chain
- any approved 300-level or above MIS courses. Consult the online course catalog or the online class schedule accessible via the AUS student information system to verify course classifications.

### Minor in Marketing

This minor is designed to provide a student with the basic coverage of key marketing concepts. The minor is intended for students whose major discipline involves interaction with customers in some way. The minor will demonstrate how customer feedback can be used in a variety of disciplines and careers.

Students applying to this minor should have successfully completed a minimum of 60 credits and be in good academic standing.

The following rules apply:

- The minor consists of a minimum of 18 credits, including at least nine credits in courses at or above the 300 level in marketing.
- At least nine credits of the 18 credits required for the minor must be taken in residence at AUS.
- At least six credits of the nine credits at or above the 300 level must be taken in residence at AUS.
- A minimum GPA of 2.00 must be earned in courses completed to satisfy the minor.

Students seeking a minor in marketing must successfully complete the following courses or their equivalent. All course prerequisites must be satisfied.

#### Minor Requirements (9 credits)

- MKT 301 Consumer Behavior
- MKT 302 Marketing Research
- MKT 401 Marketing Strategy

#### Minor Electives (minimum of 9 credits)

Students must successfully complete a minimum of nine credits in courses selected from the following:

- any approved 300-level or above approved MKT courses. Consult the online course catalog or the online class schedule accessible via the AUS student information system to verify course classifications.

- MIS 312 Business Intelligence
- SCM 320 Quality Management and Service Organizations

### Minor in Supply Chain Management

The minor in supply chain management (SCM) prepares graduates to pursue careers in the running of a firm's operations to deliver products and services to customers.

The minor focuses on supply chain management skills that develop timely and effective business operations, and enable firms to capitalize on new technologies. In particular, the minor promotes the integration of information technologies that create strong entrepreneurial opportunities for firms.

Supply chain management entails understanding of how manpower, equipment and other resources need to be organized for a firm to be successful. The minor highlights the importance of multinational supply chains and logistics that are critical to the success of the UAE given its location as a worldwide trade hub. The role of quality and service delivery in operations is incorporated into the minor since they are vital to the success of firms competing in a global marketplace.

Students applying to this minor should have successfully completed a minimum of 60 credits and be in good academic standing.

The following rules apply:

- The minor consists of a minimum of 18 credits including at least six credits in courses at or above the 300 level in the supply chain management (SCM) discipline, and at least three credits in courses at or above the 300 level in other non-SCM business courses offered within SBA.
- At least nine credits of the 18 required for the minor must be taken in residence at AUS.
- At least six credits of the nine credits at or above the 300 level must be taken in residence at AUS.
- A minimum GPA of 2.00 must be earned in course completed to satisfy the minor.

Students seeking a minor in supply chain management must successfully complete the following courses or their equivalent. All course prerequisites must be satisfied.

**Minor Requirements (9 credits)**

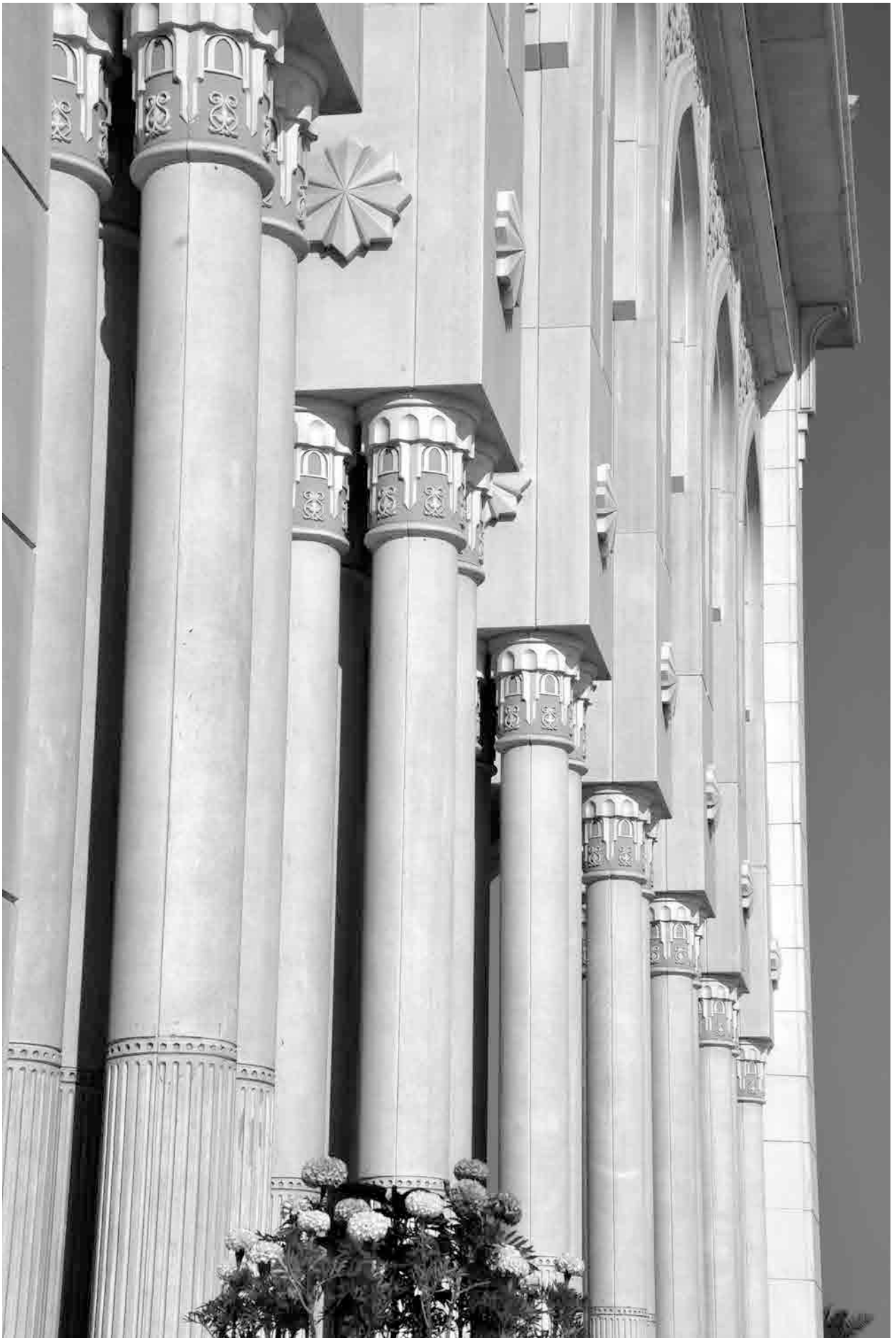
- MGT 315 Enterprise Resource Planning
- SCM 310 Management of Supply Chain
- SCM 311 Logistics Management

**Minor Electives  
(minimum of 9 credits)**

Students must successfully complete a minimum of nine credits in courses selected from the following:

- ACC 360 Accounting Information Systems
- ECO 401 Managerial Economics
- ECO 452 Economic Forecasting
- FIN 430 Financial Forecasting
- MKT 303 E-Commerce
- MKT 307 B2B Marketing and Negotiations
- SCM 320 Quality Management and Service Organizations
- SCM 394/494 approved special topics in supply chain management. Consult the online course catalog or the online class schedule accessible via the AUS student information system to verify course classifications.
- any 300-level or above MIS and/or MGT courses not listed as requirements for the minor





# College of Architecture, Art and Design

## ARC

## Architecture

**ARC 201 Architectural Design Studio I (12-0-6).** Addresses fundamentals of making architectural form and space with emphasis on design inquiry, exploration and process. Concentrates on classic instances of form sources in architectural design: function, experience, structure, construction and context. Digital media are integral to the studio. Repeatable only once. Prerequisites: DES 112, DES 121, DES 122, DES 132, MTH 003 or MTH 111 or MTH 103, and WRI 101 or WRI 102. Lab/Tech fee rate B applies.

**ARC 202 Architectural Design Studio II (12-0-6).** Continues the content and purpose of ARC 201 with increased emphasis on design development and physical and technical resolution. Digital media are integral to the studio. Repeatable only once. Prerequisite: ARC 201. Lab/Tech fee rate B applies.

**ARC 215 Descriptive Geometry (4-0-3).** Introduces concepts and practices of the precise description of form in space. Includes systematic treatment of projection systems, including orthographic, oblique and perspective projections. Instruction and assignments involve both traditional and digital design media. Course format includes lectures and supervised applications. Prerequisite/concurrent: ARC 201 or IDE 201. Lab/Tech fee rate A applies.

**ARC 221 Pre-Modern Architecture and Urban Form (3-0-3).** Covers factors influencing the production of architecture and urban form through the study of select buildings and cities within the context of world history from the ancient world to 1850 CE. Focuses on ways in which theoretical knowledge and practical design principles were applied across cultures. Addresses interrelationships between diverse architectural and urban traditions through comparative analyses of historical buildings and cities. Prerequisite: DES 122.

**ARC 222 Modern Architecture and Urban Form (3-0-3).** Introduces knowledge and design principles fundamental to an understanding of the architecture and urban form from 1850 to 1960. Integrates history and theory focusing on a selection of significant issues proceeding topically rather than chronologically. Considers technological changes and regional influences and contributions, concludes with the

debates that gave rise to Postmodern Architecture. Prerequisite: DES 122.

**ARC 225 Islamic Art and Architecture (3-0-3).** Concentrates on common and regional elements of Arab and Islamic material culture. Follows developments from formation of an architectural language to diverse regional expressions in calligraphy, ceramics, metals, carpets and other media of artistic work. Relates stylistic phenomena to underlying spiritual and intellectual intent. Prerequisite: WRI 102.

**ARC 232 Materials and Methods I (3-0-3).** Offers an in-depth review of building materials and their properties as they relate to methods of construction and contemporary construction practices used to prepare sites and to erect the building's basic structure. Covers site preparation, foundations, concrete, steel and timber structures, and masonry work. Discusses the basics of producing construction drawings. Prerequisite: ARC 201 or IDE 201.

**ARC 233 Introductory Techniques in Digital Fabrication (4-0-3).** Introduces the concepts, tools and methods used in digital fabrication practices. Covers the fundamental skills necessary for exploring the role of digital fabrication tools in architecture. Prerequisite: DES 132. Lab/Tech fee rate A applies.

**ARC 237 Introductory Techniques in Material Fabrication (4-0-3).** Introduces the concepts, tools and methods used in material fabrication practices. Explores the relationship between material properties, material processes and design through hands-on fabrication exercises. Prerequisite: DES 132. Lab/Tech fee rate A applies.

**ARC 265 Fundamentals of Digital Design (4-0-3).** Introduces the fundamental concepts, tools and methods of digital design. Covers software, file management and output strategies related to 2D drafting, 3D modeling and rendering. Prerequisite: DES 132. Lab/Tech fee rate A applies.

**ARC 271 Introduction to Landscape (3-0-3).** Introduces the fundamental cultural, ecological, spatial and technical aspects of landscape design and construction. Includes a range of scales, from the urban and infrastructural to the tactile and botanical, most relevant to the discipline of architecture. Investigates the environmental and climatic forces that impose pragmatic challenges to site construction and occupation.

Emphasizes the cultural and vernacular traditions that influence regional and historical land-use patterns and the spatial integration of interior and exterior inhabitation. Prerequisite: DES 101 or DES 131.

**ARC 273 Principles of Landscape Architecture (3-0-3).** Introduces the interpretation and expression of spatial forms from the unique point of view of landscape architects. Analyzes the work of leading designers in the field of landscape architecture to understand their contribution of new knowledge to the profession. Examines a number of contemporary design issues that help to define the profession, which will be addressed in lecture and lab formats. Prerequisite: ARC 201.

**ARC 281 Architectural Principles (3-0-3).** Provides an overview of the fundamental formal, cultural and environmental issues specific to the discipline of architecture and interior design. Emphasizes two- and three-dimensional composition, organizational strategies, and the basic syntax of spatial configuration. Examines the effect of light, air, weather and orientation on spatial experience in the built environment with a focus on building forms and interiors that incorporate a passive and site-specific response to environmental conditions. Prerequisite/concurrent: ARC 201 or IDE 201.

**ARC 301 Architectural Design Studio III (12-0-6).** Advances the fundamentals of the making of architectural form based on concepts derived from space, structure and building construction. Studio-based projects emphasize design strategies for small, multilevel, infill buildings with conventional, short-span structural systems. Repeatable only once. Prerequisites: ARC 202 or IDE 202, and PHY 104.

**ARC 302 Architectural Design Studio IV (12-0-6).** Includes studio-based projects with emphasis on the tectonics of building structure and envelope. Building case studies and design projects explore a range of material and construction system types including steel, wood, masonry and reinforced concrete. Repeatable only once. Prerequisite: ARC 301.

**ARC 311 Illustration and Rendering (4-0-3).** (Equivalent to IDE 311). Covers illustration and rendering techniques that enable students to express their ideas faster with more precise results. Covers freehand color drawing techniques using markers,

color pencils and watercolors.

Prerequisite/concurrent: ARC 201 or IDE 201.

**ARC 316 Photography and Visual Representation (4-0-3).** Introduces a broad range of photographic techniques and processes intended to facilitate the representation of architectural concepts. Explores the history, theory and practices related to various techniques. Investigates the roles of narrative and sequence in photography. Experiments with combined, montaged and repeated images. Prerequisite: ARC 201 or VIS 221, or DES 160 and DES 362. Lab/Tech fee rate A applies.

**ARC 322 Global Issues in Architecture (3-0-3).** Examines our emerging understanding of global issues confronting humankind, including population growth, declining reserves of non-renewable resources, etc. Gives an overview of the environmental impact of human communities through history. Prerequisite: ENG 203 or ENG 204.

**ARC 323 Shelter and Settlement in Post-Conflict Societies (3-0-3).** Explores the role of design in improving shelter and settlements inhabited by refugees and internally displaced people affected by forced migration. Examines the complex questions associated with forced migration and addresses the impact of humanitarian initiatives related to the built environment. Analyzes shelter and settlement in post-conflict societies through case studies and focuses on ways of representing data and research findings to a broad audience. Prerequisite: ARC 202 or IDE 202 or MUM 202 or VIS 202 or DES 300 or POL 201.

**ARC 324 History of Landscape Architecture (3-0-3).** Presents an introductory survey of the history of landscape design and the interrelationship of architecture and landscape architecture in various cultures throughout history. Prerequisite: ENG 203 or ENG 204.

**ARC 331 Materials and Methods II (3-0-3).** Offers an in-depth examination of the materials and processes involved in finishing a building. Uses a case study approach to demonstrate the evolution of the building process of the major components that are built following the erection of the building's basic structure. Covers stairs, doors, windows, partitions, ceilings, floors, claddings and joints. Investigates design considerations and construction methods with hands-on experience in producing detailed drawings. Prerequisite: ARC 232.

**ARC 342 Structures for Architects (3-0-3).** Introduces the classification and behavior of structural elements and

systems most relevant to the design of architecture. Includes the fundamentals of structural analysis, types and classifications of structural dynamics, properties and performance capacity of the primary building materials, and structural elements. Individual structural components and topics are presented in relation to system types and classifications. Emphasizes the dynamic relationship between components and systems. Covers the structural design process including the collaborative nature of working with a structural consultant in a professional office environment. Prerequisites: ARC 201 or IDE 201, and PHY 104.

**ARC 354 Environmental Energies and Building Form (3-0-3).** Studies the physical phenomena that make climate (rain, humidity, temperature, wind, sun, etc.) influence buildings. Covers heat transfer methods, solar radiation, vapor in air, air leakage and water condensation and wind movement. Studies indoor thermal environment and thermal comfort of building occupants. Discusses examples of how these phenomena are used in building design. Does not meet the natural sciences general education requirement for architecture major. Prerequisite: PHY 100 or PHY 101 or PHY 104.

**ARC 366 Applied Computer-Aided Design (4-0-3).** Introduces two-dimensional drafting and three-dimensional Building Information Modeling (BIM) CAD applications. Identifies components and capabilities of each application. Emphasizes the use of 2D CAD applications in the management of a drafting task to produce quality drawings. Emphasizes the use of BIM applications to assist in design decisions. Prerequisite: ARC 201 or IDE 201. Lab/Tech fee rate A applies.

**ARC 374 Environmentally Sustainable Design (4-0-3).** (Equivalent to IDE 374). Develops a greater focus on holistic and sustainable approaches to design. Covers issues such as demand and supply of energy and water and the generation of waste. Reiterates the principles of reduce, reuse and recycle. Predominant emphasis is on practical strategies directly applicable in design. Material is presented as lectures and seminars, supplemented with readings. Prerequisite/concurrent: PHY 100 or PHY 101 or PHY 104.

**ARC 382 Architectural Detailing (3-0-3).** Explores the relationship between the design and production of architectural details and the conceptual underpinnings of a project. Introduces technical drawing, construction drawings and industry standards for

graphic and written communication. Emphasizes the role of tectonics and material integration beyond pragmatic applications. Prerequisite: ARC 202.

**ARC 397 Internship in Architecture (0-0-0).** Requires a minimum of five weeks (normally 200 hours) of approved professional experience. Requires the work undertaken to be documented in a formal report submitted to the department by the beginning of the following term. Graded as Pass/Fail. Prerequisites: ARC 302 and approval of internship coordinator. Registration fee applies.

**ARC 401-01 Architectural Design Studio V (12-0-6).** Employs advanced design tools to respond to complex architectural projects in a topic or collaborative setting. Allows for disciplinary research and experimentation involving specialized techniques and in-depth investigation beyond the scope of schematic building design. Projects address the discipline of architecture at various scales, ranging from details and full-scale fabrication to urban design. Repeatable only once. Prerequisites: ARC 232 and ARC 302.

**ARC 402 Architectural Design Studio VI (12-0-6).** Comprises a capstone and focuses on the development of a comprehensive building design project integrating building technologies with other non-technical design issues. Addresses data collection, analysis and programming along with a detailed design development of building technology components. Repeatable only once. Prerequisite: ARC 401-01.

**ARC 421 Architectural Theory (3-0-3).** Engages the conceptual basis of the work of specific architects, historical and contemporary architectural historians and theoreticians from the 1960s to the present. Examines schools of thought in architecture with an emphasis on the understanding of both written and visual analysis of built form and design. Prerequisites: ARC 221 or ARC 222, and ENG 203 or ENG 204.

**ARC 424 Evolution of Cities (3-0-3).** Introduces the origin, growth and development of cities throughout the history. Examines the various socioeconomic, historic, political and environmental forces that help explain city form. Explores case studies of sites from ancient times to the present with particular emphasis on cities in Islamic and Middle Eastern cultures. Prerequisite: ENG 203 or ENG 204.

**ARC 433 Advanced Topics in Digital Fabrication (4-0-3).** Explores advanced concepts, tools and methods used in digital fabrication practices.

Investigates the relationship between technology and design through the development of advanced skills related to digital fabrication techniques in architecture. Prerequisite: ARC 202 or ARC 233 or IDE 202. Lab/Tech fee rate A applies.

**ARC 436 Working Drawings (4-0-3).** Introduces the production of working drawings used in the building industry. A preliminary building design is developed to produce a set of complete architectural working drawings. Emphasizes the use of computer technology in drawing production and information coordination. Prerequisite: ARC 301 or IDE 301.

**ARC 437 Advanced Topics in Material Fabrication (4-0-3).** Explores advanced concepts, tools and methods used in material fabrication practices. Investigates the relationship between material properties, material processes and design through hands-on fabrication exercises. Prerequisite: ARC 202 or ARC 237 or IDE 202. Lab/Tech fee rate A applies.

**ARC 451 Environmental Control Systems (3-0-3).** Presents the basic principles for the selection and the design of the main environmental control systems in buildings, including plumbing, heating, ventilation, air conditioning, electric, lighting, and fire suppression and protection systems. Prerequisite/concurrent: ARC 401-01.

**ARC 461 Project Management (3-0-3).** Introduces the basic and advanced concepts of running design projects. Explores the design process and project phases, analyzing them in detail under the project management concept of delivering projects "on time, on budget, every time." Prerequisite: senior standing.

**ARC 463 Professional Practice (3-0-3).** (Equivalent to IDE 463). Introduces the professional practice of architecture and interior design. Covers the fundamental knowledge of project management, client and consultant relationships, construction administration and the operations of a design business. Introduces the implications of time, budget and economic parameters in relation to the design process, professional ethics, social and political culture, and business management. Prerequisite: junior standing.

**ARC 465 Advanced Computer-Aided Design (4-0-3).** Concentrates on the specific demands on CAD systems by the architecture and building professions. Applies CAD systems to the different phases of planning: preliminary design, design, construction documents, extraction of volumetric

data and transfer to spreadsheet and/or database software, rendering software, post-rendering work in pixel-editing software, technical drawing layout software, etc. Prerequisite: ARC 301 or IDE 301. Lab/Tech fee rate B applies.

**ARC 474 Issues in Contemporary Urban Design (3-0-3).** Examines major concepts, principles and theories of urban design. Reviews the historic development of urban design as a professional field and surveys current urban design issues, trends and practices in both the Western and non-Western/Islamic contexts. Prerequisite/concurrent: ARC 301.

**ARC 498 Studio Abroad (3 to 6 credits).** Provides studio activities conducted in regional and international sites promoting a global-oriented approach to design. Prerequisite: studio specific.

**ARC 501 Architectural Design Studio VII (12-0-6).** Employs advanced design tools to respond to complex architectural projects in a topic or collaborative studio setting. Focuses on research, experimentation, and/or specialized techniques leading to solutions that address issues of program, context, building technology and/or fabrication. Addresses the discipline of architecture at various scales ranging from conceptual investigations to full-scale fabrication and urban design. Repeatable only once. Prerequisite: ARC 402.

**ARC 502 Architectural Design Studio VIII (12-0-6).** Continues the employment of advanced design tools to respond to complex architectural projects in a topic or collaborative studio setting. Employs research, experimentation and/or specialized techniques leading to solutions that address issues of program, context, building technology and/or fabrication. Addresses the discipline of architecture at various scales ranging from conceptual investigations to full-scale fabrication and urban design. Repeatable only once. Prerequisite: ARC 501.

**ARC 561 Construction Management (3-0-3).** Studies in-depth the interrelationships among the various professional disciplines in the building and construction industry as they pertain to issues of management and planning of complex construction projects. Reviews standard practices of tendering, contracting, quantity surveying, cost estimation, supervision, quality control and economy. Prerequisite: ARC 301 or IDE 301.

**ARC 581 Critical Practice and Contemporary Discourse (3-0-3).** Examines the role and application of research methodology and critical

thinking in the work of leading practitioners and academics. Investigates a current topic in contemporary discourse with a focus on the articulate application of theory and research in architectural production. Foregrounds the history of ideas that frame and influence contemporary trends in the discipline. Focuses on applying critical thinking skills to the analysis and production of architecture as a mode of inquiry. Prerequisite: ARC 402.

**ARC 591 Directed Architectural Design Research (3-0-3).** Focuses on the development of an architectural design research project under the guidance of a faculty advisor. Prerequisite: consent of the department.

**ARC 592 Directed Architectural Design Studio (12-0-6).** Focuses on the resolution of an independent architectural design project developed under the guidance of a faculty advisor and presented and defended in a formal public critique. This course may substitute for ARC 502. Repeatable only once. Prerequisite: consent of the department.

## ART Art and Art History

**ART 101 Survey of Art (3-0-3).** Explores art's contribution to Western civilization. Introduces personalities, ideas and the cultural context that established major styles in painting, sculpture and architecture. The first part of this two-course sequence covers the time span from Prehistory to the Middle Ages. Not open to students who have taken DES 121. Prerequisite/concurrent: WRI 101.

**ART 111 Freehand Drawing (4-0-3).** Introduces the basic drawing skills required for freehand drawing and includes freehand perspective, projection systems and design visualization. Not open to CAAD students.

**ART 141 Introductory Painting (6-0-3).** Introduces the fundamentals and principles of observational painting. Explores various representational strategies, methods, materials and techniques with exercises and assignments designed to develop skills needed to communicate visual information in a painterly context. Lab/tech fee rate B applies.

**ART 142 Painting: The Practice of Color (6-0-3).** Introduces the basic theories of color and paint application. Covers materials, methods, processes, techniques and the critical skills required to structure form and content

into the visual language of painting. Lab/tech fee rate A applies.

**ART 203 Da Vinci and the Age of Discovery (3-0-3).** Explores the context, themes and personalities that shaped the shift from the Middle Ages to the Renaissance. Traces the role of Christianity and Islam in shaping medieval faith and art. Investigates classical humanism, Leonardo da Vinci, Michelangelo, the Reformation and the impact of scientific and geographic discovery. Prerequisite: WRI 102.

**ART 211 Intermediate Drawing (4-0-3).** Explores drawing approaches, attitudes, processes and materials as a means of personal visual exploration and expression. Focuses on current drawing practices through gallery visits, critiques and lectures on materials and methods. Prerequisites: ART 111 or DES 111, and WRI 102. Lab/Tech fee rate A applies.

**ART 280 Introduction to Pottery (4-0-3).** Introduces traditional techniques and production processes using clay. Explores the concept and application of centering and form making using the potter's wheel with a variety of conventional hand-building methods including pinching, slabs, coils and hybrids. Emphasizes a reliance on tools in the manipulation of material. Prerequisites: DES 101 or DES 131, and sophomore standing. Lab/Tech fee rate B applies.

**ART 361 Michelangelo: Painter, Sculptor, Architect (3-0-3).** Studies the art and architecture of Michelangelo and his contributions to Renaissance culture. Examines Michelangelo's role in shaping the social status of the artist in Renaissance Florence and Rome. Explores Michelangelo's relationships with popes, kings and rival artists, and examines his contribution to the development of mannerism in painting and architecture. Assesses Michelangelo's relevance to contemporary discourse. Prerequisites: ART 101 or DES 121 or DES 122, and ENG 203 or ENG 204.

**ART 362 Bernini: Architect, Sculptor, Designer (3-0-3).** Covers the architecture, sculpture and urban design of Gianlorenzo Bernini and his innovative contributions to Italian Baroque culture. Examines his role in achieving unity of the visual arts. Assesses Bernini's part in shaping the face of the Rome we know today. Appraises Bernini's cooperation and competition with other architects of the period and compares urban spaces of the Baroque to contemporary examples. Prerequisites: DES 121 or DES 122, and ENG 203 or ENG 204.

## DES

**DES 101 Design Foundations for Non-Majors (6-0-3).** Introduces knowledge, skills and theories comprising design. Focuses on the learning process as a designer. Explores a variety of tools, media and design strategies through ideation, design process, design communication and presentation as an experience of generating designed artifacts. Includes workshops and demonstrations in the studio, the materials lab and the computer lab. Not open to CAAD students.

**DES 111 Descriptive Drawing I (6-0-3).** Introduces the fundamental principles of observational and analytical drawing. Explores various representational and analytical approaches through assignments that encourage the development of skills needed to effectively represent and communicate visual information. Restricted to CAAD students. Not repeatable.

**DES 112 Descriptive Drawing II (6-0-3).** Further introduces the student to the principles of drawing. Emphasizes the development of an individual approach to representation, and a wide variety of assignments encourages the student to develop an understanding of a range of techniques and materials of drawing. Restricted to CAAD students. Not repeatable. Prerequisite: DES 111.

**DES 121 Introduction to Architecture, Art and Design History (3-0-3).** Explores a global approach to art, architecture and design. Investigates the technological, religious and social forces that helped to reveal the universality of the human impulse to design. Examines ideas, techniques and design methods thematically within a chronological framework covering the time span from the Stone Age to the Industrial Revolution.

**DES 122 Modern Developments in Architecture, Art and Design (3-0-3).** Explores the developments in architectural thinking and in all aspects of design during the modern era. Investigates thematically the evolution of ideas and processes that shaped contemporary movements in architecture and design. Discusses contemporary concerns, forms, ideas and attitudes of 20th and 21st century design and architecture.

**DES 131 Design Foundations I (6-0-3).** Introduces the principles, conceptual and critical skills, and the techniques of design. Covers the observation of the world critically and

## Design

meticulously and the analysis of the broad structures and the small details of visual phenomena. Introduces skills needed to conceptualize and to communicate observations through traditional means and through digital and other media. Introduces craft and making skills with a variety of materials and methods. Uses class assignments, critiques and presentations to develop an aesthetic awareness coupled with critical thinking skills. Restricted to CAAD students. Not repeatable.

**DES 132 Design Foundations II (6-0-3).** Continues the principles of design, with an emphasis on testing aesthetic and perceptual assumptions. Students develop problem-solving techniques through individual design solutions. While Design I focuses on skills and the discovery and critical understanding of the phenomenal world, Design II is primarily concerned with manipulation and synthesis, and the design and creation of unique two- and three-dimensional design concepts. Restricted to CAAD students. Not repeatable. Prerequisite: DES 131.

**DES 160 Introduction to Photography (3-0-3).** Provides a hands-on introduction to photographic practice. Covers camera control, film processing and printing in a photography darkroom as well as the basics of digital applications. Introduces photographic language and considerations through the study of examples taken from the history of photography. Not open to ARC, IDE, MUM and VIS students. Lab/Tech fee rate A applies.

**DES 170 Introduction to Product Design (4-0-3).** Surveys the contemporary and historical developments in product design. Develops an understanding of the roles of the product designer and introduces fundamental environmental, cultural and economic issues relevant to the design of products. Introduces the scope and range of product design, including an awareness of product system service design. Explores various stages and processes of product design including design research, concept generation, scenario building, market evaluations, design development and production. Employs case studies, written and verbal presentations, and introduces basic skills through the development of small-scale exercises. Prerequisite: DES 101 or DES 131. Lab/Tech fee rate B applies.

**DES 200 Communication Design (6-0-3).** Introduces the materials and techniques most commonly used by designers in the field of communication and stresses the development of skill in these areas through the completion of class assignments and projects



representative of the concepts discussed in class. Students develop a deeper understanding of visual communication and become well-versed in the capacities and restrictions inherent in the materials and techniques most commonly used by professional designers. Not open to multimedia design and visual communication students. Prerequisite: DES 131 or MCM 100 or NGN 110 or BIS 101 or STA 201 or STA 202. Lab/Tech fee rate A applies.

**DES 230 Digital Media in Communication Design (4-0-3).** Builds on the development and skills associated with digital design. Helps students gain a more complete understanding of how digital media is used in electronic design, through working with the latest in industry-specific hardware and software, and learn the capabilities available to communication designers. Emphasizes the creation, preparation and presentation of finished digital media projects. Not open to multimedia design and visual communication students. Prerequisite: DES 131 or BIS 101 or MCM 100 or NGN 110 or STA 201 or STA 202. Lab/Tech fee rate A applies.

**DES 231 History of Design (3-0-3).** Explores topics in the history of design and visual communication. Introduces recognized schools of design philosophy and/or practice. Explores the relationship between design and culture. Prerequisites/concurrent: WRI 102 and sophomore standing.

**DES 232 Research Methodologies for Design (3-0-3).** Introduces research processes within design practice and theory. Explores diverse research methods and strategies that inform design decisions while improving process, efficiency and time management. Addresses research demands implicit to design disciplines through readings, discussions and practical assignments. Prerequisites: DES 101 or DES 131, and ENG 203 or ENG 204.

**DES 270 Design as Form (6-0-3).** Develops skills in three-dimensional design and form making. Explores relationships of form, perception and visual/sensory phenomenon with specific focus on the application of design principles to the creation of small-scaled objects through methods of modeling and development. Prerequisites: DES 101 or DES 131, and sophomore standing. Lab/Tech fee rate A applies.

**DES 275 Fundamentals of Design Management (3-0-3).** Introduces the fundamentals of design management. Includes the implementation of design management at the corporate, process and project level in corporate,

medium and small-sized enterprises. Stresses skills required in different organizations in the global economy. Prerequisite/concurrent: DES 231.

**DES 300 Design Project (6-0-3).** Further develops a practical understanding of designing for a purpose. Requires students to define a project that concludes with a presentation to a virtual client and an evaluation of the success of the project. Not open to multimedia design and visual communication students. Prerequisite: DES 200.

**DES 320 Introduction to Web Design (6-0-3).** Introduces website design. Students learn to use a variety of graphic design and web page authoring tools, and Internet technologies and other relevant issues are discussed. Students are expected to learn and use software packages for developing real-life web pages. Not open to multimedia design and visual communication students. Lab/Tech fee rate A applies.

**DES 331 Entrepreneurship for Design (3-0-3).** Examines key concepts of entrepreneurship. Provides an understanding of the entrepreneurial opportunity and of the entrepreneurial process. Covers viability screening to ascertain whether the new venture to the point of investor readiness, gain intellectual property protection, and design the business model for the new venture. Prerequisite: ENG 203 or ENG 204.

**DES 340 Materials and Processes for Design (4-0-3).** Covers a variety of techniques, materials and processes specific to the fabrication of three-dimensional models and small-scaled forms. Introduces both traditional and digital tools and develops safe working practices. Examines the relationship between the use of digital technology and traditional methods of fabrication. Explores the creative potential of materials and construction methodologies and emphasizes the iterative investigation of form and structure with the integration of multiple design principles. Develops student's skills in producing three-dimensional forms with a high degree of craftsmanship. Prerequisite/concurrent: ARC 202 or DES 270 or IDE 202 or MUM 202 or VIS 202. Lab/Tech fee rate B applies.

**DES 360 Critical Discourse in Design (3-0-3).** Examines the relationship between design intention and interpretation. Reviews the application of graphic language in visual media. Requires research on topics related to design communication. Complements studio-based design courses by exploring design considerations and practice from a

theoretical perspective. Prerequisite: DES 231.

**DES 362 History of Photography: The Portrait (3-0-3).** Explores the history of photography as evidenced in the development of the photographic portrait. Covers examples of early photographic practice; the commercialism of photography; and documentary, fine art and contemporary approaches to the photographic portrait genre. Prerequisite: ENG 203 or ENG 204.

**DES 363 Principles of Museum and Gallery Management (3-0-3).** Introduces the history, purpose and organization of museums. Explores contemporary museum and gallery practices, topics include: the museum and its mission, exhibition development and design, marketing and audience development, organization and financial management as well as the social, economic and political trends that shape museums. Introduces the various aspects of professional work in both museums and galleries. Prerequisite: ENG 203 or ENG 204.

**DES 370 Introduction to Prototyping (6-0-3).** Examines the conceptual and technical skills that represent evolutionary steps in design process and production. Covers the use of hand drawing, digital rendering and fabrication techniques to develop ideas. Addresses concept generation skills, including ideation drawing and rapid prototyping activities. Focuses on the visual and verbal communication skills necessary for the projection and promotion of ideas and products. Prerequisite: ARC 201 or DES 230 or DES 270 or IDE 201 or MUM 201 or VIS 201, or DES 101 and MCE 236L. Lab/Tech fee rate B applies.

**DES 374 Package Design (4-0-3).** Introduces principles of package design. Focuses on the integration and application of graphic and visual elements to three-dimensional objects through folding, creasing and simple die cutting. Examines packaging trends in the context of the needs of the region to develop economical, responsible and sustainable solutions. Covers environmental and social issues related to packaging. Prerequisite: DES 101 or DES 131. Lab/Tech fee rate A applies.

**DES 380 Innovation and Strategy (4-0-3).** Introduces the management of innovation with an emphasis on product/service innovation. Identifies important trends in innovation and explores their implications for innovation management. Includes various sources, types and patterns of innovation, as well as the role of standards, the timing of market entry and their influence in shaping

innovation strategy.

Prerequisite/concurrent: DES 300.

**DES 397 Internship in Design Management (0-0-0).** Requires a minimum of five weeks (normally 200 hours) of approved professional experience. Requires the work undertaken to be documented in a formal report submitted to the department by the beginning of the following term. Graded as Pass/Fail. Prerequisites: Junior II standing and approval of internship coordinator. Registration fee applies.

**DES 462 Design Management (3-0-3).** Introduces the principles and practices of the economic and commercial aspects of design practice in a global economy. Includes microeconomics theory as it applies to private enterprise: basic business economics, planning and management. Gives attention to the processes and skills required in establishing an independent design office. Prerequisite/concurrent: DES 300.

**DES 471 Managing the Design Process (3-0-3).** Introduces theoretical aspects of project organization. Involves research and planning an event and exhibition. Offers the opportunity to study the design process and what is necessary within a group to make a large, multifaceted project happen. Includes the following topics: division of responsibilities, utilizing timelines and developing presentation skills. Prerequisite: DES 300.

**DES 472 Exhibition Project (3-0-3).** Introduces students to a keynote project. Involves the real planning and exhibition of the final portfolios produced by the senior visual communication and multimedia students to the professional design community. Provides experience in producing and designing exhibitions. Utilizes design management skills in developing a project that relies on a working timeline and organization. Prerequisite: junior standing.

**DES 475 Service Design (4-0-3).** Introduces the core activities of service design including the planning and organizing of people, infrastructure, communication and material components of a service in order to improve its quality and the interaction between service providers and customers. Emphasizes tools, techniques and methods of service design. Prerequisite/concurrent: DES 380.

**DES 480 Design Thinking (6-0-3).** Addresses design thinking as a methodology of innovation based on a deep understanding of what people want and need. Focuses on the six components of design thinking derived

from the cognitive strategies and methodologies of creative design practice and explores their potential in resolving complex urban, social and business problems. Prerequisite/concurrent: DES 475.

**DES 498 Studio Abroad (3 to 6 credits).** Provides studio activities conducted in regional and international sites promoting a global-oriented approach to design. Prerequisite: studio specific.

## FLM

## Film

**FLM 100 The Art of Film (4-0-3).** Introduces the central issues of film aesthetics, including formal and stylistic elements: color, lighting, editing, sound, movement, mise-en-scene, etc. Develops analytical and interpretive skills by providing critical tools required for discussing and writing about film as well as examining relationships between a film and its technological and cultural impact on society. Subjects are treated topically rather than historically, and emphasis is placed on mastering key concepts of film grammar and art. Prerequisite/concurrent: WRI 102.

**FLM 201 History of Film to 1945 (4-0-3).** Examines the influences and impact of pioneer and early silent filmmakers. Covers topics such as the evolution of the comedic form, cinema and society, and the effect of artistic movements such as impressionism and expressionism. Develops students' analytical and interpretive skills by examining relationships between a film and its technological and cultural impact. Prerequisite/concurrent: WRI 102.

**FLM 202 History of Film since 1945 (4-0-3).** Examines the influences and impact of landmark films and filmmakers since 1945. Covers topics such as the development of new film technologies and techniques as well as approaches that helped to make film a distinct art form. Discusses comparison with other art forms and the use of frame and image to convey emotional content, along with concepts such as montage, genre, auteur and mise-en-scène. Prerequisite/concurrent: WRI 102.

**FLM 203 History of Arab Film (4-0-3).** Examines the influences and impact of landmark Arab films and filmmakers from 1920 to the present. Covers topics such as the development of new film technologies and techniques as well as approaches that helped to make Arab cinema distinct from other national or regional cinemas. Discusses how cinema has reflected major

concerns of Arab culture and society. Prerequisite/concurrent: WRI 102.

**FLM 210 Narrative Structure in Film (4-0-3).** Introduces the development of narrative sequential imagery required to communicate an idea or story line, focusing on developing distinctive narrative image-making skills. Projects emphasize idea generation, story concept/structure, storyboards and narrative writing for film. Examines narrative structure in relation to the languages of design, cinema and interactive story. Prerequisite: ENG 203 or ENG 204. Lab/Tech fee rate A applies.

**FLM 310 Film Production I (4-0-3).** Introduces the process, development, production and post-production of narrative film projects. Provides practical experience including production planning, pre-visualization, storyboarding and location production. Screenings of significant films provide a critical context for the production process. Prerequisite: WRI 102; prerequisite/concurrent: FLM 100 or FLM 201. Lab/Tech fee rate B applies.

**FLM 312 Film Production II (4-0-3).** Continuation of FLM 310. Includes project-based studies in film development, production and non-linear computer-based post-production. Screenings of significant films provide a technical and critical context for the production process. Prerequisite: FLM 310. Lab/Tech fee rate B applies.

**FLM 332 Experimental Film and Video I (4-0-3).** Examines basic to intermediate concepts as they relate to the aesthetics of short non-narrative format. All three stages of production are represented through series of practical projects that enable students to investigate the relationship between image and sound as they relate to overall aesthetic value. Different approaches are examined through screening of case studies focusing on style conventions. Prerequisite: DES 230 or FLM 100 or MUM 201 or VIS 201. Lab/Tech fee rate A applies.

**FLM 360 Screenwriting (3-0-3).** Focuses on the craft of writing for film and television. Covers research methods, interviewing techniques, subject treatment, dialogue writing and the development of basic script formats. Explores the process of transforming story ideas into film or television scripts. Prerequisites: FLM 100, and ENG 203 or ENG 204.

**FLM 401 Significant Film Genres (4-0-3).** Serves as the capstone course in film criticism with a particular focus on themes and/or eras in film. Topics covered may include, but are not limited to, the following: films of the 1950s, screwball comedy, musicals,

detective, western films, and film noir in cultural context. Specific focus shown by subtitle. Prerequisites: FLM 201 or FLM 202 or FLM 203, and ENG 203 or ENG 204.

**FLM 410 Advanced Film Production (4-0-3).** Offers advanced studies in film development, production and non-linear computer-based post-production for third-and fourth-year students. Screenings of significant films provide a technical and critical context for the production process. Prerequisite: FLM 310. Lab/Tech fee rate B applies.

**FLM 412 Documentary Film Production (4-0-3).** Focuses on the fundamentals of documentary film production. Covers research methods, interviewing techniques, production and editing, as well as studying documentary works that exemplify the theory and practice of this genre. Prerequisite: FLM 310 or MCM 281. Lab/Tech fee rate B applies.

## HRM Heritage Management

**HRM 121 Islamic Art and Heritage (3-0-3).** Provides an overview of Islamic art and heritage with a focus on its visual richness across the Arab World, from the Umayyad Caliphates through the Ottoman Empire. Introduces the current state of cultural heritage in the Arabian Peninsula and discusses the World Heritage Convention as a means to promote cultural continuities in the Islamic World. Discusses emerging museums to address the contemporary construction of an Arab-Islamic identity in the region.

**HRM 331 Traditional Regional Material and Climate (3-0-3).** Introduces how traditional building types were molded by indigenous building materials and climate. Students visit and explore the existing sites to study design responses to lifestyle and climate traditionally employed in the region.

## IDE Interior Design

**IDE 201 Interior Design Studio I (12-0-6).** Investigates the fundamentals of interior space with a focus on design inquiry, process and representation. Introduces components that shape interior space and analyzes their relationships with a given context. Develops the basic skills of spatial organization by addressing issues of size, scale, hierarchy, distribution and circulation. Introduces software applications and graphic techniques integral to the development and

presentation of studio projects. Repeatable only once. Prerequisites: DES 112, DES 121, DES 122, DES 132, and MTH 001 or MTH 003 or MTH 103 or MTH 111, and WRI 101. Lab/Tech fee rate B applies.

**IDE 202 Interior Design Studio II (12-0-6).** Continues the investigation of the IDE 201 studio content with additional emphasis on the application of natural and artificial light, colors and materials. Technical resolutions and anthropometric requirements in the context of space making are broadly investigated. Further develops the use of software applications and graphic techniques integral to the development and presentation of studio projects. Repeatable only once. Prerequisite: IDE 201. Lab/Tech fee rate B applies.

**IDE 225 History and Theory of Interior Design: Global and Regional Issues (3-0-3).** Examines the historical and social movements that established the foundation for the contemporary practice of interior design. Reviews historical origins of design in the Middle East and its influence in Eastern civilization from the 18th century onwards. Emphasizes design history from the industrial revolution to the present, with an in-depth revision from the avant-garde artistic and aesthetic streams of the 20th century to the most important contemporary designs. Prerequisites: DES 101 or DES 131, and WRI 101.

**IDE 239 Interior Materials and Methods (3-0-3).** Introduces interior architectural finish and construction materials, available products, performance characteristics, technical attributes and considerations, and methods of application. Explores basic structural systems, interior finish materials and applications, technical evaluation methods, detail documentation and specification requirements using standard construction methodology. Prerequisites: DES 101 or DES 131, and WRI 101.

**IDE 251 Color and Light (4-0-3).** Introduces the fundamentals, principles and art of lighting and color, and their visual and physical effects in interior design. Explores light and color as important elements in interior space through the study of related perceptual and physical factors. Introduces relevant terminology to define light and color as attributes of architectural and interior space, including illumination levels, color temperatures, light sources and light fixtures. Prerequisites: DES 101 or DES 131, and WRI 101.

**IDE 301 Interior Design Studio III (12-0-6).** Focuses on advanced spatial concepts relevant to contemporary practices in the field. Investigates the

role of precedents and analogue spaces in generating conceptual ideas. Examines the expressive potential of interior elements (floor, wall, stairs, openings, etc.) and materials. Develops an understanding of the relationship between interior elements, materials and the architectural shell. Explores various design scales with a specific focus on how resolved technical details can express formal ideas. Repeatable only once. Prerequisites: IDE 202 or ARC 202, and PHY 104.

**IDE 302 Interior Design Studio IV (12-0-6).** Continues the intent and purpose of IDE 301. Emphasizes the development of programming strategies within a defined cultural context. Concentrates on the phenomenological aspects of interior environments and explores the spatial and perceptual implications of artificial lighting and materials. Explores the conceptual and spatial implications of furniture layout, selection and design. Repeatable only once. Prerequisite: IDE 301.

**IDE 311 Illustration and Rendering (4-0-3).** (Equivalent to ARC 311). Covers illustration and rendering techniques that enable students to express their ideas faster with more precise results. Covers freehand color drawing techniques using markers, color pencils and watercolors. Prerequisite/concurrent: IDE 201 or ARC 201.

**IDE 334 Furniture and Furnishings (4-0-3).** Addresses furniture designers, typologies, principles of anthropometrics and ergonomics related to work processes/seating and the human body, materiality, construction and fabrication/production technologies. Explores the form, function, aesthetics and cultural influences through lectures, class discussions, case studies and various media. Culminates in assignments, presentations, and research, and the development of scale models of furniture design projects. Prerequisites: DES 132, and ENG 203 or ENG 204.

**IDE 335 Furniture Design Basics (4-0-3).** Explores the basic function and design of furniture as it relates to human factors, such as anthropometrics and ergonomics. Provides a link between historical, theoretical and practical experience. Defines the elements of form, function and aesthetic by exploring experimental concepts and adopting alternative ways of thinking about the objects that surround us. Applies furniture models built to scale, or other presentation techniques, to effectively support the evolution of new concepts. Prerequisite/concurrent: IDE 201 or ARC 201.

**IDE 352 Environmental Control Systems in Interior Design (2-3-3).**

Provides an integrated presentation of environmental control systems (lighting, heating, ventilating, air conditioning, sanitary and acoustics) with special attention to the needs of interior designers. Presents systems as they influence one another and as they constrain interior space planning and design. Prerequisite: PHY 104; prerequisite/concurrent: IDE 201 or ARC 201.

**IDE 374 Environmentally Sustainable Design (4-0-3).**

(Equivalent to ARC 374). Develops a greater focus on holistic and sustainable approaches to design. Covers issues such as demand and supply of energy and water, and the generation of waste. Reiterates principles of reduce, reuse and recycle. Predominant emphasis is on practical strategies directly applicable in design. Material is presented as lectures and seminars, supplemented with readings. Prerequisite/concurrent: PHY 100 or PHY 101 or PHY 104.

**IDE 397 Internship in Interior Design (0-0-0).**

Requires a minimum of five weeks (normally 200 hours) of approved professional experience. Requires the work undertaken to be documented in a formal report submitted to the department by the beginning of the following term. Graded as Pass/Fail. Prerequisites: Junior II standing and approval of internship coordinator. Registration fee applies.

**IDE 401 Interior Design Studio V (12-0-6).**

Addresses a large-scale interior design project within a specific cultural context. Integrates advanced topics with conventional design development strategies. Addresses issues of sustainability, life safety, accessibility, human behavior and spatial experience. Repeatable only once. Prerequisite: IDE 302.

**IDE 402 Interior Design Studio VI (12-0-6).**

Explores a comprehensive large scale interior design project with an emphasis on the production of a full set of construction drawings and specifications, including an understanding of building systems, code compliance, sustainability and health, safety and welfare (HSW). Repeatable only once. Prerequisite: IDE 401.

**IDE 434 Construction, Detailing and Structures (4-0-3).**

Builds upon IDE 239 Materials and Methods, examining interior structures and construction. Addresses the content, vocabulary and process involved in design, detailing and fabrication of interior spaces. Emphasizes the development of technical drawings and language to effectively communicate with allied

design practitioners. Prerequisite: IDE 239 or ARC 232.

**IDE 460 Exhibition Design (4-0-3).**

Equips students with the essential research, planning and design tools to conceive, prepare and produce persuasive exhibition and educational environments such as product shows, museums and gallery interiors. Explores issues of planning, lighting, stagecraft, narrative composition and human perception. Prerequisite: IDE 202 or ARC 202.

**IDE 463 Professional Practice (3-0-3).**

(Equivalent to ARC 463). Introduces the professional practice of architecture and interior design. Covers the fundamental knowledge of project management, client and consultant relationships, construction administration and the operations of a design business. Introduces the implications of time, budget and economic parameters in relation to the design process, professional ethics, social and political culture, and business management. Prerequisite: junior standing.

**IDE 491 Final Project Research (6-0-3).**

Requires students to choose a design topic with the guidance of an advisor and approval of the faculty. Each student prepares an individual program for IDE 492 Final Project Design, concluding with a formal, bound document. Prerequisites: IDE 302, IDE 334, IDE 352 and consent of the department.

**IDE 492 Final Project Design (12-0-6).**

Requires individual design resolution based upon the research findings initiated in IDE 491. The final project is developed under the guidance and advice of a faculty member and is presented and defended in a formal public jury. This course may substitute for IDE 402. Prerequisites: IDE 397, IDE 401, IDE 491 and consent of the department.

**IDE 498 Studio Abroad (3 to 6 credits).**

Provides studio activities conducted in regional and international sites promoting a global-oriented approach to design. Prerequisites: ARC 302 or IDE 302, and consent of department.

**MUM      Multimedia Design****MUM 201 Multimedia Design Studio I (6-0-3).**

Introduces fundamental skills in the creation of digital sound and image content. Explores the interrelationship of image, text and sound through formal investigations and basic narrative sequencing. Repeatable only once. Prerequisites: DES 112, DES 121, DES

122, DES 132, MTH XXX and WRI 101. Lab/Tech fee rate A applies.

**MUM 202 Multimedia Design Studio II (6-0-3).**

Introduces the principles of interaction design by analyzing and creating objects, interfaces and patterns. Emphasizes the creation of functional prototypes using industry standard practices. Repeatable only once. Prerequisite: MUM 201. Lab/Tech fee rate A applies.

**MUM 221 Motion Graphics and Video (4-0-3).**

Introduces compositing strategies using video, sound and image content. Provides historical overview and conceptual context through case studies and screenings of significant work. Prerequisite: MUM 201. Lab/Tech fee rate A applies.

**MUM 301-01 Multimedia Design Studio III (6-0-3).**

Explores sequential narrative design in linear and interactive media. Emphasizes analysis and deconstruction of significant narrative structures in relationship to form, content and meaning. Repeatable only once. Prerequisite: MUM 202.

**MUM 302-01 Multimedia Design Studio IV (6-0-3).**

Examines user experience design through the integration of research, prototyping, content creation and media delivery. Emphasizes the development and presentation of functioning prototypes. Repeatable only once. Prerequisite: MUM 301-01.

**MUM 304 Media Systems and Publishing (4-0-3).**

Explores various methods of distribution through current and future platforms and provides comprehensive understanding of media as a system. Examines the relationship between commerce, design and communication. Prerequisite: MUM 301-01. Lab/Tech fee rate A applies.

**MUM 311 Animation (4-0-3).**

Introduces the principles of animation through exploration of traditional animation techniques, concepts and storyboarding. Emphasizes the production of images in motion and expression utilizing traditional or digitally aided processes. Prerequisite: ARC 201 or DES 230 or IDE 201 or MCM 200 or MUM 201 or VIS 201. Lab/Tech fee rate A applies.

**MUM 320 Web Design I (4-0-3).**

Explores web design through examination of developments in digital media and Internet enabling technologies. Introduces communication design practices for the World Wide Web. Considers information design, navigation plans and elements of interactivity in designing web pages. Addresses the skills necessary to design, author and edit web pages to

create a coherent website. Prerequisite: ARC 201 or IDE 201 or MUM 201 or VIS 201 or DES 230 or MCM 200. Lab/Tech fee rate A applies.

**MUM 330 Web Design II (4-0-3).** Explores the process of web design from proposal to production through the fusion of content and interactivity. Studies dynamic web environments through the exploration of interactive authoring tools. Focuses on the tools and techniques of website development and management. Prerequisite/concurrent: MUM 320. Lab/Tech fee rate A applies.

**MUM 331 3D Animation (4-0-3).** Addresses strategies and production pipeline in 3D modeling and animation: non-linear animation strategies, texture mapping, dynamics, lighting and rendering for contemporary professional output. Prerequisite: MUM 201. Lab/Tech fee rate A applies.

**MUM 340 Interactive Environments (4-0-3).** Focuses on design and implementation of interactive applications and environments. Covers narrative, content development, information architecture, patterns of interactive structures, interface design, user-orientation and user-engagement. Consider the development of interactive applications through prototyping and the progressive testing of design solutions. Addresses instructional and learning systems, computer games, interactive fiction and multimedia-supported business applications. Prerequisite: ARC 201 or IDE 201 or MUM 201 or VIS 201 or DES 230 or MCM 200. Lab/Tech fee rate A applies.

**MUM 360 Multimedia Design History and Theory (3-0-3).** Examines the origins and history of multimedia design and its technologies. Surveys critical media culture readings from both the theoretical field of media studies and the creative works of artists, designers, filmmakers and writers. Prerequisite: DES 231.

**MUM 397 Internship in Multimedia Design (0-0-0).** Requires a minimum of five weeks (normally 200 hours) of approved professional experience. Requires the work undertaken to be documented in a formal report submitted to the department by the beginning of the following term. Graded as Pass/Fail. Prerequisites: MUM 302-01 and approval of internship coordinator. Registration fee applies.

**MUM 405 Multimedia Design Studio V (12-0-6).** Focuses on the development of topical discipline-specific or inter-/trans-disciplinary design projects. Explores local, regional and/or global themes through individual and/or collaborative projects.

Repeatable only once. Prerequisite: MUM 302-01.

**MUM 406 Multimedia Design Studio VI (12-0-6).** Focuses on the development of a comprehensive multimedia design project. Addresses the role of research, analysis and synthesis in professional design practice. Covers aspects of planning, management and production. Requires an approved student-initiated or faculty-directed capstone/topical project. Repeatable only once. Prerequisite: MUM 405.

**MUM 498 Studio Abroad (3 to 6 credits).** Provides studio activities conducted in regional and international sites promoting a global-oriented approach to design. Prerequisite: studio specific.

## UPL Urban Planning

**UPL 201 Introduction to Urban Planning (3-0-3).** Introduces the discipline of urban planning. Surveys the history of the field as well as its links with other fields of environmental studies, such as architecture, urban design, geography and engineering. Provides an overview of what planners do and the tools they use in their practice. Prerequisite: WRI 102.

**UPL 302 Analysis of Spatial Phenomena (3-0-3).** Addresses key concepts and technical skills involved in analyzing spatial phenomena. Covers topics such as spatial inferences, cartographic quality, geospatial data, exploratory spatial data analysis, and analytical concepts and methods. Emphasizes a working knowledge of geographic information systems and related software applications. Prerequisites: junior standing, any 100-level MTH, and WRI 101. Lab/Tech fee rate A applies.

## VIS Visual Communication

**VIS 201 Design Studio I (6-0-3).** Introduces principles of visual composition and organization through systems-based approaches to design. Explores formal relationships of varying complexity- from simple abstractions to the articulation of multiple categories of text and image-based information. Presents strategies to manage content. Examines denotation and connotation in visual communication. Addresses the integration of digital media within design projects. Repeatable only once. Prerequisites: DES 112, DES 121, DES 122, DES 132, MTH XXX and WRI 101. Lab/Tech fee rate A applies.

**VIS 202 Design Studio II (6-0-3).** Covers essential typographic, compositional and imaging techniques. Examines strategies of creating, manipulating and combining text and images to facilitate communication. Explores varied means of visualization for print-or time-based media. Introduces the role of sequencing and transformation in communicating visual and textual information. Repeatable only once. Prerequisite: VIS 201. Lab/Tech fee rate A applies.

**VIS 213 Illustration Drawing (4-0-3).** Builds on skills introduced in foundation drawing and encourages students to utilize a wide variety of illustration media and techniques. Class projects focus on drawing from life, photo reference gathering techniques, and visualizing concepts and ideas within the genre of commercial illustration. Prerequisite/concurrent: ART 111 or DES 111. Lab/Tech fee rate A applies.

**VIS 221 Photography Basics (4-0-3).** Introduces basic photographic skills of camera control and photographic practice through the use of digital technology. Introduces and explores topics relating to the history and theory of photographic practice. Prerequisite: DES 101 or DES 131. Lab/Tech fee rate A applies.

**VIS 231 Typography I: Normative Typographic Principles (4-0-3).** Introduces the fundamental conventions and vocabulary associated with typography. Addresses information hierarchy through the study of visual form and structure. Explores the editorial and expressive potentials of typography. Engages traditional and digital technologies within coursework. Prerequisite/concurrent: ARC 201 or IDE 201 or DES 200 or MUM 201 or VIS 201. Lab/Tech fee rate A applies.

**VIS 242 Electronic Online Publishing (4-0-3).** Introduces fundamental concepts and practical applications of web and electronic publishing. Examines the potential of media authored content through short, basic exercises using relevant technologies. Prerequisite: VIS 201 or DES 200. Lab/Tech fee rate A applies.

**VIS 301 Design Studio III (6-0-3).** Examines the relationship between visual form and content. Addresses the role of semiotics in visual communication. Emphasizes the application of methods and strategies used in the design of print-based publications for general and/or specific audiences. Repeatable only once. Prerequisite: VIS 202.

**VIS 302 Design Studio IV (6-0-3).** Explores representations of abstract ideas in the form of symbols and

logotypes. Covers research methods and design strategies associated with the development of visual identity systems. Addresses the role of branding, the development of project briefs, logo design, and the development and application of visual identity standards. Repeatable only once. Prerequisite: VIS 301.

**VIS 311 Illustration Design (4-0-3).**

Introduces students to various techniques of idea generation by focusing upon illustration as a means of conveying ideas and concepts. Encourages students to arrive at visual equivalents to written and/or oral texts in the contexts of the history of design and illustration. Prerequisite: VIS 213 or ART 211.

**VIS 312 Illustration Genres (4-0-3).**

Explores the potential of 19th and 20th century illustration genres as a means of visual communication. Investigates use of historical illustration styles in a contemporary context. Prerequisite: VIS 213 or ART 211.

**VIS 313 Visual Narrative (4-0-3).**

Explores narrative and storytelling structures in design including storyboarding and sequential drawing. Examines history and current practice in sequential visual arts. Emphasizes research, drawing and rendering skills needed to develop characters in sequential formats such as animation, film, illustration, children's and juvenile books, and graphic novels. Prerequisites: VIS 213 or ART 211, and ENG 203 or ENG 204. Lab/Tech fee rate A applies.

**VIS 320 Printmaking: Lithography and Serigraphy Methods (4-0-3).**

Introduces basic concepts and skills in traditional and contemporary lithography, serigraphy and alternative printmaking methods while developing a firm skills base to expand upon in students' continuing studies in their specific disciplines. Investigates traditional mechanical and digital experimental reproductive processes as well as a basic history and theory of the graphic arts. Prerequisite: VIS 213. Lab/Tech fee rate B applies.

**VIS 321 Photojournalism (4-0-3).**

Explores the history and practice of photojournalism. Students are expected to have sound black and white technical skills, as the course focuses on developing personal awareness and vision within the medium of photography. Through a series of slides, lectures and small photographic assignments, the course will investigate subject matter through the development of the photographic essay. Prerequisite: VIS 221, or DES 160 and DES 362. Lab/Tech fee rate A applies.

**VIS 322 Printmaking: Relief and Intaglio Methods (4-0-3).**

Introduces basic concepts and skills in traditional and contemporary relief and intaglio printing and production methods while developing a firm skills base to be expanded upon. Examines the role of the relief and intaglio reproduction in material culture. Examines traditional and experimental applications in two- and three-dimensional work across a range of disciplines. Prerequisite: VIS 213 or ART 211. Lab/Tech fee rate B applies.

**VIS 323 Photography for Communication (4-0-3).**

Covers the theory and practice of constructed or stage photography. Examines techniques and processes to develop abilities related to effective visual communication. Focuses on theme work and the development of a portfolio. Prerequisite: VIS 221 or ARC 316, or DES 160 and DES 362. Lab/Tech fee rate A applies.

**VIS 325 Creative Studio**

**Photography (4-0-3).** Explores the control and manipulation of artificial lighting for creative effect in a photography studio environment. Practical applications of studio flash lighting are introduced and explored via practical assignment work. In addition students will be introduced to significant examples of photographers' work that exploit the controlled use of lighting. Prerequisite: VIS 221 or ARC 316, or DES 160 and DES 362. Lab/Tech fee rate B applies.

**VIS 326 Screen Printing: Methods and Techniques (4-0-3).**

Develops skills in screen printing and its potential applications for both paper and alternate surfaces. Explores the different techniques for developing screen print initially using paper and hand-painted stencils and then moving onto photographic stencils and combinations of the two. Prerequisite: VIS 202 or MUM 202 or ARC 202 or IDE 202 or DES 300. Lab/Tech fee rate B applies.

**VIS 327 Analog Photography Processes (4-0-3).**

Covers the practice of 35mm analog photography. Explores darkroom printing techniques and processes central to effective visual communication. Focuses on theme work and the development of a portfolio. Prerequisite: VIS 221 or ARC 316, or DES 160 and DES 362. Lab/Tech fee rate A applies.

**VIS 331 Typography II: Complex Typographic Systems (4-0-3).**

Explores the relationship between content and form in typographic design. Examines the normative and expressive aspects of typography and how they function in micro publications, complex multi-page and or multilingual

publications, wayfinding and information systems, and text for exhibitions supported by reference and analysis of contemporary case studies. Focuses on analyzing content, its meaning, and the intended goals and needs of both the information provider and the information user. Prerequisite/concurrent: VIS 301. Lab/Tech fee rate B applies.

**VIS 342 Environment, Experience and Interaction Design (4-0-3).**

Explores the intersection of visual communication and the built environment through lectures, case-study analysis and studio projects. Covers wayfinding systems, architectural graphics, signage, dynamic environments and mapping. Prerequisite: VIS 301. Lab/Tech fee rate B applies.

**VIS 361 The Design Profession (3-0-3).**

Deals with issues of working in design-related fields, including professional practice, intellectual property, employability, freelancing and working within a cultural context. Imparts knowledge of the region's design industry, through research and field trip documentation. Prepares students for their summer internships. Open to Department of Art and Design students only. Prerequisite/concurrent: DES 360 or MUM 360.

**VIS 397 Internship in Visual Communication (0-0-0).**

Requires a minimum of five weeks (normally 200 hours) of approved professional experience. Requires the work undertaken to be documented in a formal report submitted to the department by the beginning of the following term. Graded as Pass/Fail. Prerequisites: VIS 302 and approval of internship coordinator. Registration fee applies.

**VIS 405 Design Studio V (12-0-6).**

Focuses on the development of topical discipline-specific or inter-/trans-disciplinary design projects. Explores local, regional and/or global themes through individual and/or collaborative projects. Restricted to visual communication students. Repeatable only once. Prerequisite: VIS 302.

**VIS 406 Design Studio VI (12-0-6).**

Focuses on the development of a comprehensive communication design project. Addresses the role of research, analysis and synthesis in professional design practice. Covers aspects of planning, management and production. Requires an approved student-initiated or faculty-directed capstone/topical project. Restricted to visual communication students. Repeatable only once. Prerequisite: VIS 405.

**VIS 498 Studio Abroad (1 to 6 credits).**

Provides studio activities

conducted in regional and international sites promoting a global-oriented approach to design. Prerequisites: VIS 202 and consent of the department.

## AUS Courses Offered Abroad

AUS courses offered abroad provide students with the opportunity to complete and earn credits for AUS courses or AUS studios that are conducted in a regional or an international site.

### Course Abroad (1 to 3 credits).

Features on-site visits offering the opportunity to experience first-hand regional and international design practices or to engage in site-specific design projects, highlighting particular themes relevant to the specific location. Department permission is required for enrollment and credit. Can be repeated for credit. Prerequisites: topic specific. Lab/Tech fee may apply.

### Studio Abroad (3 to 6 credits).

Provides studio activities conducted in regional and international sites promoting a global-oriented approach to design. Prerequisite: studio specific (see specific entries earlier in this section).

Courses abroad are numbered as 193, 293, 393 or 493 courses. Studios abroad are numbered as 498. The three-letter course prefix reflects the field of study of the course.

Descriptions of AUS courses offered abroad are made available in the college during registration.

**Directed Study (1 to 4 credits).** An investigation under faculty supervision beyond what is offered in existing courses. Prerequisites: minimum CGPA of 3.00, Junior II standing and consent of the instructor.

Directed study courses are numbered as 396 or 496 courses. The three-letter course prefix reflects the field of study of the course (e.g., directed study courses in architecture are coded as ARC 396 or ARC 496).

For more details on independent study, please refer to Registration in Independent Study Courses in the Academic Policies and Regulations section of this catalog.

## Interdisciplinary Study Courses

Interdisciplinary study (IDS) courses provide opportunities for students to benefit from collaboration by faculty from a range of disciplines. Courses with an IDS course code are normally co-taught by two or more faculty members and focus on topics beyond those offered in existing courses. Prerequisites: topic specific. Lab/Tech fee may apply.

IDS courses at the 300 level require sophomore standing or above; 400-level IDS courses are restricted to junior standing and above.

Descriptions of particular IDS courses are made available during registration.

## Special Topic Courses

### Independent Study

Independent study is the umbrella term used to label two types of independent work: independent course and directed study.

Students are allowed to take one independent study. A second independent study could be approved by the student's associate dean for graduation purposes only.

#### Independent Course (1 to 4 credits).

A course listed in the catalog but offered in an independent study format. The course is coded using the course number in the catalog.

Students are not allowed to repeat courses in an independent course format.

To be eligible to apply for an independent course, students must be in good academic standing.

#### Special Topic (1 to 4 credits).

Presents a theoretical or practical topic proposed by the faculty beyond what is offered in existing courses. Can be repeated for credit. Prerequisites: topic specific. Lab/Tech fee may apply.

Special topic courses are numbered as 194, 294, 394 or 494 courses. The three-letter course prefix reflects the field of study of the course.

Special topic courses at the 300 level require sophomore standing or above; 400-level special topic courses are restricted to junior standing and above.

Descriptions of particular special topic courses are made available during registration in the college/school offering the course.

# College of Arts and Sciences

## AMS American Studies

**AMS X94 Special Topics in American Studies (1 to 4 credits).** Presents a theoretical or practical topic proposed by the faculty beyond what is offered in existing courses. Can be repeated for credit. Prerequisites: topic specific. Lab/Tech fee may apply.

Check the Special Topic Courses section at the end of the College of Arts and Sciences course descriptions for more information on special topics.

## ANT Anthropology

**ANT 205 World Cultures (3-0-3).** (Formerly INS 205). Explores the varied cultures of the world. Addresses the critical importance of societal culture as a tool of human survival. Uses anthropological methods to give an appreciation of cultural differences and similarities and thereby increases understanding of the complex world with which we must cope. Prerequisite/concurrent: WRI 102.

## ARA Arabic

### Arabic Language

**ARA 105 Elementary Arabic I (3-2-3).** Introduces the Arabic script and its phonology and basic vocabulary and grammar. Builds the foundations of the four language skills (listening, speaking, reading and writing). Forms the first part of a two-semester sequence in elementary Arabic. Limited to non-native speakers of Arabic. Prerequisite: placement test.

**ARA 106 Elementary Arabic II (3-2-3).** Focuses on further developing the four language skills introduced in Elementary Arabic I. Expands knowledge of Arabic grammar and vocabulary. Fosters cultural awareness of the Arab world through the use of short texts and situational dialogues. Forms the second part of a two-semester sequence in elementary Arabic. Limited to non-native speakers of Arabic. Prerequisite: placement test.

**ARA 107 Intensive Elementary Arabic I (6-2-6).** (In Arabic). Introduces the Arabic script, its phonology, basic vocabulary and grammar. Builds the foundations of the four language skills (listening,

speaking, reading and writing) to expand knowledge of vocabulary and grammar. Fosters cultural awareness of the Arab world through the use of short texts and situational dialogues. Limited to visiting students who are non-native speakers of Arabic.

**ARA 108 Intensive Elementary Arabic II (6-2-6).** (In Arabic). Enhances the non-native speaking student's ability to comprehend a variety of aural and written materials at a more advanced elementary level. Develops communicative abilities in terms of expressing themselves with Arabic-speaking peers both orally and in writing. Builds the Arabic language competency of non-native speakers of Arabic. Limited to visiting students who are non-native speakers of Arabic. Prerequisite: ARA 107 or placement test.

**ARA 203 Intermediate Arabic I (3-2-3).** Develops the four basic language skills (listening, speaking, reading and writing) with emphasis on the oral and written skills, as part of a two-term sequence in intermediate Arabic. Introduces Arab culture through the use of authentic reading materials drawn from different genres, such as literature, history, politics and science. Limited to non-native speakers of Arabic. Prerequisite: placement test.

**ARA 204 Intermediate Arabic II (3-2-3).** Develops the four basic language skills—listening, speaking, reading and writing—as part of a two-term sequence in intermediate Arabic. Introduces Arab culture through the use of appropriate reading materials from literary, historical, political and scientific genres. Limited to non-native speakers of Arabic. Prerequisite: ARA 203 or permission of instructor.

**ARA 205 The Language of the Qur'an (3-0-3).** (In Arabic). Introduces the language of the Qur'an from a linguistic perspective. Examines the semantic, syntactic and rhetorical elements that substantially affect comprehension of the Qur'anic text. Prerequisite: permission of the instructor.

**ARA 210 Composition for Native Speakers of Arabic (3-0-3).** Aims to develop the writing skills of the native speaker of Arabic. Develops themes such as letter writing and gives attention to the development of personal style. Takes a historical look at styles of composition in Arabic.

**ARA 220 Composition for Non-Native Speakers of Arabic (3-0-3).** Aims to develop the writing skills of

non-native speakers of Arabic. Develops themes such as letter writing and gives attention to the development of different styles in modern and contemporary Arabic writings.

**ARA 308 Arabic Grammar in Use (3-0-3).** (In Arabic). Provides an overview of the historical background of Arabic grammar, its origin, schools, and place within and impact upon the Arabic language, history and culture. Covers the syntactic and morphological structures of Arabic that contribute to coherence and semantics and applies them practically to sociolinguistic contexts. Addresses traditional and modern approaches to Arabic grammar in use. Prerequisite: permission of instructor.

**ARA 309 Business Arabic (3-0-3).** (In Arabic). Develops abilities in reading and writing Arabic-language business documents and proposals. Teaches Arabic speaking and listening skills necessary for effective communication in the business world. Prerequisite: ARA 210.

**ARA 314 Media Arabic (3-0-3).** Teaches and practices the language skills necessary to comprehend and contribute to a wide range of Arabic-language media. Prerequisite: ARA 210.

**ARA 340 The Social Context of Arabic (3-0-3).** (In English). Discusses language issues in the Arab world by relating language to national identity. Identifies and characterizes sociopolitical problems related to the development of Modern Standard Arabic in the Arab world today and how they affect language planning, literacy development and evolution of MSA. Prerequisite: ENG 203 or ENG 204.

**ARA 360 Arabic Linguistics (3-0-3).** Addresses the history and development of the Arabic language and its relation to Arab culture and history. Covers the main areas of Arabic linguistics: phonology (the sounds of the language), morphology (the structure of words), semantics (study of meaning) and syntax (types and structure of sentences). Focuses on the analysis of Arabic texts. Prerequisite: ARA 205 or ARA 206 or ARA 207 or ARA 210 or ARA 220 or TRA 210 or TRA 220.

**ARA 404 Working with MSA Texts (3-0-3).** Builds on the earlier Arabic courses using materials that are more advanced. Uses Modern Standard Arabic texts (political, economic and social) to develop further the grammatical structures and the four skills practiced in earlier courses.



Covers advanced language competency and skills such as skimming, summarizing, paraphrasing and extended writing. Prerequisite: ARA 203 or ARA 204 or ARA 210.

## Arabic Literature

**ARA 101 Introduction to Arabic Heritage I (3-0-3).** (In both Arabic and English). Introduces the intellectual, literary, artistic and cultural contributions of the Arabs to world civilization from pre-Islamic times to the fall of Baghdad in 1258 CE.

**ARA 102 Introduction to Arabic Heritage II (3-0-3).** (In both Arabic and English). Introduces the intellectual, literary, artistic and cultural contributions of the Arabs to world civilization from the fall of Baghdad in 1258 CE to the end of the 19th century.

**ARA 201 Arabic Literature in Translation (3-0-3).** (In English). Provides a detailed study of genre and theme in Arabic literature with special emphasis on the modern period. Prerequisite: WRI 102.

**ARA 206 Modern Arabic Prose (3-0-3).** (In Arabic). Surveys the renaissance of Arabic prose from the 19th century to the present. Examines the modern Arabic novel, short story, play and autobiography. Studies the rise of these fundamentally Western literary forms in the Arab world as a result of the Arab "Awakening" (*al-Nahda*). Prerequisite: ARA 101.

**ARA 207 Arabic Drama (3-0-3).** (In Arabic). Looks at the emergence of Arabic drama in the 19th century until the present day and assesses prototype drama forms of the medieval period. Provides, through a study of selected plays by prominent authors, a picture of the influence of Arabic drama on Arabic literature. Prerequisite: ARA 101.

**ARA 209 Modern Arab History through Literature (3-0-3).** (In English). Introduces modern Arab history through literature and links literary production to its historical and cultural context. Builds awareness of how history and literature intersect and of the similarities and differences in historical and literary writing. Readings include works of fiction and non-fiction such as novels, short stories, memoirs, biographies and autobiographies. Prerequisite: WRI 102.

**ARA 301 Classical Arabic Prose until the end of the Third Century A.H. (3-0-3).** Through critical textual analysis, this course tracks the evolution and development of classical Arabic prose from pre-Islamic times until the late second century A.H. after the death of Al Jahiz. Major trends,

styles and forms are examined from a complex perspective, combining the evolutionary chronological approach with the artistic and analytical. It assesses the significance of the oratory tradition in early Islamic and looks at the early development of the epistolary genre, which was to become the focus of Arabic prose literature. It also looks at the influence of the Qur'an and Hadith on the development of Arabic prose.

**ARA 304 Modern Arabic Poetry (3-0-3).** (In Arabic). Surveys the renaissance of Arabic poetry from the 19th century to the present. Prerequisite: ARA 101.

**ARA 312 Modern Arabic Literature: Prose and Poetry (3-0-3).** (In Arabic). Surveys the renaissance (*al-Nahda*) of Arabic literature from the early 20th century to the present. Illustrates contemporary literary trends such as neo-classicism, romanticism and modernism through the study of selected novels, short stories, drama and poetry. Prerequisite: ARA 101.

**ARA 332 Women Writers from the Gulf (3-0-3).** (In Arabic). Studies the development of the female literary tradition in modern Arabian Gulf states. Examines the treatment of gender and other socio-cultural and political themes in selected texts by contemporary Gulf women writers. Prerequisite: ARA 201 or ARA 206 or ARA 207 or ARA 209 or ARA 240.

**ARA 350 Literature of the Arabian Gulf (3-0-3).** (In Arabic). Examines the contribution of literary figures in the Arabian Gulf, especially those of the United Arab Emirates, to Arabic literature in general. Prerequisite: ARA 201 or ARA 206 or ARA 207 or ARA 209 or ARA 210.

**ARA 403 War and Peace in Arabic Literature and Film (3-0-3).** (In English). Analyzes the way the twin themes of war and peace have been treated in modern Arabic literature and film by surveying Arabic novels, short stories, poetry, autobiographies and selected feature films. Prerequisite: ENG 203 or ENG 204.

## Arab/Islamic Culture and Civilization

**ARA 103 Arabic Music in a Historical Context (3-0-3).** Studies the historical development of Arabic Classical and folk musical genres from the pre-Islamic to modern times. Examines music in its dialectical relationship with political and social climates of Arab culture.

**ARA 240 Arab-Islamic Culture and Civilization (3-0-3).** (In English). Examines the rise of Islam as a major world civilization. Provides an overview of the manifestation of Islamic culture in Arab history through the study of the basic Islamic texts and the contributions of Muslim intellectuals. Prerequisite: ARA 101 or ARA 102.

**ARA 281 The Art of Qur'anic Recitation (Tajweed) (3-0-3).** (In Arabic). Provides an overview of the history and schools of Tajweed. Addresses the rules governing the correct oral rendering of the Hafs mode of reciting the Qur'an and their practical application, namely, those related to the nūn sākinah and nunnation (dissimilation/vocalization, assimilation with and without nasalization, incomplete assimilation, sound replacement), mīm sākinah, types of vowel prolongation, qalqalah and pause positions. Prerequisite: oral placement test.

**ARA 302 Arab Identity and Thought (3-0-3).** (In English). Examines representative writings by Arab authors dealing with Arab identity formation in relation to or in opposition to other nations and cultures. Prerequisite: WRI 102.

**ARA 303 Classical Arab/Islamic Culture (3-0-3).** (In English). Explores the ways in which Islam has shaped the history and culture of the Arabs and discusses some of the significant features of Arab/Islamic culture and the several contributions this culture has made. Prerequisite: WRI 102.

**ARA 320 Arabs and the West: The Andalusian Symbiosis (3-0-3).** (In English). Introduces the cultural symbiosis between Arabs and Europeans during the eight centuries of Arab/Muslim rule in Spain. Examines and reevaluates the literary and cultural developments of that time. Discusses the historical, literary, linguistic and artistic products of Al Andalus. Prerequisite: junior standing.

**ARA 380 Sufism: Readings in Islamic Mysticism (3-0-3).** (In English). Discusses the salient features of the mystical dimension within Islam. Covers the historical background of the tradition and the foremost personalities who played a major role in its development. Examines the primary concepts promoted in Sufism and their manifestation, in both a religious and social context, through the classical works that present both Sufi theory and practice. Prerequisites: ARA 101 or ARA 102, and ENG 203 or ENG 204.

**ARA 383 Islamic Law and Jurisprudence (3-0-3).** (In English). Discusses the incremental evolution of the legal tradition in Islam to

contextualize the juristic contributions of the foremost personalities who played a major role in its genesis. Examines the sources of Islamic law (*al-masadir*), its evidence (*al-adilla*), its guiding principles (*al-usul*), its jurisprudential maxims (*al-qawa'id*) and its underlying objectives (*al-maqasid*), which underpin the structure of Islamic legal theory. Prerequisites: ARA 240, and ENG 203 or ENG 204.

**ARA 385 Islamic Texts in Translation (3-0-3).** (In English). Explores the development of the Arab-Islamic intellectual tradition and traces the genesis of religious learning by examining the influence of the Islam's primary sacred texts and how they shaped the religion's intellectual history. Discusses the literary production of this evolution by selectively examining a range of Islamic texts from a number of disciplines such as Islamic jurisprudence (*fiqh*), scholastic theology (*kalam*) Arab philosophy (*falsafa*) and Islamic spirituality and mysticism (*tazkiyat al-nafs*). Prerequisite: ENG 203 or ENG 204.

**ARA 402 Qur'anic Studies (3-0-3).** (In English). Aims to develop the understanding of major topics in Qur'anic studies such as the revelation of the Qur'an, the characteristic features of Meccan and Medinan revelations, the notion of abrogation in the Qur'an, circumstances of revelation and parables in the Qur'an and their moral lessons. Provides the opportunity to study Qur'anic exegesis and to explore the Qur'an's various themes and theological, spiritual and legal concepts. Requires a basic understanding of Qur'anic script. Prerequisites: ARA 101, and ENG 203 or ENG 204.

## BIO Biology

**BIO 101 General Biology I (3-3-4).** Covers the molecular basis of life, the carbon atom, cells, organelles, plant and animal physiology, genetics, speciation, evolution, the origins of life and bacteriology. Provides an in-depth study of biology in preparation for a profession in biology. Lab/Tech fee rate A applies.

**BIO 102 General Biology II (3-3-4).** Covers plant and animal diversity, animal evolution, plant and animal form and function, body systems, animal behavior, ecology and conservation biology. Provides an in-depth study of organism biology in preparation for a profession in biology. Prerequisite: BIO 101. Lab/Tech fee rate A applies.

**BIO 103 Introduction to Human Biology (3-0-3).** Surveys biological concepts with a strong emphasis on human biology. Includes the following topics: the scientific method, biochemistry, cell biology, functions and dysfunctions of the human organ systems and a strong emphasis on maintaining a healthy lifestyle. Not open to science or engineering students.

**BIO 210 Introduction to Human Anatomy and Physiology (3-0-3).** Provides a basic foundation in human anatomy and physiology with an emphasis on the normal functions of the major human organ systems. Discusses current literature on some human diseases resulting from dysfunction. Prerequisite: BIO 101.

**BIO 251 Ecology (2-3-3).** Covers the general principles of ecology with an emphasis on desert ecology and conservation. Includes case studies that illustrate important ecological principles. Includes laboratory excises that emphasize basic field ecology techniques, experimental design, data collection, modeling and analysis. Requires the completion of two professional-quality written reports. Not open to students in the BSB program who have not yet met the program's formal admission requirements. Prerequisite: BIO 102. Lab/Tech fee rate A applies.

**BIO 260 Genetics and Molecular Biology (3-3-4).** Introduces the general principles of genetics from Mendelian to modern molecular genetics. Covers DNA replication, transcription, translation, mutations, gene regulation, quantitative genetics, genetic engineering and genomics. Includes genetic applications in medicine, agriculture and law enforcement. Illustrates general principles discussed in class with laboratory experiments using modern equipment. Prerequisite: BIO 102. Lab/Tech fee rate B applies.

**BIO 310 General Physiology (3-3-4).** Explores the general physiology of multicellular organisms and emphasizes the mechanisms that coordinate activities of cells and tissues within these multicellular organisms. Assists in developing an understanding of cellular and biochemical processes fundamental to the survival of living organisms. Relates cellular processes to the organismal level and contrasts the differences in these processes as they occur in different organisms. Introduces examples of different organisms to illustrate various physiological principles. Prerequisites: BIO 102 and junior standing. Lab/Tech fee rate A applies.

**BIO 330 Ecosystems Management (3-0-3).** Focuses on the policies of ecosystems management from a scientific and natural approach. Gives special attention to current research and case studies of organism adaptations and roles in specific habitats and adverse environments, and to formulate approaches and policies most suitable for the management of natural, restored and artificial ecosystems. Reviews management practices in light of current scientific and sociobiological understanding of biodiversity, conservation and sustainability. Prerequisite: BIO 251.

**BIO 332 Cell Biology (3-0-3).** Includes all of the concepts related to the cell, the "unit of life." Focuses on the metabolic pathways of the cell as they relate to the structure and function of cell organelles and other anatomical components. Covers macromolecules of the cell, biosynthesis, bioenergetics, metabolic regulatory mechanisms, membrane structure and transport, intracellular compartments and transport, cytoskeletal systems, cellular movement, cell communication and signal transduction mechanisms. Not open to students in the BSB program who have not yet met the program's formal admission requirements. Prerequisite: BIO 260.

**BIO 335 Microbiology (3-3-4).** Covers the biology of microorganisms (viruses, bacteria, fungi and helminthes). Emphasizes the role they play in our lives, especially as related to epidemiology, health, prevention of infection and identification. Teaches sterile techniques, how to culture and identify bacteria, and how to control them in clinical, personal and environmental settings. Prerequisite: BIO 101. Lab/Tech fee rate A applies.

**BIO 341 Principles of Pharmacology (3-0-3).** Covers the general physical and chemical properties of drugs, along with their mechanisms of action and side effects. Relates drug-receptor interactions at the cellular level to pathophysiological effects on major organ systems. Explores the clinical application of a variety of medicinal drugs. Introduces the fundamentals of drug discovery and pre-clinical development and the latest frontiers in drug delivery methods. Prerequisite: BIO 310.

**BIO 361 Evolution and Biodiversity (3-0-3).** Introduces principles of evolution as applied to all organisms. Covers the origins of life, the history of evolution, biogeography, population genetics, speciation, phylogenetic analysis, human evolution and applications to current problems in agriculture, species conservation,

population dynamics and the effects of environmental change. Prerequisite: BIO 260.

**BIO 371 Principles of Neuroscience (3-0-3).** Covers the basic principles of organization and function of the mammalian nervous system. Illustrates the function of neurons, synaptic transmission, sensory systems, and complex brain function. Emphasizes the key mechanisms involved in brain development, neural signaling, and neural correlates of sensory perception. Discusses primary literature in neuroscience with emphasis on research in cellular physiology and sensory systems. Prerequisites: BIO 102 and junior standing.

**BIO 421 Marine Environments (2-3-3).** Focuses on interactions between biological, chemical and physical processes in marine environments. Places strong emphasis on marine ecology and local fauna of the Gulf region. Includes the following topics: marine physics and chemistry and their importance to marine biology, oceanic plankton and nekton, deep-water biology, coastal habitats, energy flow, fisheries and marine conservation issues. Prerequisite: BIO 251. Lab/Tech fee rate A applies.

**BIO 461 Desert and Maritime Plants (3-0-3).** Provides a good working knowledge of the desert and maritime plants that are unique to the United Arab Emirates. Develops familiarity with the proper taxonomy and identification of species, and provides knowledge about the environment in which they grow. Emphasizes the adaptations of plant species to the special stresses plants encounter in the hot, dry and often salty environments found in this region. Prerequisite: BIO 251.

**BIO 481 Cellular and Molecular Immunology (3-0-3).** Covers basic principles of cellular and molecular immunology with special emphasis on development of the immune system, innate and adaptive immunity, cells and tissues of the immune system, antibody structure and synthesis, complement pathways, antigen-antibody reactions, antigen presentation, humoral and cell-mediated immune responses, and transplantation. Discusses major topics related to diseases and conditions such as allergies, autoimmune diseases, and immunodeficiency. Prerequisite: BIO 335.

**BIO 491 Senior Research Project I (0-6-3).** Requires selection of a biology problem for an independent research project. Upon approval of the department, the student begins with a literature search then follows up with laboratory studies. The results are then presented in a seminar as well as thesis

form. Prerequisite: senior standing. Lab/Tech fee rate B applies.

**BIO 492 Senior Research Project II (0-6-3).** Continuation of BIO 491. Requires selection of a new or related biology problem for an independent research project. Upon approval of the department, the student begins with a literature search then follows up with laboratory studies. The results are then presented in a seminar as well as thesis form. Prerequisite: senior standing. Lab/Tech fee rate B applies.

## CHM

## Chemistry

**CHM 101 General Chemistry I (3-3-4).** Covers the fundamental chemical principles, concepts and laws. Includes the following topics: reaction stoichiometry, types of chemical reactions, solution stoichiometry, gas laws, kinetic theory of gases, thermochemistry, atomic structure and periodicity, the Bohr model, Lewis structures, ionic and covalent bonding. Laboratory experiments illustrate principles discussed in the course. Lab/Tech fee rate A applies.

**CHM 102 General Chemistry II (3-3-4).** Covers the solid state and crystallography, the liquid state and phase diagrams, properties of solutions, including colligative and chemical properties; reaction kinetics, acid-base and complex ion equilibria; laws of thermodynamics; enthalpy and free energy; electrochemistry; and nuclear chemistry. Includes laboratory experiments illustrating principles discussed in the course. Prerequisite: CHM 101. Lab/Tech fee rate A applies.

**CHM 104 Basics of Chemistry (3-0-3).** Introduces the fundamental chemical principles, concepts and laws. Includes atomic theory, atomic structure and periodicity; chemical bonding; reaction stoichiometry and chemical accounting; physical states and intermolecular forces; gas laws and the kinetic-molecular theory; acids; bases and redox reactions; nuclear chemistry; organic chemistry; and topics dealing with chemistry and everyday life. Not open to science and engineering students.

**CHM 215 Organic Chemistry I (3-0-3).** Surveys reactions of aliphatic and aromatic compounds including modern concepts of bonding, mechanisms, conformational analysis and stereochemistry. Includes the following topics: alkanes and cycloalkanes; alkenes; alkynes; biologically active acetylenic compounds; electrophilic and nucleophilic reactions; resonance; alkyl halides; and SN1, SN2, E1 and E2

mechanisms. Not open to students in the BSB, BSC and BSES programs who have not yet met the program's formal admission requirements. Prerequisite: CHM 102.

**CHM 216 Organic Chemistry II (3-0-3).** Deals with modern spectroscopic techniques for structure determination; chemistry of oxygen and nitrogen compounds; and chemistry of alcohols, ethers, carbonyl compounds and amines. Gives special attention to mechanistic aspects. Prerequisite: CHM 215.

**CHM 217 Organic Chemistry Laboratory I (0-4-1).** Includes experiments on purification, separation and identification techniques, as well as synthesis of various organic compounds. Prerequisite: CHM 215. Lab/Tech fee rate A applies.

**CHM 218 Organic Chemistry Laboratory II (0-4-1).** Includes experiments related to the theoretical principles and synthetic methods of modern organic chemistry. Prerequisites: CHM 216 and CHM 217. Lab/Tech fee rate A applies.

**CHM 221 Basic Concepts of Inorganic Chemistry (3-0-3).** Introduces basic concepts of inorganic chemistry. Covers atomic structure and the periodic table; molecular models, Lewis structure, electron pair repulsion model, hybridization and its use in explaining molecular properties; symmetry, point groups, electronic transitions and molecular vibrations; and molecular orbital theory of homonuclear and heteronuclear diatomic molecules and some triatomic molecules. Includes applications of inorganic compounds in environmental systems. Prerequisite: CHM 102.

**CHM 242 Quantitative Analysis (3-0-3).** Introduces the basic theories underlying analytical methods of chemical analysis. Covers fundamentals and applications of electrochemistry, compleximetric titrations, gravimetric and combustion analysis, spectrophotometry and chromatography. Gives special attention to complex systems and analysis of environmental samples. Not open to students in the BSC and BSES programs who have not yet met the program's formal admission requirements. Prerequisite: CHM 102.

**CHM 243 Quantitative Analysis Laboratory (0-3-1).** Comprises experiments that apply analytical methods to chemical analysis. Employs a variety of wet and dry analytical techniques associated with complex acid/base titrations systems, electrochemistry, compleximetric titrations, gravimetric and combustion analysis, and spectrophotometry.

Emphasizes replicate measurements and statistical analysis.

Prerequisite/concurrent: CHM 242.

Lab/Tech fee rate B applies.

**CHM 315 Organic Chemistry III (3-0-3).** Covers chemistry and reactions of B-dicarbonyl compounds, neighboring group effects, phenols, aryl halides, electrocyclic and cycloaddition reactions, thiols, reactions and synthesis of heterocyclic amines, carbohydrates, amino acids, proteins, and natural and synthetic polymers. Prerequisite: CHM 216.

**CHM 321 Chemistry of Transition Metals (3-3-4).** Covers principles and applications of transition metal chemistry. Includes the following topics: coordination chemistry, group theory, organometallic reaction mechanisms, electrochemistry, photochemistry, bioinorganic chemistry, catalysis and applications to organic synthesis. In the practical part, typical inorganic complexes of some non-transition and transition elements are prepared and characterized using physical methods and spectroscopic techniques. Prerequisite: CHM 221. Lab/Tech fee rate B applies.

**CHM 330 Physical Chemistry I (3-0-3).** Investigates in depth the basic concepts of thermodynamics. Analyzes the properties of gases as the basis for the study of the laws of thermodynamics, which are applied to questions of chemical equilibrium, phases and solutions, phase equilibrium and other applications. Prerequisites: CHM 102 and MTH 104.

**CHM 331 Physical Chemistry II (3-0-3).** Covers kinetics, electrochemistry, surface chemistry and transport properties. Emphasizes the theory of reaction rates and methods of handling kinetic data. Examines the conventions, underlying theory and practical applications of electrochemical cells. Prerequisite: CHM 330 or CHE 214.

**CHM 332 Physical Chemistry III (3-0-3).** Comprises three parts: quantum mechanics (structure of the atom, simple quantum mechanical systems, H-atom, harmonic oscillator and angular momentum); chemical spectroscopy (atomic spectrum, IR spectroscopy and electronic spectra of molecules); and statistical mechanics (Maxwell's distribution, partition and thermodynamic functions). Prerequisite: CHM 331.

**CHM 335 Physical Chemistry Laboratory (1-6-3).** Comprises individually performed experiments. Includes topics such as thermodynamics, kinetics, electrochemistry, surface chemistry and transport phenomena. Requires

submission of an original report after each experiment, including sample calculations and error analysis.

Prerequisite/concurrent: CHM 331. Lab/Tech fee rate B applies.

**CHM 345 Instrumental Analysis (2-3-3).** Introduces modern instrumental methods of analysis utilized by scientists and engineers. Provides an understanding of the principles, laws and operation of modern instrumentation. Reviews spectroscopic methods: mass, molecular, optical, flame and plasma. Surveys electrochemical, analytical and chromatographic techniques. Prerequisite/concurrent: CHM 242 and CHM 243. Lab/Tech fee rate B applies.

**CHM 350 Biochemistry (3-0-3).** Introduces the fundamental principles of biochemistry: protein structure and function; carbohydrates; lipids and the structure of biological membranes; enzymatic catalysis and regulations; and metabolism of carbohydrates, lipids and amino acids. Discusses the vital relationship between structure and function of major organic macromolecules. Surveys fundamental nucleic acid and protein biochemistry topics such as DNA replication, transcription and translation. Prerequisite: CHM 215.

**CHM 415 Spectroscopy in Organic Chemistry (3-0-3).** Deals with modern methods of structure determination employing spectroscopic techniques and stereochemistry. Includes the following topics: infrared spectroscopy of organic functional groups; nuclear magnetic spectroscopy (NMR) (chemical shifts, coupling constants, first- and second-order spectra, two-dimensional spectroscopic methods); ultraviolet spectroscopy, its origin and applications to different chromophores; mass spectrometry (spectrum generation, interpretation and fragmentation patterns of various classes of organic compounds); and solving combined structure problems. Prerequisite: CHM 216.

**CHM 431 Biophysical Chemistry (3-0-3).** Deals with the physical chemistry of biological and biochemical molecules. Covers applications of chemical potential to membranes; multiple equilibria in biochemical systems; binding of small molecules and ions to macromolecules; cooperative phenomena; types of molecular weights; transport process (diffusion, sedimentation, viscosity, and electrophoresis); polarography; light scattering; enzyme kinetics and pharmacokinetics; the physical chemistry of nucleic acids; the relation between structure and function of biological macromolecules; and

conformational transitions. Prerequisite: CHM 331.

**CHM 491 Senior Research Project I (0-6-3).** Requires the selection of a chemistry problem for independent research project. Involves a literature search and laboratory studies. Involves presentation of experimental results in a seminar as well as thesis form. Prerequisite: senior standing. Lab/Tech fee rate B applies.

**CHM 492 Senior Research Project II (0-6-3).** Continuation of CHM 491. Requires the selection of a new or related chemistry problem for independent research project. Upon approval of the department, the student begins with a literature search then follows up with laboratory studies. The results are then presented in a seminar as well as thesis form. Prerequisite: senior standing. Lab/Tech fee rate B applies.

## EDU

## Education

**EDU 210 Philosophy of Education (3-0-3).** Focuses on the aims and purposes of education and traces the development of education and the concept of schooling from Plato and Confucius to contemporary educational thinkers. Gives special attention to issues of current educational concern including gender and educational values. Prerequisite: ENG 203 or ENG 204.

**EDU 220 Introduction to Teaching (3-0-3).** Introduces the basic issues important to the teaching profession. Covers effective teaching practices such as planning, classroom organization, behavior management and use of technology in the classroom. Explores other issues in teaching, including motivation, leadership, and multicultural and international education. Prerequisite: ENG 203 or ENG 204.

**EDU 225 Globalization and Education (3-0-3).** Introduces globalization in relation to schooling and educational issues. Explores ways that globalization has been problematized and researched in educational literature. Examines globalization from an educational stance and explores the macro and micro elements of a globalized economy. Prerequisite: ENG 203 or ENG 204.

**EDU 307 Teaching and Learning in an Electronic Environment (3-0-3).** Focuses on the prominent research and best practices trends in content and language learning, as well as the social and individual factors that affect teaching processes in an electronic

environment. Explores how research and best practices in the area of e-learning can be utilized in different classroom situations. Prerequisite: ENG 203 or ENG 204.

**EDU 309 Classroom Discourse (3-0-3).** Focuses on patterns of language use in a variety of classrooms. Examines how these patterns can affect the equality or inequality of educational and learning opportunities. Analyzes discourse from the perspective of teaching practitioners in different professional settings. Prerequisite: ENG 223 or ENG 224 or ENG 234.

**EDU 315 Emotional Intelligence (3-0-3).** Examines theoretical perspectives of teaching Emotional Intelligence (EQ) within a multicultural context. Focuses on the ability to perceive and understand personal emotions and those of others to improve academic performance and helps to develop intra and interpersonal relationships. Examines ways to develop emotional intelligence (EQ) at both the personal and professional levels. Prerequisite: ENG 203 or ENG 204.

**EDU 319 Teaching and Learning in a Foreign Language (3-0-3).** Discusses various theoretical models dealing with teaching in a foreign language to children and adolescents. Examines the processes involved when reading and learning in a foreign language as well as effective instructional strategies based on current research in the field. Prerequisite: EDU 210 or EDU 220.

**EDU 325 Methodology and Materials Development (3-0-3).** Introduces pedagogical approaches, techniques and methodologies that can be useful in various educational settings. Offers the opportunity to evaluate and adapt commercially available textbooks as well as to create discipline-specific teaching materials. Prerequisite: EDU 210 or EDU 220.

**EDU 329 Curriculum Development (3-0-3).** Introduces the basic principles of effective assessment and course design. Covers evaluating learner centered/communicative curriculum, setting goals and objectives, analyzing resources, writing syllabi and conducting students' needs analyses. Prerequisite: EDU 210 or EDU 220.

## ENG English English Language

**ENG 203 Writing about Literature (3-0-3).** Builds upon the skills acquired

in WRI 102 to develop further critical thinking and academic writing competencies. Requires reading of short stories, poetry and drama and producing a research paper using analytical and critical skills in response to literary texts. Either ENG 203 or ENG 204 can be used to meet the general education communication requirement. Prerequisite: WRI 102.

**ENG 204 Advanced Academic Writing (3-0-3).** Builds upon the skills acquired in WRI 102 to further develop critical thinking and academic writing competencies. Requires reading and responding to a variety of non-literary texts and drawing on these texts in producing a research paper whose argument demonstrates their analytical and critical thinking skills. Either ENG 203 or ENG 204 can be used to meet the general education communication requirement. Prerequisite: WRI 102.

**ENG 207 Professional Communication for Engineers (3-0-3).** Develops technical writing and professional communication skills through engineering multidisciplinary projects (EMDPs). Analyzes, through EMDPs and teamwork, the distinctive features of various professional oral and written genres. Develops and enhances work ethics, leadership, interpersonal and decision-making skills. Restricted to engineering students. Prerequisites: ENG 204 and junior standing. Registration fee applies.

**ENG 208 Public Speaking (3-0-3).** Introduces the art of public speaking, debate and argument. Develops confidence in public speaking through introducing the techniques of making effective presentations and through extensive practice in public speaking. Prerequisite: ENG 203 or ENG 204.

**ENG 223 Introduction to Language Study (3-0-3).** Defines language and how it works. Encourages the examination of beliefs and attitudes about language and provides the techniques of language analysis. Covers grammar and appropriate usage, oral vs. written language, formal vs. informal language, standard vs. non-standard languages, language universals and language typology. Prerequisite: ENG 203 or ENG 204.

**ENG 224 English Grammar (3-0-3).** Focuses on the fundamental rules of English grammar as they relate to sentence structure and function. Explores different systems of analysis, including an introduction to the analysis of texts. Prerequisite: ENG 203 or ENG 204.

**ENG 225 Writing for Business (3-0-3).** Aims to develop skills in writing business documents such as CVs, correspondence, memoranda,

short and long reports, and proposals necessary to communicate effectively in the business world. Prerequisites: ENG 203 or ENG 204, and junior standing.

**ENG 226 Development of the English Language (3-0-3).** Traces the development of the English language from its Indo-European roots to the present day. Emphasizes linguistic change in English throughout its history. Prerequisite: ENG 203 or ENG 204.

**ENG 231 Writing for Visual Media (3-0-3).** Introduces existing and emerging communication technology and examines its impact on the communication process. Builds the skills for managing the process of designing documents, from the planning stage through final production. Teaches basic rhetorical principles and their application through writing articles, stories and advertising copy. Prerequisites: ENG 203 or ENG 204, and junior standing.

**ENG 234 Language in Society (3-0-3).** Introduces the sociolinguistic approach to language. Focuses on how language structure and language use are interrelated and also examines variables responsible for language variation within a speech community. Explores definitions of language, dialect, diglossia and multilingualism. Prerequisite: ENG 203 or ENG 204.

**ENG 302 Stylistics (3-0-3).** Examines the essential concepts and techniques of literary stylistics. Uses selected literary texts to illustrate and explain a variety of English language structures. Prerequisite: ENG 203 or ENG 204.

**ENG 321 Cultures in Contact (3-0-3).** Introduces the ways in which language and culture influence human interaction in a variety of cultural and interpersonal contexts. Covers a broad range of topics, including perception differences, worldview, identity, verbal and nonverbal styles of communication, and the effect of bias and conflicting value systems on cross-cultural communication. Prerequisite: ENG 203 or ENG 204.

**ENG 331 The Sound Patterns of Language (3-0-3).** Examines the nature of the rules governing the sound system of language with special emphasis on English. Introduces the study of the physiology of speech production and phonetic transcription through practical exercises. Examines inflectional and derivational rules in language and word formation processes. Prerequisite: ENG 223 or ENG 224.

**ENG 332 The Psychology of Language (3-0-3).** Explores the relationship between language and the

mind. Examines processes involved in comprehension, production and acquisition of language, and introduces research techniques and linguistic data collection. Prerequisite: ENG 203 or ENG 204.

**ENG 334 Meaning in Language (3-0-3).** Introduces various approaches to the study of meaning in language, examining linguistic reference and truth conditions of linguistic signs and expressions. Explores inferential strategies, presuppositions and speech acts in human communication, and situational context determining language use. Prerequisite: ENG 223 or ENG 224 or ENG 234.

**ENG 372 English and Globalization (3-0-3).** Discusses the role of English in globalization processes. Examines how the use of global English in education, the workplace and society transforms local cultures and affects national languages and identities. Prerequisite: ENG 203 or ENG 204.

**ENG 382 Language Variation in Media (3-0-3).** Studies texts from different media types to examine variation in English based on text-type, genre, register, and ideological and social backgrounds. Introduces corpus-based research methodologies. Prerequisite: ENG 223 or ENG 224 or ENG 234.

**ENG 385 Language and Gender (3-0-3).** Examines the reasons behind the differences in men's and women's talk. Explores how categories of language influence one's belief about one's self and others and the ways in which gendered language use relates to power and dominance in society. Prerequisite: ENG 223 or ENG 224 or ENG 234.

**ENG 401 Advanced English Grammar (3-0-3).** Provides an intensive investigation into contemporary English sentence structure, function and meaning. Analyzes how structure types and sentence relationships are realized in various texts and genres. Discusses issues relative to descriptive/prescriptive approaches to language. Prerequisite: ENG 223 or ENG 224.

**ENG 405 Discourse Analysis (3-0-3).** Looks at the interpretation of meaning situated beyond the level of the sentence. Examines the role of notions such as background knowledge, cohesion and coherence in texts and conversational interaction in order to achieve a better understanding of how language works as a communication medium. Prerequisite: ENG 223 or ENG 224.

**ENG 490 Senior Research Project (3-0-3).** Focuses on the study of a literary movement/literary writer or qualitative/quantitative investigation of a linguistics issue of the student's and professor's choice. Includes the writing of a long critical paper/creative work/response to a specific literary problem, or reporting research findings in a journal article-length paper. Prerequisite: senior standing.

**ENG 495 Seminar in English (3-0-3).** Focuses on various topics in English language or English literature. The focus of the course is specified at the offering time. Consult the online course catalog or the online class schedule accessible via the AUS student information system to verify course classifications. Prerequisite: junior standing.

## English Literature

**ENG 185 Playing with Texts (3-0-3).** Introduces disciplines associated with the study of English. Explores linguistic, literary and rhetorical topics through viewing and analyzing short texts, such as real-world texts, songs, poems, films, short stories and graphics texts. Restricted to students with less than 45 credits. Prerequisite: EPT score of 4 or ELPT score of 1 or WRI 001.

**ENG 210 Introduction to Literature (3-0-3).** Focuses on the study of fiction, poetry and drama and shows how writers use the basic elements of their craft to convey insights into human nature. Prerequisite: ENG 203 or ENG 204.

**ENG 214 Seventeenth to Nineteenth Century American Literature (3-0-3).** Examines American literature from the colonial period to 1900, concentrating on the philosophical, social and political issues that shaped various American writers. Prerequisite: ENG 203 or ENG 204.

**ENG 215 Contemporary World Literature (3-0-3).** Introduces contemporary literary movements such as modernism, magic realism, feminism, regionalism and postmodernism. Examines the works of major international writers. Focuses on works written in or translated into English. Prerequisite: ENG 203 or ENG 204.

**ENG 300 Introduction to Literary Theory (3-0-3).** Highlights a variety of 20th century critical practices and theoretical approaches to the study of literature. Offers practical applications of the theoretical texts under examination. Prerequisite: ENG 210 or

ENG 214 or ENG 215 or ENG 310 or ENG 311.

**ENG 301 Creative Writing (3-0-3).** Introduces the basic elements of writing and evaluating poetry, fiction and creative non-fiction. Requires the submission of at least 20 pages of material suitable for inclusion in the student literary magazine. Prerequisite: ENG 203 or ENG 204.

**ENG 303 Shakespeare's Plays (3-0-3).** Examines works by Shakespeare. Covers Shakespeare's histories, romances, comedies and tragedies within the context of the politics, history and culture of his time. Prerequisite: ENG 203 or ENG 204.

**ENG 308 British Literature Until 1600 (3-0-3).** Surveys English and related literatures from the Anglo-Saxon period through Shakespeare. Studies texts in the context of their social, political and historical influences. Prerequisite: ENG 203 or ENG 204.

**ENG 309 British Literature: 1600–1800 (3-0-3).** Examines the transition in literature and thought from the Jacobean Age to the Enlightenment and the beginning of Romanticism. Prerequisite: ENG 203 or ENG 204.

**ENG 310 Nineteenth Century British Literature (3-0-3).** Surveys British poetry, prose and drama in the 19th century. Studies representative texts in relationship to their social, political and historical background. Prerequisite: ENG 203 or ENG 204.

**ENG 311 Twentieth Century British Literature (3-0-3).** Focuses on 20th century British poetry and prose, examining the causes of the rise of modernism and the subsequent development of post-modernism, as well as the persistence of traditional forms such as realism and fantasy. Prerequisite: ENG 203 or ENG 204.

**ENG 314 Twentieth Century American Literature (3-0-3).** Examines American literature from 1900 to the present, concentrating on the philosophical, social and political issues that shaped the work of writers. Discusses the changing form and content of American fiction, drama, poetry and essay, as well as relevant literary theories. Prerequisite: ENG 203 or ENG 204.

**ENG 315 East Meets West: Colonial and Post-Colonial Encounters (3-0-3).** Examines the representations of the Middle East, India, China and North Africa in the works of North American and European writers. Addresses the responses to and representations of Westerners by non-Western writers. Prerequisite: ENG 203 or ENG 204.

**ENG 316 Modern Drama and Beyond (3-0-3).** Introduces developments in drama from the modern period to the present. Exposes major literary developments in drama such as realism, theater of the absurd, epic theater and various types of experimental and contemporary theater. Prerequisite: ENG 203 or ENG 204.

**ENG 378 Literature as Film (3-0-3).** Uses literary works and their cinematic adaptations to introduce film theory ideas and their parallel techniques in literature. Prerequisite: ENG 203 or ENG 204.

**ENG 393 Shakespeare on Film (3-0-3).** Uses an interdisciplinary approach (incorporating English literature and media/film studies) to teach how to synthesize elements of film theory and literary criticism and incorporate them into a series of research papers. Prerequisite: ENG 203 or ENG 204.

**ENG 410 The American Novel (3-0-3).** Examines the styles and concerns of the American novel from the 19th century to the present and includes representative examples of such national and international literary movements as romanticism, realism, modernism, postmodernism and magic realism, with particular emphasis on how American novelists adapted these styles to suit their own society and culture. Prerequisite: ENG 210 or ENG 214 or ENG 215 or ENG 314.

**ENG 421 Early English Novel (3-0-3).** Traces the development of the novel from its rise in the early 18th century to its flowering in the great realistic novels of the 19th century. Prerequisite: ENG 210 or ENG 215 or ENG 308 or ENG 309.

**ENG 430 Modern British Novel (3-0-3).** Examines trends in the 20th century British novel, including such literary movements as realism, modernism and postmodernism. Prerequisite: ENG 210 or ENG 215 or ENG 310 or ENG 311.

**ENG 490 Senior Research Project (3-0-3).** Focuses on the study of a literary movement/literary writer or qualitative/quantitative investigation of a linguistics issue of the student's and professor's choice. Includes the writing of a long critical paper/creative work/response to a specific literary problem, or reporting research findings in a journal article-length paper. Prerequisite: senior standing.

**ENG 495 Seminar in English (3-0-3).** Focuses on various topics in English language or English literature. The focus of the course is specified at offering time. Consult the online course

catalog or the online class schedule accessible via the AUS student information system to verify course classifications. Prerequisite: junior standing.

## ENV Environmental Science

### ENV 100 Principles of Environmental Science (3-0-3).

Introduces the basic principles of environmental science. Explores the scientific method, structure of matter, energy principles, ecological concepts, organism interactions, communities and ecosystems, population dynamics, energy sources, biodiversity, human activities and the environment, managed ecosystems, water management, air quality and solid waste management. Not open to engineering and science students.

### ENV 201 Fundamentals of Environmental Science (3-0-3).

Combines ideas and information from chemical, physical and biological disciplines. Provides information on how nature works and how environmental systems are interconnected. Employs scientific laws, principles and concepts to help understand environmental and resource problems and their possible solutions. Makes connections between natural systems and environmental issues using different physical science perspectives. Presents information that will ultimately be related to real-world environmental problems. Prerequisite/concurrent: CHM 102.

### ENV 252 Environmental Chemistry (3-0-3).

Investigates in detail the interaction between natural systems and human activity. Emphasizes the following topics: aquatic chemistry, with special attention paid to water pollution and water treatment; atmospheric chemistry, with emphasis on air pollution, protection of the atmospheric environment and global atmosphere problems; soil chemistry; and sources and treatment of hazardous wastes. Explores local and regional pollution problems in detail. Prerequisite: CHM 215.

### ENV 261 Physical Geography (3-0-3).

Covers the physical aspects of the geographic environment. Includes topics such as cartography and geographic information systems, the global energy balance, air temperature and pressure, atmospheric moisture content and precipitation, global wind circulation, weather systems, earth materials, forming and weathering processes, water cycling, fluvial processes and landforms. Prerequisite: CHM 101 or PHY 101.

### ENV 311 Environmental Modeling (3-0-3).

Deals with the study, collection, evaluation and interpretation of data and the modeling and analysis of urban and environmental problems. Includes topics such as population, pollution, mass transportation systems and climate modeling. Prerequisites: ENV 201 and MTH 104.

### ENV 352 Environmental Toxicology (3-0-3).

Combines principles of chemistry, biochemistry, biology and environmental science. Discusses the basic principles of environmental toxicology, including toxicant fate, bioavailability and biochemistry; dose-response relationships, toxicity testing, and species sensitivity distributions; and individual, population and community effects. Covers briefly principles of risk assessment and risk management of toxicants. Prerequisites: CHM 215 and ENV 201.

### ENV 353 Soil and Water Chemistry (2-3-3).

Deals with the development of soil/water chemistry. Includes modern analysis methods for humic substances, minerals, particulates and pollutants in the soil. Covers topics such as mineralogy, soil solution, ion exchange/sorption, water acidity, wetlands and redox processes in aerobic soils and nitrogen transformations. Addresses a variety of analytical techniques that are commonly used in soil and water analysis. Prerequisite: ENV 252. Lab/Tech fee rate B applies.

### ENV 411 Environmental Assessment and Management (3-0-3).

Deals with the impact of human activities on the ecosystem. Demonstrates how environmental assessment results provide a basis for comparing various management options, enabling decision makers and the public to make informed decisions about the management of ecological resources. Discusses ethical and legal dimensions of a number of environmental problems. Emphasizes local and regional issues. Students cannot obtain credit for both ENV 411 and ENV 412. Prerequisites: ENV 201 and junior standing.

### ENV 412 Concepts and Models in Environmental Management Systems (3-0-3).

Introduces modern tools of environmental management. Presents various models of environmental management systems and explores their application in the UAE and GCC countries. Discusses the elements of decision making in environmental management heading to resource conservation and pollution prevention and mitigation. Discusses ethical and legal dimensions of a number of environmental problems with emphasis on regional case studies.

Students cannot obtain credit for both ENV 411 and ENV 412. Prerequisites: ENV 100 and junior standing.

**ENV 451 Waste Treatment (3-0-3).** Introduces the modern concepts of solid and liquid waste treatment. Covers sources and classifications of hazardous waste and their transport in the environment; hazardous waste management problems; physical, chemical and biological waste treatment processes; waste minimization; and analysis systems for regional planning. Prerequisites: ENV 252 and junior standing.

**ENV 453 Environmental Monitoring and Analysis Techniques (2-3-3).** Covers sampling, storage, preservation and analytical techniques critical in obtaining quality data for environmental monitoring of pollutants in each component of the environment. Stresses the interrelationship of these components and their importance to ecosystems along with the difficulties in environmental sampling. Provides standard methods for the examination of environmental samples and applies them in practical application for all compartments of the environment. Prerequisites: CHM 345, ENV 201 or ENV 252, and STA 201. Lab/Tech fee rate B applies.

**ENV 491 Senior Research Project I (0-6-3).** Investigates in depth an environmental problem within the context of an independent research project. Involves literature search followed by field and laboratory studies. Evaluates scientific, ethical and legal dimensions of the problem investigated. Requires attendance and commentary on related seminars and tests on assigned topics as well as the presentation of results in both oral and thesis formats. Prerequisite: senior standing. Lab/Tech fee rate B applies.

**ENV 492 Senior Research Project II (0-6-3).** Continuation of ENV 491. Requires student to select a new or related environmental problem for independent research. Upon approval by the department, student begins with a literature search then follows up with field and laboratory studies. The results are presented in a seminar as well as in a thesis form. Prerequisite: senior standing. Lab/Tech fee rate B applies.

**ENV 497 Internship in Environmental Science (0-0-0).** Requires a minimum of five weeks of approved applied work in environmental aspects with a governmental, municipal or private organization. Graded as Pass/Fail. Prerequisites: Junior II standing and approval of internship coordinator. Registration fee applies.

## GEO

**GEO 201 World Cultural Geography (3-0-3).** Provides a broad survey of the cultural geography of the world. Addresses cultural systems, agriculture and natural resources, urbanization, industrialization, development and political geography, among other topics. Prerequisite/concurrent: WRI 102.

## HIS

**HIS 201 Western Cultural Studies I (3-0-3).** Introduces the student to the basic doctrines and concepts of Western civilization. Covers reading material from the Renaissance to modern times, focusing on selections from the great books that have made Western civilization what it is. Deals with readings that cover theology, politics, science and literature. Prerequisite: WRI 102.

**HIS 202 Western Cultural Studies II (3-0-3).** Continues the introduction of the basic doctrines and concepts of Western civilization. Covers reading material from modern and contemporary authors focusing on selections from the great books that made Western civilization what it is. Deals with readings that cover theology, politics and literature. Prerequisite: WRI 102.

**HIS 204 Modern Arab History (3-0-3).** Studies the history of the modern Arab world focusing mainly on the history of the region from 1800 and the changes that began to take place at that time. Concentrates on four aspects of the region's transformation: the experience of imperialism and colonialism, modernity, nationalism and the development of the modern state system. Prerequisite: WRI 102.

**HIS 205 World History I [up to 1500] (3-0-3).** Studies the world's major civilizations prior to 1500 concentrating on their primary institutions and their cultural contacts. Devotes particular attention to the Arab and Islamic world and Western Europe. Prerequisite: WRI 102.

**HIS 206 World History II [1500 to present] (3-0-3).** Looks at some of the major changes that have taken place since 1500 including: the exploitation and settlement of the Americas; the shift in power from the East (the Middle East and Asia) to the West (Europe and the United States); the Industrial Revolution and the globalization of capitalism; the domination of most of the societies of the world by the European powers and

## Geography

the United States (i.e., colonialism and imperialism); political and social revolutions, including wars of national liberation against colonial regimes; and changes in technology. Prerequisite: WRI 102.

**HIS 208 Women in History (3-0-3).** Comparatively surveys women's history from antiquity to the present in Europe and the Middle East. Aims to examine the lives, achievements, contributions and position of women historically, as well as to introduce the methodology of women's history, the sources for the study of women and the theories that provide the framework for the research and writing of women's history. Prerequisite: WRI 102.

**HIS 210 The Making of Modern Europe (3-0-3).** Introduces modern European history by exploring the key events and trends that have shaped Europe from 1789 to the present. Investigates the French Revolution, the Industrial Revolution, European imperialism, the development of nationalism, the First World War, the Russian Revolution, the rise of fascism, the Second World War, the Cold War, the collapse of the Soviet Union and development of the European Union. The course will also focus on the key social, demographic and cultural trends that have redefined European life in the 19th and 20th centuries. Prerequisite: WRI 102.

**HIS 212 Modern Japanese History (3-0-3).** Surveys the history of Japan from its beginnings to today. Briefly outlines Japan's earliest times, and then focuses on the period after the mid-1500s and the first contact with Europeans, the Edo Era (1600-1868), with major discussion of the history of economic, social, cultural, political and foreign policy developments from 1868 to the present day. Prerequisite: WRI 102.

**HIS 215 The Making of Modern Southeast Asia (3-0-3).** Introduces the history of Modern Southeast Asia (Indonesia, Thailand, Singapore, Malaysia, Vietnam, Cambodia, the Philippines, Myanmar and Laos). Explores the impact of colonialism upon the region by investigating not only the role of imperial powers, but also the ways in which colonial administrations affected indigenous populations. Focuses on the emergence of nationalism in the 20th century and its role in anti-colonial movements. Examines regional development in the context of the Cold War. Exhibits the success of ASEAN in wake of the Asia crisis of 1997. Prerequisite: WRI 102.

**HIS 221 History of Science and Technology (3-0-3).** Studies the development of scientific thought and methodology from ancient Greece to



the modern era. Covers topics such as contributions of China, Islamic lands and Europe; the surge of French and 17th century English science; and the influence of science on patterns of thinking and behavior. Touches upon diverse areas such as the histories of astronomy, nuclear energy, chemistry and forensics, as well as life and environmental sciences.

Prerequisite/concurrent: WRI 102.

**HIS 240 Introduction to American History (3-0-3).** Surveys the history of North America with a particular emphasis on the United States of America from the first European settlements to the present day. Covers interactions with Native Americans, slavery, the foundation of government, the Civil War and its aftermath, immigration, the emergence of the US as an industrial power, the US' role as an international power in the 20th century, social movements including those for civil and women's rights, the Cold War and its consequences, and the present situation of the US in the world. Prerequisite: WRI 102.

**HIS 307 Modern Palestinian History (3-0-3).** Examines Palestinian history before 1948 and brings the story forward to the breakthrough Oslo Accord of 1993 and its troubled aftermath. Focuses primarily on the origins and key aspects of the Arab-Israeli conflict. Prerequisites: WRI 102 and junior standing.

**HIS 308 Ottoman History (3-0-3).** Examines the social and economic history of the Ottoman Empire from its inception in 1294. Covers Ottoman expansion and governmental consolidation in the 16th and 17th centuries, including imperial foreign policy towards the Safavids and Europeans. Discusses the increasing political and economic influence of Europe during the 18th and 19th centuries in the context of the loss of Ottoman Europe and the Tanzimat reforms. Examines the rise of nationalist movements among many of the Empire's inhabitants and the impact of World War I. Prerequisite: HIS 201 or HIS 202 or HIS 204 or HIS 205 or HIS 206 or HIS 208 or HIS 210 or HIS 212 or HIS 215 or HIS 221 or HIS 240.

**HIS 310 Modern Gulf History (3-0-3).** Introduces the history of the Gulf Arab states in the 19th and 20th centuries. Examines the traditional economy of the Gulf before oil, traditional forms of rulership, the traditional role of merchants, British involvement in the region and the impact of oil in the first half of the course. Surveys the individual histories of the six Gulf Arab states in the second half of the course. Prerequisites: WRI 102 and junior standing.

**HIS 311 America and the Middle East (3-0-3).** Traces the connections between the United States and the Arab and Persian world from the first official contacts between the "Barbary Pirates" and the Jefferson Administration to the present. Studies a wide variety of material, from politics, immigration and war to art, literature and film. Requires a research paper on the topic of the student's choice as a key component of the course. Functions as a seminar. Prerequisite: HIS 204 or HIS 206 or HIS 240.

**HIS 312 Modern Iranian History (3-0-3).** Introduces the history of modern Iran in the 19th and 20th centuries. Focuses on the political and social transformation of Iran under the influence of European imperialism and popular protest movements. Examines the roles of constitutionalism, modernity and nationalism in the development of the Qajar and Pahlavi monarchies, and the Iranian Revolution of 1978-1979. Prerequisite: ENG 203 or ENG 204.

**HIS 330 Resistance and Collaboration in Modern France and Algeria (3-0-3).** Analyzes the nature of resistance and collaboration in France and Algeria during 1940-1970. Investigates the reasons why different groups and individuals chose to either resist or collaborate in the Second World War and the Algerian War of Independence. Uses films, original documents, novels and academic writing to study the history of moral behavior in war, the role of Islam in colonial struggles, and the ways in which Western and Islamic forms of history are constructed in Europe and North Africa. Demands a personal engagement with ethical questions such as the following: for what causes is it just to kill and in what circumstances would you collaborate with an enemy? Prerequisite: WRI 102.

**HIS 340 History of the Family (3-0-3).** Explores the transformation of family life and family structures in a specific historical context. Examines the family as an economic, political and social entity, and as a gendered network. Analyzes the relationship between family/kinship structures and socio-economic/socio-political developments. Covers key concepts and different methodological approaches employed in the field of family history. Prerequisite: HIS 201 or HIS 202 or HIS 204 or HIS 205 or HIS 206 or HIS 208 or HIS 210 or HIS 212 or HIS 215 or HIS 221 or HIS 240 or ANT 205 or WST 240.

## INS International Studies

**INS 120 Global Problems (3-0-3).** Introduces disciplines associated with international studies (e.g., political science, geography, anthropology, sociology, economics, history and philosophy) through the study of global issues. Employs particular global problems as case studies in order to explore different disciplinary and theoretical approaches. Addresses the impact of particular global problems on both international affairs and on local populations and examines national, regional and international responses to global issues. Restricted to students with less than 45 credits. Prerequisite/concurrent: WRI 101.

**INS 290 Research Practicum I (3-0-3).** Involves faculty-supervised student projects in special topics of current interest. Both oral and written presentations on the topics are required. Graded as Pass/Fail. Prerequisite: WRI 102.

**INS 291 Research Practicum II (1 to 3 credits).** Continuation of INS 290. Involves faculty-supervised student projects in special topics of current interest. Both oral and written presentations on the topics are required. Graded as Pass/Fail. Prerequisite: WRI 102.

**INS 301 Globalization (3-0-3).** Examines the process of globalization, which is well underway at all levels of society with sociopolitical impacts on all cultures. Introduces the globalization of economic systems, multinational organizations, technological, consumerism and worldwide communication systems. Prerequisite: ANT 205 or HIS 206 or POL 201 or SOC 201.

**INS 310 The Middle East Meets the West (3-0-3).** Examines issues pertaining to the Middle East and the West, including the history, religion, foreign policy, tensions, perceptions and other relevant issues. Explores cultural commonalities and differences. Includes formal exchanges with student groups from the United States, Europe and the Middle East. Prerequisite: ANT 205 or GEO 201 or HIS 206 or POL 201 or SOC 201.

**INS 316 South Asian Culture and History (3-0-3).** Introduces seminal writings related to the emergence of modernity on the Indian subcontinent. Examines the evolution of modern South Asia from 1818 until 1947. Surveys major figures who grappled with and helped shape social and political struggles during the British colonial period. Examines debates

about religious reform, the role of women, nation formation, caste stratification, and complexity of the social and political discourse of the period. Analyzes primary texts, including autobiographies, speeches, dialogues, treatises, ethnography and literary fiction. Prerequisite: ANT 205 or HIS 205 or HIS 206 or HIS 215 or POL 201 or SOC 201.

**INS 322 Global Political Economy (3-0-3).** Deals with the roots and evolution of the global political economy from the end of the World War II and the launching of the Bretton Woods system to the Asia crisis of 1997 and its spread to Russia, Latin America and the Middle East. Focuses on the interplay between politics and economics for topics such as management of the international financial system via the IMF, World Bank, World Trade Organization, globalization, trade, multinational corporations and changes in world production patterns, trade agreements such as the European Union, development strategies, debt crises, and attempts at political and economic liberalization in various countries. Prerequisites: ECO 201, ECO 202 and POL 202.

**INS 325 Imperialism (3-0-3).** Explores the origins, development and consequences of modern imperialism. Surveys the key patterns that have defined the growth and expansion of modern empires. Uses case studies of concrete historical situations to provide a detailed look at how empires grow and develop. Exhibits the development of imperial and colonial cultures in order to examine the durability of imperial orders. Investigates the decline and end of empires and the rise of nation states. Investigates the disparities between different patterns of decolonization and their respective legacies. Prerequisite: HIS 205 or HIS 206 or POL 201.

**INS 330 Women and Politics (3-0-3).** Examines the involvement of women in formal and informal politics from a global perspective. Addresses different forms of women's political activism and their impact. Focuses on developments and issues within individual countries through case studies. Prerequisite: ANT 205 or HIS 208 or POL 201 or WST 240 or WST 250.

**INS 350 Moot Court (3-0-3).** Introduces fundamentals of advocacy before international tribunals. Covers analysis of legal precedents, the development of legal briefs and the structure of oral arguments. Focuses on the skills required for analytical legal thinking. Repeatable up to 6 credits; the second registration will be used

towards free electives. Prerequisites: BLW 301 or MCM 321 or PHI 201 or POL 201, and permission of instructor.

**INS 400 Ethnic Politics in the Developing World (3-0-3).** Examines the historical origins and contemporary dynamics of ethnic politics in the developing world. Surveys different theoretical approaches to the study of ethnic conflict, as well as the impact of colonialism on ethnic identities, and the legacy of decolonization on nationalist movements in the developing world. Examines a number of post-independence challenges faced by multiethnic states through the use of case studies. Prerequisite: POL 202.

**INS 413 Political Economy of the Arab World (3-0-3).** Surveys the political economic trajectories of selected states in the Arab world, paying special attention to the politics, societies and ideological currents of the Eastern (Mashreq) Arab world. Explores themes such as the process of post-colonial state formation, the rise of Arab nationalism and other forms of proto-nationalisms, variations in regime consolidation and state-society relations, the institutional structures of authoritarianism, the challenges of economic restructuring and political liberalization, and the Islamist challenge. Prerequisites: ECO 201, ECO 202 and POL 202.

**INS 414 Political Economy of the Asia Pacific Region (3-0-3).** Explores political, economic, social and environmental issues in the Asia Pacific Region, which includes South, Southeast, East and Northeast Asia; Australasia; and the Pacific littoral states of North, Central and South America. Places special emphasis upon the efforts of regional cooperation organizations and lessons to be gleaned by the states of Southwest Asia and the Middle East. Prerequisites: ECO 201 and ECO 202, and INS 301 or INS 322 or POL 300 or POL 304.

**INS 415 War and Peace in the Middle East (3-0-3).** Examines inter-state conflict, and efforts to negotiate peace in the Middle East. Gives special attention to the interaction between the Arab-Israeli conflict, regional rivalries, the policies of the main international powers, and domestic politics in shaping regional dynamics. Some of the topics covered include the Arab-Israeli Wars, the different Gulf Wars and the Arab-Israeli peace process. Prerequisite: POL 202.

**INS 490 Senior Research Project (3-0-3).** Focuses an independent capstone research project involving global issues or problems, in conjunction with an academic supervisor. Considers theoretical approaches in disciplines related to the

Bachelor of Arts in International Studies program. Restricted to international studies students. Prerequisites: INS 322 and senior standing.

**INS 497 Internship in International Studies (0-0-0).** Involves applied work in international studies with businesses, a government organization or private agencies. Admission to the class must be approved by the student's advisor. Graded as Pass/Fail. Prerequisites: Junior II standing and approval of internship coordinator. Registration fee applies.

## MCM

## Mass Communication

**MCM 100 Introduction to Digital Media Design (3-1-3).** Introduces graphic design as a form of visual communication through the examination of type, image, form and color. Explores design processes using digital design software. Explains the various elements and principles of design and how these fit together to create good composition. Covers aspects of advertising and public relations design and layout. Restricted to mass communication students. Lab/Tech fee rate A applies.

**MCM 102 Introduction to Media Literacy (3-0-3).** Introduces media as history as well as how and why various media forms were created. Discusses comparisons and relationships between visual arts, music, and oral, written and technological media. Gives broad background knowledge on art, myth, music and the forces that helped foster their development. Prerequisite/concurrent: WRI 102.

**MCM 150 Introduction to Mass Communication Studies (3-0-3).** Examines the nature of the various areas of the mass media, (i.e., television, radio, newspapers, magazines and interactive outlets) and how they impact the individual and society. Prerequisite/concurrent: WRI 102.

**MCM 200 Intermediate Digital Media Design for Mass Communication (3-1-3).** Stresses intermediate creative design problem-solving techniques as applied to single and multiple page layout as well as color and typography. Builds on the processes in previous courses, enabling a more thorough analysis and questioning of problems while exploring a range of design solutions. Prerequisites: MCM 100 and MCM 150. Lab/Tech fee rate A applies.

**MCM 203 Effective Relational and Presentational Communication**

**Skills (3-0-3).** Examines theories and practices relevant to acquiring effective skills in relationship building and maintenance as well as in presenting information accurately and persuasively. Examines how personal and situational factors influence both interpersonal and public communication. Prerequisite: ENG 203 or ENG 204.

**MCM 222 Integrated Marketing Communication (3-0-3).** Explores the essential issues shaping contemporary communication practice including direct-response advertising, media technology, communication planning, sales, public relations and event marketing. Prerequisite: MCM 150; prerequisite/concurrent: MKT 201.

**MCM 225 Theories of Mass Communication (3-0-3).** Introduces the various prevailing communication theories, including agenda setting, uses and gratification, and diffusion constructs. Prerequisite: MCM 150.

**MCM 231 Writing for Mass Communication (3-0-3).** Introduces the specific forms of writing used in the mass media within a professional communication environment. Includes news stories and advertising copy for print and broadcast, and various types of writing for public relations such as press releases. Prerequisite: MCM 150.

**MCM 241 Media and Professional Presentations (3-0-3).** Explores the range of presentation techniques needed by advertising, public relations and other media professionals. Includes advanced oral presentation skills, scripting and representational technology. Prerequisite: MCM 231.

**MCM 255 Principles of Advertising (3-0-3).** Provides an analysis of commercial advertising from a global perspective with attention to communication theory. Examines the structure of advertising messages, how they are adapted to specific audiences and the social settings in which they occur. Explores issues of Internet advertising and e-commerce. Prerequisite: MCM 150; prerequisite/concurrent: MKT 201.

**MCM 265 Principles of Public Relations (3-0-3).** Surveys the fundamentals and techniques involved in public relations operations, including the history, philosophy and ethics of the practice and functions of management, planning, research and communication. Explores the theoretical and practical applications of public relations in contemporary society. Prerequisite: MCM 150.

**MCM 275 Principles of Journalism (3-0-3).** Introduces the basic principles of journalism as it occurs in a variety of

media forms. Discusses the history of journalism, from the penny press, yellow journalism and muckraking to modern responsible journalism and tabloid journalism. Discusses a variety of legal and ethical journalistic concerns. Covers writing techniques for newspapers, radio and television broadcast news. Prerequisite/concurrent: MCM 231.

**MCM 277 Video Editing for Journalism (3-1-3).** Covers the use of professional editing software. Explores techniques that include the use of supers, titles, CG, news and photos, and special effects such as blue screen techniques, basic editing functions such as multi-track audio and video layering, audio monitoring. Examines and employs additional skills such as adding voice over and voice over/sound on tape to a series of video clips, and editing documentary shorts, which can require narration and music, utilizing a variety of new media output formats. Prerequisite/concurrent: MCM 281. Lab/Tech fee rate A applies.

**MCM 281 Principles of Media Production and Performance (3-1-3).** Surveys a variety of media production and performance techniques. Presents media elements, such as concept development, writing, supervision, performance, scheduling and execution of a variety of media formats. Discusses background information on the history of specific media, media theory and aesthetics. Prerequisite/concurrent: MCM 231. Lab/Tech fee rate A applies.

**MCM 300 Mass Communication Research Methods (3-0-3).** Introduces social science research methods within a mass communication context. Emphasizes the scientific method and surveys basic concepts of theoretical and empirical research. Covers a variety of methodologies, elementary statistics and criteria for adequate research. Prerequisites: MCM 225, MCM 231, and STA 202 or QBA 201 or NGN 111.

**MCM 307 Film Criticism (3-0-3).** Introduces film genres and formulas (film noir, polyphonic narrative, comedy, romance, verities, etc.) and to critical approaches with which to analyze the cinematic text. Requires exploration, discussion, research and writing about films as well as screenplay texts, using such theoretical approaches as semiotics and structuralism, feminist, psychoanalytic, formalist and social criticism. Prerequisite: MCM 231.

**MCM 309 Social Media for Mass Communication (3-0-3).** Focuses on social networking, micro-blogging and web applications employed in the fields of journalism, public relations, advertising and related media.

Addresses ways in which social networking tools can be used to communicate and share information. Considers the legal and ethical implications associated with the use of social media for mass communication. Prerequisites: MCM 231 and junior standing. Lab/Tech fee rate A applies.

**MCM 320 Intercultural Communication (3-0-3).** Provides an overview of world cultural literacy and shows how cultures influence communication. Enables the acquisition of knowledge about the interrelation of the humanities, music, mythology, art, theater, history and science. Prerequisite: ENG 203 or ENG 204.

**MCM 321 Mass Communication Law and Ethics (3-0-3).** Examines global legal issues affecting mass communication practices in advertising, journalism and public relations. Introduces professional ethical theory and decision making, and corporate social responsibility. Prerequisite: MCM 255 or MCM 265 or MCM 275.

**MCM 329 Mass Communication and Society (3-0-3).** Provides an overview of the effect of media on culture and society. Explores how media reflect and mold culture. Examines the role the media play in creating "the global village." Examines how the audience uses and is used by various media outlets and how that use affects the perception of various cultures. Prerequisite: MCM 225.

**MCM 351 Advertising Copy and Layout (3-1-3).** Explores issues, strategies, theories and practices in writing and editing advertising messages. Teaches the technical aspects of advertising: writing advertising copy and designing effective layouts based on clients' strategies, and elements of reproduction mechanicals. Emphasizes the use of new technologies and design parameters to produce effective advertising. Considers audience differentiation, media strategy and creative strategy. Employs persuasive attention-getting techniques. Prerequisite: MCM 255. Lab/Tech fee rate A applies.

**MCM 353 Direct Response Advertising (3-0-3).** Introduces marketing communication that achieves an action-oriented objective as a result of the advertising message sent through a number of media, including telemarketing, direct mail and point-of-purchase. Prerequisite: MCM 255. Lab/Tech fee rate A applies.

**MCM 354 The Internet and Marketing Communication (3-0-3).** Introduces online marketing communication while bringing attention to the various strategies related to interactive advertising and

communication. Explores issues related to research on the Internet, online marketing, email marketing, web casting and privacy. Prerequisite: MCM 255.

**MCM 360 Crisis and Conflict Management (3-0-3).** Provides practical insights into ways communication professionals recognize and manage organizational crisis and conflict, and ways of planning, executing and evaluating damage control mechanisms. Prerequisite: MCM 255 or MCM 265 or MCM 275.

**MCM 361 Case Studies in Public Relations (3-0-3).** Focuses on how to apply the principles and theories of public relations to solve problems or initiate opportunities for actual occurrences in the practice of public relations. Prerequisite: MCM 265.

**MCM 369 Public Relations Writing (3-0-3).** Introduces the essentials of how to prepare and present written material for use in the practice of public relations. Teaches the techniques needed for creating effective written communication at a standard generally expected of persons entering into the practice of public relations. Prerequisite: MCM 265.

**MCM 370 Broadcast Journalism (3-1-3).** Introduces the basic principles of broadcast journalism as it occurs in radio, TV and online (webcasting). Includes discussions of technological, ethical and legal issues affecting broadcast news, as well as lab/studio practice in writing and producing broadcast reels. Prerequisite: MCM 275. Lab/Tech fee rate A applies.

**MCM 371 News Writing (3-0-3).** Builds expertise in the writing of news for newspapers and magazines. Gives concentrated practice in the methods of research, interviewing, writing, marketing and publishing of articles, and in the skills required in the production of newspapers. Prerequisite: MCM 275.

**MCM 374 Feature Writing (3-0-3).** Focuses on how to plan, write and edit news features, personality profiles, issue-oriented articles and human impact stories for the print media. Emphasizes narrative, descriptive, analytic and storytelling skills. Includes one-on-one instructor-student conferences that stress story building and revision techniques. Prerequisite: MCM 275.

**MCM 375 Editing for the Print Media (3-0-3).** Provides practical exposure to skills in preparing and editing manuscripts for publications. Emphasizes a number of editing styles and employs appropriate editing symbols. Prerequisite: MCM 275.

**MCM 376 Writing for Magazines (3-0-3).** Introduces the various techniques in magazine writing. Focuses on different formats specific to magazine writing. Analyzes the elements of a magazine including readership, writing style and tone. Prerequisite: MCM 275.

**MCM 377 Photojournalism (3-0-3).** Teaches the technical basis of using a 35mm or digital camera to take photos for publication. Early lectures detail technical issues such as lens settings, shutter speed, lighting and composition. Includes weekly photojournalism assignments for the student newspaper. Requires access to a digital or 35mm camera. Prerequisite: MCM 255 or MCM 265 or MCM 275. Lab/Tech fee rate B applies.

**MCM 378 Literary Journalism (3-0-3).** Provides an overview of the literary journalism genre. Explores the intersection of journalism and literature, the overlap of fiction and non-fiction, through pioneering works. Enhances reporting and information-gathering skills, and demonstrates how real stories can be told and adapted in an engaging way. Prerequisite: ENG 203 or ENG 204 or MCM 231. Lab/Tech fee rate A applies.

**MCM 379 Journalism in the Arab Countries (3-0-3).** Provides an overview of the main issues and practices of the news industry in Arab Countries. Examines recent developments in journalism, as well as the main actors, news organization and channels in the pan-Arab news media. Tackles several factors that affect news making, including political, social and cultural influences on Arab news and reporting. Focuses on the reporting of war and political conflict, women and development issues, and human rights in the region. Combines both theoretical and professional approaches to the practice of journalism in the Arab region as approached and practiced by Arab journalists, news producers, news media directors and owners. Prerequisite: MCM 225.

**MCM 380 Persuasive Communication (3-0-3).** Teaches a comprehensive and critical treatment of theory and research in persuasion. Discusses attitudes, behaviors/actions, functional approaches to attitude, belief-based models of attitude, cognitive dissonance theory, theories of behavioral intention, campaign strategies, message factors, receiver and context factors, and persuasive effects. Prerequisite: MCM 255 or MCM 265 or MCM 275.

**MCM 383 Organizational Communication and Leadership (3-0-3).** Teaches the role of communication in creating a productive

organizational environment in terms of interpersonal and group behavior. Reviews the theory and practice of team building, conflict resolution and problem solving and explores how communication and organizational cultures relate to each other. Prerequisite: MCM 255 or MCM 265 or MCM 275.

**MCM 392 Women and Film (3-0-3).** Examines issues pertaining to women and film such as, but not limited to, history of women's cinema, prominent women directors and genres, and social functions of film as it pertains to the role of women in society. Prerequisite: ENG 203 or ENG 204.

**MCM 411 Multiple Camera Studio Production (3-0-3).** Introduces multiple camera and studio production techniques. Emphasizes practical knowledge of basic video and cinema production techniques from the viewpoint of the producer. Requires the development and writing of multiple camera scripts in a variety of formats such as live news, game show and drama. Focuses on a variety of producing skills regarding supervision of crew and talent. Prerequisite: MCM 281 or FLM 310. Lab/Tech fee rate B applies.

**MCM 431 Strategic Communications Research (3-0-3).** Expands on the basic knowledge and skills introduced in MCM 300 and principles courses in preparation for using relevant research methods essential to strategic contributions in advertising and public relations campaigns. Emphasizes designing and developing research projects. Prerequisites: MCM 255 or MCM 265 or MCM 275, and MCM 300.

**MCM 453 Advertising Media Planning (3-0-3).** Examines media planning, buying and sales as performed by advertising agencies, clients and media. Evaluates different advertising media for various market situations. Examines target audience, media characteristics and data sources. Prerequisite: MCM 255.

**MCM 454 Case Studies in Advertising (3-0-3).** Explores major issues in advertising, with a focus on the characteristics of successful ad campaigns. Examines international and cross-cultural problems in advertising within and across industry, government and institutions. Prerequisite: MCM 255.

**MCM 455 Advertising Campaigns (3-0-3).** Requires collaboration on a semester-long project that includes the conception, research, development and execution of real-life advertising campaigns. Emphasizes advanced copywriting and layout and production concerns for print, broadcast and new media. Requires students to organize,

manage and perform all functions: soliciting business, conducting market and consumer research, contacting clients, writing plans, creating advertising campaigns, evaluating media and preparing campaign evaluations for community service agencies. Prerequisites: MCM 351 and MCM 453.

**MCM 463 International Public Relations (3-0-3).** Develops the skills necessary to plan and implement international public relations programs, taking into account social, economic, political, legal and cultural factors. Prerequisite: MCM 361.

**MCM 465 Public Relations Campaigns (3-0-3).** Functions as a full-service public relations firm, requiring a semester-long PR project that uses all the relevant skills gained in other MCM courses. Prerequisites: MCM 361 and MCM 369.

**MCM 467 Public Relations for Non-Profit Organizations (3-0-3).** Explores fund-raising techniques, alumni relations and foundation management. Prerequisite: MCM 361.

**MCM 469 Advanced Public Relations Writing (3-0-3).** Offers advanced experience in the wide range of writing styles and applications that are essential to begin a professional career. Focuses on understanding and mastering action-oriented communication methods and best professional practices. Provides both a conceptual framework and in-depth training in advanced techniques. Prerequisite: MCM 369.

**MCM 470 Writing and Reporting for Broadcast News (3-0-3).** Examines broadcast news writing, with emphasis on practical experience and exercises involving real or simulated airtime. Requires assigned beats and topics, regularly created scripts and completion of at least three news packages by the end of the semester. Prerequisite: MCM 370. Lab/Tech fee rate B applies.

**MCM 471 Advanced News Writing (3-0-3).** Teaches how to write carefully researched stories, using writing, reporting and interviewing skills acquired in previous classes. Emphasizes immersion or in-depth reporting; students spend a great deal of time with a subject to develop skills in storytelling and organization. Prerequisite: MCM 371.

**MCM 472 Editorial and Critical Writing (3-0-3).** Teaches the basics of writing editorials, op-eds and columns, including analyzing arguments, generating ideas, researching supporting data, assessing and engaging the audience, structuring the article, writing concisely, controlling

style voice and tone appropriate to subject matter and audience, and writing to meet deadlines. Prerequisite: MCM 371.

**MCM 473 Writing for Multimedia (3-0-3).** Offers hands-on experience with writing and producing shorter-form texts for electronic media. Studies comparative perspectives of writing for radio, television, Internet and CD-ROM texts. Covers generating ideas, writing proposals, research and development of topics, planning and employing the stylistic conventions of professional writers in the field. Teaches the distinctive competencies of writing for each medium and of working from concepts to actual productions. Prerequisites: MCM 231 and MCM 281. Lab/Tech fee rate A applies.

**MCM 475 Writing and Producing for Documentaries (3-1-3).** Provides exposure to representative documentaries with regard to history, form, technique, trends and audience objectives. Examines different formats used in documentary production and the concepts used in transforming research efforts into production of a full half-hour program. Emphasizes genre-specific research methodologies, planning a production schedule, interviewing skills, videotape shooting, sound, scriptwriting and rewriting for longer form reports, sound and video editing, graphics and post-production. Prerequisite: MCM 231. Lab/Tech fee rate A applies.

**MCM 480 Critical Analysis of the Mass Media (3-0-3).** Examines the uses of critical theory and specific methodological approaches in the study of mass media. Considers sources of influence in society and the implications of media production and consumption. Prerequisite: MCM 300.

**MCM 481 International Mass Communication (3-0-3).** Enhances understanding of world media systems' impact on different world cultures. Examines how global media behavior affects domestic politics, regulations, businesses, economics, national development and public diplomacy. Prerequisite: MCM 300 or INS 301 or MGT 305.

**MCM 485 Integrated Marketing Communication Campaigns (3-0-3).** Examines all aspects of integrated marketing communication (IMC) campaigns. Covers research, strategy planning, creative planning, media planning and pitching. Requires collaborative work focused on developing and executing an IMC campaign. Prerequisites: MCM 351 and MCM 453, or MCM 361 and MCM 369.

**MCM 490 Senior Project (3-0-3).** Requires faculty-supervised student

projects in special topics of current interest. Requires both oral and written presentations on the topics. Prerequisites: Junior II standing and approval of instructor.

**MCM 491 Print Media Project (3-0-3).** Requires students to conceptualize, write, develop, manage and produce a multimedia campaign using a variety of forms (e.g., print, broadcast, web-based, etc.). The semester-long project culminates in discrete, marketable productions as well as a coherent campaign, thus providing each student with a writer-producer's portfolio and demo reel to present to prospective employers as the student embarks on a career as a media professional. Prerequisite: MCM 275. Lab/Tech fee rate A applies.

**MCM 497 Mass Communication Internship (0-0-0).** Provides a minimum of five weeks (normally 240 hours) of on-the-job training and experience with a professional firm in either advertising creativity, sales, advertising media, writing and/or editing for print and/or electronic media. Students are expected to find their own placement for this requirement. Graded as Pass/Fail. Prerequisites: Junior II standing and approval of internship coordinator. Registration fee applies.

## MTH

## Mathematics

**MTH 001 Preparatory Mathematics for Engineers (3-2-4).** Preparatory for MTH 103 Calculus I. Emphasizes the basic skills and techniques of algebra and trigonometry. Explores real and complex numbers, basic arithmetic, equations and inequalities, study of functions, polynomial and rational functions, exponential and logarithmic function, trigonometric functions and introduction to limits. Students are allowed to repeat a preparatory course up to Sophomore I standing (less than 45 credits).

**MTH 002 Preparatory Business Mathematics (3-0-3).** Preparatory for MTH 101 Mathematics for Business. Covers integers and variable expression, fractions, decimals and real numbers, basic algebraic operations, equations and inequalities, functions and graphs, polynomial and rational functions, and exponential and logarithmic functions. Students are allowed to repeat a preparatory course up to Sophomore I standing (less than 45 credits).

**MTH 003 Preparatory Mathematics for Architects (3-0-3).** Preparatory for MTH 111 Mathematics for Architects. Covers basic ideas and

concepts of arithmetic, algebra, geometry and trigonometry and calculus applications needed for architecture and design. Students are allowed to repeat a preparatory course up to Sophomore I standing (less than 45 credits).

**MTH 100 Fundamentals of Logic and Geometry (3-0-3).** Covers logic and set theory, geometry in the plane and space, and basic algebra. Includes the following topics: fundamentals of inductive and deductive reasoning; propositional and first order logic; sets, relations and functions; Euclidean and analytical geometries in two and three dimensions; and linear transformations and quadratic forms. Not open to architecture, engineering, interior design, science and School of Business Administration students.

**MTH 101 Mathematics for Business I (3-0-3).** Covers coordinate systems and graphs, matrices, linear systems and applications, elementary linear programming, set theory, counting techniques, permutations and combinations, introduction to probability, and the mathematics of finance. Emphasizes techniques and applications. Prerequisite: MTH 002 or any AUS math placement test or SAT Subject Test–Math level 1 with a minimum score of 600.

**MTH 102 Mathematics for Business II (3-0-3).** Covers the derivative, rules for differentiation and their applications, definite and indefinite integrals, methods of integration and applications, functions of more than one variable, partial differentiation and applications to optimization. Emphasizes techniques and applications. Not open to science or engineering students. Prerequisite: MTH 101.

**MTH 103 Calculus I (3-1-3).** Covers inverse functions, limits of functions; differentiation of algebraic, logarithmic, exponential, trigonometric and inverse trigonometric functions; applications of derivatives including maxima and minima, related rates, approximations, theory of integration with applications including areas and volumes. Includes a computer laboratory component. Not open to students in DES, MUM and VIS majors. Prerequisite: MTH 001 or Engineering Math Placement Test or SAT Subject Test–Math level 1 with a minimum score of 600. Lab/Tech fee rate A applies.

**MTH 104 Calculus II (3-1-3).** Covers techniques of integration, hyperbolic functions, improper integrals, arc length, surface area, infinite series, power series, convergence tests, parameterized curves, polar coordinates, integration in polar

coordinates and complex numbers. Prerequisite: MTH 103.

**MTH 111 Mathematics for Architects (3-0-3).** Introduces the topics of geometry and calculus needed for architecture. Reviews trigonometry, areas and volumes of elementary geometric figures, and the analytic geometry of lines, planes and vectors in two and three dimensions. Covers differential and integral calculus, including applications on optimization problems, and areas and volumes by integration. Restricted to CAAD students. Prerequisite: MTH 001 or MTH 003 or Architecture Math Placement Test or Engineering Math Placement Test or SAT Subject Test–Math level 1 with a minimum score of 600.

**MTH 203 Calculus III (3-1-3).** Covers calculus of functions of several variables, vectors and analytic geometry of three-dimensional space, partial derivatives, gradients, directional derivatives, maxima and minima, multiple integrals, line and surface integrals, Green's theorem, divergence theorem and Stokes' theorem. Includes a computer laboratory component. Prerequisite: MTH 104.

**MTH 205 Differential Equations (3-0-3).** Covers mathematical formulation of ordinary differential equations, methods of solution and applications of first order and second order differential equations, power series solutions, solutions by Laplace transforms and solutions of first order linear systems. Prerequisite: MTH 104.

**MTH 211 Geometry for Art and Architecture (3-0-3).** Introduces the relation between geometry and architecture. Focuses on the use of geometrical concepts in art and architecture. Includes the following topics: sculpture and ancient Greek geometry; Egyptians and the geometry of the pyramids; basic geometric constructions; use of proportion in art, symmetry and isometry; Euclidean geometry; and polygons. Not open to science and engineering students. Prerequisite: MTH 100 or MTH 102 or MTH 103 or MTH 111.

**MTH 213 Discrete Mathematics (3-0-3).** (Equivalent to CMP 213). Covers propositional and predicate calculus, sets, major classes of functions and related algorithms, asymptotic analysis of functions, principle of mathematical induction, proof techniques, recursive definitions, counting, relations, graphs and trees. Restricted to students formally admitted to the second-year level in computer science or computer engineering; to mathematics students; and to students pursuing a minor in

computer science. Prerequisite: MTH 102 or MTH 103.

**MTH 221 Linear Algebra (3-0-3).** Covers systems of linear equation, algebra of matrices, linear transformations, determinants, vector spaces, inner product spaces, eigenvalues and eigenvectors, diagonalization and orthogonality, special matrices and applications. Prerequisite: MTH 104.

**MTH 243 Introduction to Mathematical Programming (0-2-1).** Introduces the idea of algorithms and procedures. Expose students to basic logic, conditional statements and iterative commands used in writing computer algebra system codes to solve selected mathematical problems. Prerequisite: sophomore standing.

**MTH 304 Mathematics of Finance (3-0-3).** Covers interest measurement, pricing of annuities (due, immediate, increasing, decreasing, geometric, with payments frequency smaller than the compounding period), amortization schedule and sinking fund method (with different remunerative and reproductive rate), yield rate, bonds (pricing, book value, market value, flat price, bond amortization schedule, callable bonds) and term structure of interest rates. Prerequisite: MTH 102 or MTH 103 or MTH 111.

**MTH 305 Life Contingencies (3-0-3).** Provides a basic review of interest theory, life tables and population problems, life annuities (due, immediate, temporary, deferred, increasing, decreasing) with basic pension application, life insurance (pure endowment, term insurance, deferred insurance, n-year endowment insurance, varying), net single premium, annual premium and statistical considerations. Prerequisites: MTH 102 or MTH 103 or MTH 111, and STA 201 or STA 202 or NGN 111 or QBA 201.

**MTH 307 Theory of Risk (3-0-3).** Covers probabilistic notions related to risk theory, individual and collective risk models for a short term, compound processes and approximations, collective risk for an extended period, applications to insurance, stop-loss insurance reinsurance, dividends in group insurance, reinsurance and probability of ruin, surplus and loss process, and ruin theory. Prerequisites: MTH 102 or MTH 103 or MTH 111, and STA 201 or STA 202 or NGN 111 or QBA 201.

**MTH 311 Intermediate Analysis (3-0-3).** Covers sets and the real number system, functions, mathematical induction, sequences and series, limits and continuity, uniform

continuity, basic topology of the real number system, differentiation, Riemann integration, sequences and series of functions, and uniform convergence. Prerequisites: MTH 203, MTH 213 and MTH 221.

**MTH 312 Advanced Calculus (3-0-3).** Provides an in-depth study of vector calculus including vector fields, Stieltjes integrals, the theory of integration of functions of two and three variables, divergence and Stokes' theorems, the inverse and implicit function theorems, as well as an introduction to the basic topology of Euclidean space, continuity and differentiation vector valued functions including linear operators on Euclidean space, and curves and surfaces. Prerequisite: MTH 203.

**MTH 313 Number Theory and its Applications (3-0-3).** Covers the Euclidean algorithm, linear congruencies and the Chinese Remainder Theorem, Fermat's Little Theorem, quadratic residues and quadratic reciprocity, Pythagorean triples and sums of squares. Includes applications in communication, public key cryptography, computer arithmetic, random number generators and music. Prerequisite: MTH 203 or MTH 213 or MTH 221.

**MTH 320 Abstract Algebra I (3-0-3).** Covers semi-groups, monoids, groups, permutation groups, cyclic groups, Lagrange's Theorem, subgroups, normal subgroups, quotient groups, (external) direct product of groups, homomorphism and isomorphism theorems, Cayley's Theorem, and introduction to rings and fields. Prerequisite: MTH 221.

**MTH 325 Coding Theory (3-0-3).** Introduces coding theory, linear codes, Hamming codes, Hamming distances, Hamming weights, probability, Shannon's theorem, dual codes, weight distribution of linear codes, cyclic codes, BCH codes, convolution codes, encoding and decoding. Prerequisite/concurrent: MTH 221.

**MTH 330 Fundamental Concepts of Geometry (3-0-3).** Describes elementary theory in foundations of geometry and logical systems, and basic theory in the fields of Euclidean, non-Euclidean and synthetic coordinate projective geometry, including homogeneous coordinates. Prerequisite: MTH 103 or MTH 111.

**MTH 343 Numerical Analysis I (3-0-3).** Introduces the fundamentals of numerical algorithms and their application for scientific computing. Includes topics such as error analysis, root finding, interpolation, function approximations, integration and differentiation, initial value problems,

optimization techniques and linear programming. Not open to students who have completed MTH 341 or CMP 341. Prerequisites: CHE 240 or CMP 120 or COE 210 or CVE 211 or MCE 226L or MTH 243, and MTH 221.

**MTH 350 Introduction to Probability (3-0-3).** Introduces probability spaces, axioms of probability, combinatorial counting techniques for discrete probability spaces, conditional probability and independent events; random variables, univariate and multivariate probability density functions expectation; variance and higher moments and moment generating functions. Prerequisite: STA 201; prerequisite/concurrent MTH 203.

**MTH 351 Methods of Applied Mathematics (3-0-3).** Introduces a broad range of mathematical tools used to solve scientific and engineering problems. Includes the following topics: Fourier analysis, integral transforms, calculus of variation, special functions and coordinate systems. Discusses applications problems, including mechanical structures, electrical circuits, fluid mechanics, continuum mechanics and geometry. Prerequisite: MTH 205.

**MTH 360 Probability and Stochastic Processes (3-0-3).** (Equivalent to ELE 360). Covers set theory, preliminaries of probability theory and random variables, stochastic processes, spectral characteristics, Markov chains and applications to systems. Prerequisites: NGN 111 or STA 201, and ELE 323 or MTH 312 or MTH 351 or prerequisite/concurrent: ELE 321.

**MTH 382 Linear Programming and Optimization (3-0-3).** Introduces optimization theory and methods, nonlinear unconstrained optimization, linear programming, sensitivity analysis, various algorithms and search methods for optimization and their analysis. Provides examples from various disciplines. Prerequisite: MTH 221.

**MTH 412 Complex Variables (3-0-3).** Studies functions of a complex variable, algebra of complex numbers, elementary functions with their mapping properties, analytic functions, power series, integration, Cauchy's Theorem, Laurent series and residue calculus, elementary conformal mappings and boundary value problem. Prerequisite: MTH 203.

**MTH 418 Graph Theory (3-0-3).** Covers graphs and sub graphs, connected and disconnected graphs, matrices, trees and girth, planar and nonplanar graphs, graph embeddings, connectivity and edge connectivity, Hamiltonian graphs, matching, factorization and coverings, networks

and applications to science and engineering. Prerequisite: MTH 213 or CMP 213.

**MTH 420 Abstract Algebra II (3-0-3).** Introduces group homomorphisms and isomorphism, classification of Abelian finite groups, Sylow theorems, ring homomorphisms, factorization of polynomials, unique factorization domains, field extensions and, in particular, cyclotomic field extensions and Galois's theory. Prerequisite: MTH 320.

**MTH 431 Dynamical Systems (3-0-3).** Examines the second order differential equations in phase plane, linear systems and exponential operators, canonical forms, stability of equilibria. Lyapunov functions, autonomous systems, the existence of periodic solutions and applications to various fields. Prerequisites: MTH 205 and MTH 221.

**MTH 432 Partial Differential Equations (3-0-3).** Covers mathematical formulations and solutions of partial differential equations of physical problems, includes the wave, heat and Laplace's equation. The mathematical tools include Fourier transform, Fourier series and Laplace transform. Prerequisite: MTH 205.

**MTH 443 Numerical Analysis II (3-0-3).** Introduces techniques and concepts of numerical analysis. Includes the following topics: direct and iterative methods for solving linear systems, and numerical methods for non-linear system of equations, initial and boundary value problems and partial differential equations. Prerequisite: MTH 343.

**MTH 490 Senior Project (0-6-3).** Provides individualized study in which a student conducts research on a topic not specifically covered in other courses under the supervision of a faculty member with expertise in that area. Prerequisites: senior standing and consent of instructor.

## MUS

## Music

**MUS 100 Music Appreciation (3-0-3).** Examines the history of music and its influence on different cultures. Covers the fundamentals of music instrumentation, form, historical time periods, "classical" and "popular" styles, and significant musical figures.

**MUS 101 Sight-Singing and Written Music Theory (3-0-3).** Focuses on sight-singing and written skills in the framework of Western music. Considers the relationship between theory and the practical understanding of musical

construction. Covers notation, harmonic and melodic analysis and ear training.

**MUS 102 Oud and Buzuk Class (2-1-3).** Explores basic oud/buzuk technique in a classroom/oud studio environment. Covers music theory topics such as finger numbers, note reading, rhythm, dynamics, legato/staccato, key signatures, intervals and rests, among others. Introduces a variety of simple oud/buzuk pieces.

**MUS 170 Class Piano I (2-1-3).** Studies basic piano technique in a classroom/piano studio environment. Covers music theory topics such as finger numbers, note reading, rhythm, dynamics, legato/staccato, key signatures, intervals and rests, among others. Introduces a variety of simple piano pieces.

**MUS 200 Introduction to European Classical Music (3-0-3).** Introduces the history and development of music within the European Classical tradition and its impact on culture worldwide. Examines the chronological development and the factors involved in the evolution of musical thought and experience. Prerequisite: WRI 102.

**MUS 202 Survey of World Music (3-0-3).** Studies music as a world phenomenon with emphasis on its relationship to culture, indigenous customs, function and significance. Focuses on important figures, instruments and theories, but equally on music's ethical and social dimensions. Prerequisite: WRI 102.

**MUS 203 Introduction to Arabic, Turkish and Persian Classical Music (3-0-3).** Introduces the history and development of music within the Arabic, Turkish and Persian classical music traditions. Examines the chronological development and factors involved in the evolution of musical thought and experience. Prerequisite: WRI 102.

**MUS 252 Applied Lessons (0-3-1).** Provides individual lessons with special focus on one instrument. Explores basic pedagogy of selected instrument. Studies repertoire to establish a foundation of basic techniques. Repeatable up to 3 credits. Prerequisite: audition with instructor.

**MUS 255 Music Ensemble (0-3-1).** Provides group ensemble activities. Explores basics of music theory and direct application in a public performance. Repeatable up to 3 credits. Prerequisite: audition with instructor.

**MUS 270 Class Piano and History (2-1-3).** Studies intermediate piano technique in a classroom/piano studio environment. Covers music theory topics such as intermediate-difficulty

rhythm patterns, detailed study of keys and key signatures, types of chords and chord progressions, and harmonization. Explores historic contributions to development of music by various composers. Prerequisite: MUS 170 or audition with instructor.

**MUS 302 Women and the Performing Arts (3-0-3).** Examines women's musical and theatrical contributions in a variety of capacities and traditions. Researches the history of women in the performing arts as composers, performers (on stage and film), patrons, and symbols in the marketing and consumption of the arts. Prerequisite: ENG 203 or ENG 204.

**MUS 352 Advanced Applied Lessons (0-3-1).** Studies directly under supervision of a professor in individual lessons with special focus on one instrument at a higher level of expertise and greater degree of difficulty. Repeatable up to three credits. Prerequisite: audition with instructor.

**MUS 355 Advanced Music Ensemble (0-3-1).** Rehearses ensemble activities in advanced level groups. Explores complex music theory and direct application in a public performance. Repeatable up to three credits. Prerequisite: audition with instructor.

**MUS 377 Piano Literature (3-0-3).** Explains the major currents in music history through the study and analysis of the keyboard repertoire of major composers. Addresses the key characteristics of the main genres found in keyboard repertoire. Covers the socio-cultural context that influenced major composers and their works. Prerequisite: MUS 200 or MUS 202 or MUS 270.

**MUS 470 Chamber Music with Piano I (2-1-3).** Studies and applies basic chamber music with piano technique through compulsory individual weekly coaching sessions and lessons. Develops the student's abilities and potential on the art of making music together with other students. Includes weekly studio class, jury evaluation and studio recital. Prerequisites: MUS 200 or MUS 202 or MUS 270, and consent of instructor based on audition. Lab/Tech fee rate A applies.

## PHI Philosophy

**PHI 201 Introduction to Philosophy (3-0-3).** Introduces basic questions, ideas and methods of philosophy. Discusses philosophers selected from various historical periods. Encourages and teaches the development of a philosophical mind. Prerequisite: WRI 102.

**PHI 202 Introduction to Islamic Philosophy (3-0-3).** Surveys the major philosophers in Islam, focusing on religious doctrines interacting with philosophical traditions. Discusses the relationship between Islamic and Western philosophy. Prerequisite: WRI 102.

**PHI 204 Ethics for Professionals (3-0-3).** Examines the ethical character of professional life. Develops a background for ethical judgment, and awareness of one's own viewpoint. Both historical sources and contemporary case studies may be used. Not open to computer science students. Prerequisite: WRI 102.

**PHI 206 Ethics and Information Technology (3-0-3).** (Equivalent to CMP 235). Examines the ethical questions raised by our life with information technology. Develops a background for ethical judgment, and awareness of one's own viewpoint. Both historical sources and contemporary case studies may be used. Prerequisite: WRI 102.

**PHI 207 Existentialism (3-0-3).** Examines the development of the various schools of Existentialist thought through an examination of its crucial texts in 19th century and 20th century thought. Explores central questions to existentialist thought such as: What does it mean to say that existence precedes essence? What is the nature of human freedom? What does it mean to be an authentic human being? Prerequisite: WRI 102.

**PHI 208 Modern Philosophy (3-0-3).** Introduces the basic ideas and institutions that might be understood as defining "modernity" within Western culture. Traces modernity as a cultural and philosophic paradigm from the Protestant Reformation until Heidegger and the postmodern turn. Focuses, through a close critical study of primary texts, on the development of the modern subject as key to understanding the ideas and institutions of the Enlightenment, and traces the decline of this self-certain subject as marking the end of modernity and the rise of the postmodern. Prerequisite: WRI 102.

**PHI 303 Political Philosophy (3-0-3).** Introduces the fundamental questions of how a polity should be structured. Emphasizes the justifications for fundamental decisions in shaping political orders. Both historical and contemporary readings apply. Prerequisite: ENG 203 or ENG 204.

**PHI 304 Themes in Western Thought (3-0-3).** Explores selected themes from the history of Western thought with relevance in the present.



Makes clear how ideas shape culture and inform life far into the future. Emphasizes the relationship between Western thought and the students' lives. Prerequisite: ENG 203 or ENG 204.

**PHI 305 Advanced Social Political Philosophy (3-0-3).** Concentrates on advanced issues in social political philosophy and offers a normative approach to social political issues from a historical perspective that allows students to understand better contemporary debates. Concentrates on a specific issue (e.g., equality, personal liberty, human rights, property rights, etc., depending on the year and instructor) and explores its significance in detail. Prerequisite: PHI 303.

**PHI 306 Philosophy of Law (3-0-3).** Surveys the philosophical issues associated with law. Considers issues relating to the natural law approach in Aquinas to later 20th century interpretations. Analyzes the positivist and realist approaches to law. Explores the relationship between law and morality, constructivism, and criticisms of the law by Marxists and others. Prerequisite: PHI 201 or PHI 202 or BLW 301 or ECO 326 or POL 201.

**PHI 309 Ethics and the Environment (3-0-3).** Explores the philosophical dimensions of how we are related to the environment. Studies why, or whether, life on Earth should be respected. Reflects on the philosophy of nature. Prerequisite: ENG 203 or ENG 204.

**PHI 310 Islamic Political Philosophy (3-0-3).** Introduces the history of Islamic political thought. Covers political philosophy in the first centuries of Islam, and the relationship between the temporal and the religious. Surveys the relationship between Islamic political thought and modernity in the 19th and 20th centuries. Examines the development of political Islam in the 20th century. Addresses contemporary debates concerning the relationship between politics and Islam in the Islamic and non-Islamic worlds. Prerequisite: PHI 201 or PHI 202 or ENG 203 or ENG 204 or POL 201.

## PHY Physics

**PHY 001 Preparatory Physics (3-0-3).** Develops problem-solving skills using algebra, trigonometry, and calculus through the study of elements of kinematics (motion in one and two dimensions) and dynamics (Newton's laws, momentum, work and energy). Required for science and engineering students with an insufficient background in physics. Students are

allowed to repeat a preparatory course up to Sophomore I standing (less than 45 credits).

**PHY 100 Conceptual Physics (3-0-3).** Gives non-science and non-engineering majors an understanding of the basic concepts of physics without complex mathematics. Emphasizes conceptual understanding of physical phenomena, firmly grounded in the scientific methods. Covers simple elements of mechanics, waves and light, electricity and magnetism, atoms and nuclei. Not open to engineering and science students.

**PHY 101 General Physics I (3-0-3).** Introduces the fundamental principles, laws and concepts of mechanics to students of science and engineering. Covers mechanics (kinematics in one and two dimensions; Newton's laws of motion with applications; work and energy; conservation of energy and momentum; general rotation, including torque and angular momentum; static equilibrium) as well as some introductory material on and mechanical waves (simple harmonic motion). Prerequisite: PHY 001 or Physics Placement Test; prerequisites/concurrent: MTH 103 and PHY 101L.

**PHY 101L General Physics Laboratory I (0-3-1).** Provides the opportunity to perform experiments that demonstrate the principles and laws of mechanics. Includes experiments on kinematics; Newton's laws of motion with friction and other forces; work and energy; conservation of momentum; rigid body rotational inertia; torque; static equilibrium; and simple harmonic motion. Prerequisite/concurrent: PHY 101. Lab/Tech Fee rate A applies.

**PHY 102 General Physics II (3-0-3).** Builds upon General Physics I. Covers electricity (electric fields, including Gauss's law; electric potential; capacitors and resistors; DC circuits), magnetism (sources of the magnetic field, including Ampere's law; induction, including Faraday's law and Lenz's law), and alternating current circuits, as well as introductory material on electromagnetic waves. Prerequisites: PHY 101 and PHY 101L; prerequisite/concurrent: PHY 102L.

**PHY 102L General Physics Laboratory II (0-3-1).** Trains students how to use new equipment and perform experiments with it that demonstrate their understanding of the basics of electricity and magnetism. Experiments include charge of the electron, electric field mapping, Ohm's law, Wheatstone bridge, power transfer, Kirchhoff's rules, RC circuit, force on a current-carrying wire in a magnetic field, magnetic field due to a

circular loop, and the charge-to-mass ratio of the electron. Prerequisite/concurrent: PHY 102. Lab/Tech Fee rate A applies.

**PHY 103 Astronomy (3-0-3).** Presents a broad view of descriptive astronomy without complex mathematics. Introduces and familiarizes the students with basic astronomical facts and phenomena that one can observe, study and explain using scientific methods. Consists of studying the night sky, using celestial coordinates, understanding the motion of heavenly bodies, familiarizing oneself with the tools of astronomers, reviewing the solar system, understanding what stars are and how they evolve, and getting a general overview of galaxies and the universe. Not open to engineering and science students.

**PHY 104 Physics for Architects (3-0-3).** Teaches selected set of algebra-based topics in physics to students of architecture. Topics covered Include: elements of mechanics (kinematics and dynamics); optics (geometrical as well as interference); sound (including general principles of acoustics, such as the propagation, transmission, attenuation and reverberation of sound); heat and energy. Not open to engineering and science students. Students cannot obtain credit for both PHY 104 and PHY 101. Prerequisite/concurrent: MTH 101 or MTH 103 or MTH 111.

**PHY 106 General Physics III (3-0-3).** Covers fluid mechanics (pressure, buoyant force, the continuity equation and Bernoulli's equation), basics of oscillatory motion (simple harmonic motion and damped and forced oscillations), mechanical waves (waves on a string, sound waves, the Doppler effect, standing waves, resonance and beats), thermodynamics (temperature, heat and heat engines, the laws of thermodynamics and the kinetic theory of gases), and light and optics (laws of geometric optics, image formation and basics of interference). Prerequisites: PHY 101 and PHY 101L.

**PHY 106L General Physics III Laboratory (0-3-1).** Comprises a selected set of experiments illustrating the principles, laws and concepts discussed in PHY 106. Includes experiments on fluid mechanics (buoyant force and viscosity), oscillatory motion (simple pendulum and the mass-spring system), mechanical waves (speed of sound), thermodynamics (specific heat and thermal expansion of metals) and optics (laws of reflection, Snell's law, the spherical mirror and lens-maker's equations and Young's double-slit

experiment). Prerequisite/concurrent: PHY 106. Lab/Tech Fee rate A applies.

### **PHY 113 Introduction to**

**Astrophysics (3-0-3).** Introduces the fundamental principles, laws and concepts of astrophysics. Applies the laws of mechanics, optics, thermodynamics and modern physics, including relativity and nuclear reactions, to the planets, stars and galaxies and their physical phenomena. Provides a technical overview of the satellites, telescopes and other astronomical instruments and techniques. Prerequisites/concurrent: PHY 101 and MTH 103.

### **PHY 201 Modern Physics (3-0-3).**

Deals with special relativity, introductory quantum mechanics, nuclear physics, elements of solid state and semi-conductor physics. Recommended for engineering majors, particularly electrical and computer engineering. Prerequisites: PHY 102 and PHY 102L.

### **PHY 201L Modern Physics**

**Laboratory (0-3-1).** Provides the opportunity to perform experiments that demonstrate the ideas of 20th century physics. Includes e/m ratio of the electron, the photoelectric effect, Frank-Hertz experiment, spectrometer, fluorescence of a luminous screen by x-rays, Young's double slit and light interference, X-ray diffraction (Bragg Reflection), hall effect, the wave model of light vs. the quantum model (h/e) experiment, and absorption of Beta and Gamma rays. Prerequisite/concurrent: PHY 201. Lab/Tech Fee rate A applies.

### **PHY 232 Properties of Matter**

**(3-0-3).** Provides a thorough and technical overview of the physical properties of matter to students with a background in basic physics. Includes the following topics: states of matter, classes of materials, atomic bonding, structural properties of matter, X-ray diffraction, experimental diffraction methods (simulation), imperfections in solids, atom movements and diffusion, mechanical properties of matter and electrical properties of matter. Prerequisites: PHY 102 and PHY 102L.

### **PHY 301 Energy Sources (3-0-3).**

Examines energy from a physics perspective. Examines present and future alternative energy sources, including hydroelectric, nuclear, solar, geothermal and tidal energy. Investigates the problems caused by each energy source and the issue of sustainability. Recommended for environmental science majors and engineering students. Prerequisites: PHY 102 and PHY 102L.

### **PHY 303 Atmospheric Physics**

**(3-0-3).** Deals with applications of thermodynamics, radiation theory,

optics and mechanics to atmospheric phenomena: composition, origin and structure; atmospheric processes; extra-tropical synoptic scale disturbances; cloud microphysical processes; radiation transfer and trapping; energy balance; and atmospheric dynamics. Prerequisites: PHY 102, and PHY 106 or CHM 102 or CHE 214 or MCE 241.

### **PHY 305 Modern Optics and Lasers**

**(3-0-3).** Provides a modern introduction of ray and wave optics and laser physics to students with a background in modern physics and electricity and magnetism. Covers the propagation of light (waves, phase and group velocities, and the Doppler Effect), the vectorial nature of light (electromagnetic fields, the Poynting vector, polarization, reflection and refraction), coherence and interference, optical spectra and light amplification (stimulated emission, population inversion and lasers). Prerequisite: PHY 201.

### **PHY 313 Satellites and Space**

**Physics (3-0-3).** Covers topics that prepare and allow the student to understand the latest developments, discoveries and trends in space science and technology. Emphasizes the relevance and application of various physical principles and laws (mechanics for orbits and electromagnetism for communication, signal detection and processing, energetics, and image processing for remote sensing, etc.) Focuses on practical applications and tools in this field. Prerequisites: PHY 102, PHY 102L and PHY 113.

### **PHY 401 Physics of Semiconductors**

**(3-0-3).** Covers the basics of semiconductor devices. Provides a general introduction to semiconductors (crystal structures, crystal symmetry, crystal growth techniques), carrier modeling (band structures, effective masses, density of states, carrier distribution, and carrier concentration), carrier action (mobility, resistivity, band bending, diffusion, recombination), pn junction diodes (build-in potential, step-junctions, boundary value solution using Poisson's equations, I-V characteristics) and optoelectronic devices (solar cells and LEDs). Designed for students with a thorough understanding of general physics and some exposure to quantum phenomena. Prerequisite: PHY 201.

## **POL Political Science**

### **POL 201 Introduction to Political**

**Studies (3-0-3).** Introduces the science of politics and examines the nature of government and public policymaking. Focuses on the processes

of government, including public administration, foreign policy and international relations. Prerequisite: WRI 102.

### **POL 202 Introduction to International Relations (3-0-3).**

Aims to acquaint students with the main stages of the evolution of international relations as a discipline since 1945, which can be seen as an ongoing debate about the explanatory value of one particular theory—Realism. Gives a profound introduction to theories of international relations as well as a theory-based introduction to foreign policy analysis. Analyzes the different schools of international relations theory as well as their respective critiques. Prerequisite: POL 201.

### **POL 208 Introduction to American Government (3-0-3).**

Surveys American government and examines the essential elements of the US political system. Covers such areas as the Constitution, Congress, the presidency, the judiciary and the electoral system. Discusses the nature of American democracy and examines such topics as federalism, culture, public opinion, political parties, interest groups, elections and the media. Prerequisite: WRI 102.

### **POL 300 Comparative Politics**

**(3-0-3).** Introduces key themes, theories and debates in comparative politics. Provides an overview of the historical, political, economic and ideational dynamics that have shaped the states and societies of the developed and developing worlds. Prerequisite: POL 201.

### **POL 302 Law and Diplomacy**

**(3-0-3).** Introduces the core concepts of the law and legal philosophy and explores the relationship between the law and political dynamics. Explores the changing functions of the state and how they were manifest in law and diplomacy. Introduces the concept of the diplomatic and consular law, and its sources and scope. Prerequisite: POL 201.

### **POL 304 International**

**Organizations (3-0-3).** (Equivalent to SOC 304). Introduces the structure and function of international organizations and their role in economic, political, military, cultural or humanitarian relations among nation-states. Selected organizations such as the United Nations, NATO, OPEC and the WTO are examples. Prerequisite: POL 202.

### **POL 305 Public International Law**

**(3-0-3).** Examines substantive international law, including the Law of the Seas, crimes against humanity, environmental law, the Geneva accords, international treaties, regional treaties,

the Charter of the United Nations and trade agreements. Analyzes selected legal institutions such as the International Court of Justice in The Hague and other tribunals dealing with international disputes. Prerequisite: POL 202.

**POL 307 Wars, Conflicts and Diplomacy (3-0-3).** Introduces the causes of war and other levels of violent international conflict, and the efforts that nations and international organizations make to avoid them. Includes an examination of the techniques of diplomacy that have been utilized, historically speaking, in these attempts to avoid wars and violent conflicts. Emphasizes concepts of national self-interest, *realpolitik*, just and unjust wars, non-interference with internal sovereign issues and nuclear weapons issues. Analyzes case studies of specific wars and considers various theories for controlling potential future flare-ups and real international conflict situations. Prerequisite: POL 202.

**POL 308 American Foreign Policy (3-0-3).** Examines the evolution and impact of American foreign policy. Studies the major issues in past and current US foreign policy, with a focus on the historic debates that have shaped American international conduct and their relevance to today's politics. Studies the processes of American foreign policy and examines the various factors in both the domestic and international contexts that have shaped and currently shape foreign policy initiatives. Gives particular attention to the sources of basic American policies during the past half century, along with a focus on the various theoretical approaches to explanation. Examines the pressing issues of today, particularly those pertaining to the Middle East and the West. Prerequisites: POL 201, and POL 202 or POL 208.

**POL 309 The American Political System (3-0-3).** Aims to provide students with an understanding of the nature of the American political system, its constitutional framework, its principles and practice. Focuses on the constitutional system of separated powers and checks and balances, and examines the dynamics of American politics, the interaction between its various political actors, and the relationships between the institutions of the presidency, congress and courts as "rivals for power." Provides a better appreciation of the workings of the American political system and the issues that are essential to American political life. Prerequisites: POL 201, and POL 202 or POL 208.

## PSY

## Psychology

**PSY 101 Introduction to Psychology (3-0-3).** Explores topics such as research methods, the nature of psychological phenomena, physiological bases of behavior, life-span development, altered states of consciousness, sensation, perception, learning, conditioning, memory, language, thinking, motivation, emotion, personality, individual differences, conflict and stress, abnormal behavior, therapeutic techniques and social psychology. Prerequisite/concurrent: WRI 101.

**PSY 102 Social Psychology (3-0-3).** Introduces the scientific study of social behavior and social influences on behavior. Focuses on the study of how our behaviors, thoughts and emotions are affected by the real or imagined presence of other people. Presents theories and research on such topics as attitude change and persuasion, stereotypes and prejudice, conformity and obedience to authority, altruism, conflict, interpersonal attraction and friendship. Prerequisite/concurrent: WRI 101.

**PSY 210 Scientific Method in Psychology (3-0-3).** Explores various methods within the social sciences that have transformed our understanding of human thought and behavior; contrasts the most common methods and explores their strengths and limitations; provides skills in seeking sources of scientific information; introduces basic concepts for data analysis and provides hands-on training with common applications; guides students through research projects, emphasizing the process of study design and material creation. Prerequisites: PSY 101 or PSY 102, and WRI 102.

**PSY 301 Abnormal Psychology (3-0-3).** Covers different theoretical approaches and empirical studies of causes, symptoms and treatment of abnormal behavior; problems and advantages of creating a classification scheme for abnormal behavior; the major diagnostic categories and review of the more common patterns of abnormal behavior; and how such disorders arise from subtle interactions between organic or psychological predisposition. Prerequisite: PSY 210, or PSY 101 and any one of STA 201, STA 202, NGN 111 or QBA 201.

**PSY 302 Developmental Psychology (3-0-3).** Explores how human psychology changes over time; considers various factors in development from conception until death, including biological, cognitive, social and cultural influences; periods of emphasis may include infancy,

childhood, adolescence or adulthood. Prerequisite: PSY 210, or PSY 101 and any one of STA 201, STA 202, NGN 111 or QBA 201.

**PSY 303 Health Psychology (3-0-3).** Takes a multi-disciplinary approach (psychology, sociology, anthropology and biology) to present the current research and controversies to explore the mind-body connection: how psychological and behavioral factors influence health and illness and how illness impacts the psyche. Prerequisite: PSY 210, or PSY 101 and any one of STA 201, STA 202, NGN 111 or QBA 201.

**PSY 304 Personality Psychology (3-0-3).** Provides a comprehensive overview of the role of personality in psychology. Develops and engages the critical thinking skills that are characteristic of behavioral scientists. Examines contemporary theories and explores the critique of social constructionists. Demonstrates the understanding of human behavior, drawing on phenomenology and personal construct theory. Prerequisite: PSY 210, or PSY 101 and any one of STA 201, STA 202, NGN 111 or QBA 201.

**PSY 305 Cognitive Psychology (3-0-3).** Provides a comprehensive overview of the role of cognition in psychology. Develops and engages the critical thinking skills that are characteristic of behavioral scientists. Explores the basics of cognitive psychology through the coverage of cognitive neuroscience, attention and consciousness, perception, memory, knowledge representation, language, problem solving and creativity, decision making and reasoning, cognitive development and intelligence. Prerequisite: PSY 210, or PSY 101 and any one of STA 201, STA 202, NGN 111 or QBA 201.

**PSY 306 Organizational Psychology (3-0-3).** Develops and engages the critical thinking skills that are characteristic of behavioral scientists. Demonstrates the theories and application of psychology in the workplace with the following topics: psychology at work, establishing a strong workforce, social organization, and solving human problems of work. Prerequisite: PSY 210, or PSY 101 and any one of STA 201, STA 202, NGN 111 or QBA 201.

**PSY 307 Stereotypes, Prejudice, and Discrimination (3-0-3).** Introduces core concepts related to stereotyping, prejudice, discrimination, stigma and intergroup relations. Focuses on how perceiving other people as somehow different from ourselves can impact our thoughts, feelings and behaviors toward those people at very

basic levels. Addresses how stereotypes are formed, maintained and changed; why prejudice exists and how it impacts society; and how people can try to control or change these processes. Prerequisite: PSY 210, or PSY 101 or PSY 102 and any one of STA 201, STA 202, NGN 111 or QBA 201.

**PSY 308 Cultural Psychology (3-0-3).** Provides an overview of the role of culture in human thoughts, feelings and behaviors. Focuses on how psychological processes are shaped by the people and information that occupy an individual's living environment. Presents theories and research on such topics as human development, selfhood, motivation, cognition, emotion and social relationships. Prerequisite: PSY 210, or PSY 101 and any one of STA 201, STA 202, NGN 111 or QBA 201.

**PSY 309 Psychology of Bilingualism (3-0-3).** Explores a psychological perspective on the relationship between language and thought. Addresses the questions of what happens in our brain when we speak, read or write. Explores how we learn language and how we learn a second language. Investigates whether our language influences the way we think. Discusses whether the ability to speak more than one language changes our perception of the world. Presents an argument about whether we can make computers understand and produce human speech, and more generally, explores how a study of the psychological aspects of language processing can contribute to the creation of Artificial Intelligence. Prerequisites: PSY 210, or PSY 101 and any one of STA 201, STA 202, NGN 111 or QBA 201.

**PSY 310 Psychology Research Experience (3-0-3).** Provides hands-on experience in psychological research. Offers the opportunity to work with faculty in reviewing scientific literature, creating research materials, guiding participants through studies and analyzing data. Aims to produce results that can be submitted for publication in international scientific journals. Addresses techniques for lab organization and the promotion of research. Prerequisite: PSY 210, or PSY 101 and any one of STA 201, STA 202, NGN 111 or QBA 201.

## SOC Sociology

**SOC 201 Introduction to Sociology (3-0-3).** Surveys the discipline and provides a foundation for other sociology courses. Introduces some of the major concepts, theories and research findings of sociology. Considers topics such as education,

race and ethnicity, organizations, the mass media, poverty and social deviance. Prerequisite: WRI 102.

**SOC 220 American Society (3-0-3).** Examines how American society is shaped by such social forces as race, class and gender. Considers additional topics such as immigration past and present, social movements, citizenship and democracy, and social control and deviance. Prerequisite: WRI 102.

**SOC 302 Environmental Sociology (3-0-3).** Examines how societies adapt to and transform their physical environment. Considers topics such as sustainable development, environmentalism as a social movement, public policy and urban sprawl. Prerequisite: WRI 102.

**SOC 304 International Organizations (3-0-3).** (Equivalent to POL 304). Introduces the structure and function of international organizations and their role in economic, political, military, cultural or humanitarian relations among nation-states. Considers selected organizations such as the United Nations, NATO, OPEC and the WTO. Prerequisite: POL 202.

**SOC 320 East Asian Societies (3-0-3).** Examines East Asian societies from sociological perspectives. Focuses on contemporary economic, social and cultural changes in China, South Korea and Japan. Introduces sociological methods to understand cross-cultural differences. Explores demography, culture and religion, marriage and family education, government, the mass media, economy, social inequality, crime and criminal justice system, health care system, aging, mental health, etc. Prerequisite: ANT 205 or GEO 201 or HIS 206 or HIS 212 or SOC 201 or SOC 220.

**SOC 370 Women's Empowerment and International Development (3-0-3).** Examines international development from a sociological perspective. Addresses the causes of women's deprivation by focusing on how global forces influence the political, social and cultural constructions of women's social role. Demonstrates an understanding of the roles of government and non-governmental organizations that seek to offer women's empowerment as strategy in international development. Prerequisite: ANT 205 or HIS 208 or POL 201 or SOC 201.

**SOC 380 Urban Sociology (3-0-3).** Explores changing urban life in different cultural, social and historical settings. Examines both classic and contemporary debates within urban sociology. Considers topics such as social segregation, urban planning, homelessness, urban development and

public service delivery. Prerequisite: WRI 102.

## STA Statistics

**STA 201 Introduction to Statistics for Engineering and Natural Sciences (3-1-3).** Explores descriptive statistics, probability theory and random variables, discrete and continuous probability distributions, experimental design and sampling, estimation, hypothesis testing, correlation, simple and multiple regression analysis, goodness-of-fit tests and the use of statistical computer software. Not open to SBA students in the BSBA degree program or students in engineering majors. Not open to students who have completed STA 202 or NGN 111 or QBA 201. Prerequisite: MTH 103 or MTH 111. Lab/Tech fee rate A applies.

**STA 202 Introduction to Statistics for Social Sciences (3-1-3).** Introduces acquisition and development of statistical methods that are commonly used in social sciences. Methods covered include techniques for classification of data, descriptive statistics, discrete random variables and the normal probability distribution, sampling techniques and experimental design, estimation, hypothesis testing, goodness-of-fit tests, simple regression and correlation, and the use of statistical computer software. Not open to SBA students in BSBA degree programs or College of Engineering students. Not open to students who have completed STA 201 or NGN 111 or QBA 201. Prerequisite: MTH 100 or MTH 101 or MTH 103 or MTH 111. Lab/Tech fee rate A applies.

**STA 233 Introduction to Survey Sampling and Analysis (3-0-3).** Introduces acquisition and development of survey design, and survey analysis. Covers techniques for survey sampling such as simple random sampling, cluster, stratified, systematic, and simulation. Addresses the analysis of survey results including statistical estimation methods and the use of statistical computer software. Prerequisite: STA 201 or STA 202 or NGN 111 or QBA 201.

## THE Theatre

**THE 101 Theatre Appreciation (3-0-3).** Introduces fundamentals of theatre, history, plays, playwriting, movement and expression, acting and production. Explores the historical context of the development of Western Drama, and applies practical

understanding of those elements. Explores theories related to each specific element.

**THE 102 Dramatic Process (3-0-3).**

Explorers the speech, movement and improvisational techniques used to create dramatic expression and effective stage communication. Introduces the Stanislavsky system. Includes interactive ensemble performances.

**THE 141 Stagecraft (3-0-3).**

Presents lectures and classroom demonstrations in the construction, painting, lighting, handling of scenery, and the making of properties. Requires crew hours.

**THE 230 Dramatic Literature**

**(3-0-3).** Examines fundamentals of theatre, plays, playwriting, movement and expression, acting and production through script analysis. Explores the historical context of the development of Western drama and applies practical understanding of those elements. Explores theories related to each specific element. Prerequisite: WRI 102.

**THE 242 Elements of Theatrical Design (3-0-3).**

Covers the vocabulary of analytical tools that theatrical designers use. Addresses color theory and picture plane composition, and discovers how the principles of two-dimensional and three-dimensional design impact the theatre artist. Contributes to development of department productions. Prerequisite: THE 101 or THE 102 or THE 141.

**THE 245 Technical Theatre**

**Laboratory (0-4-1).** Addresses the knowledge and skills necessary to work on backstage crews. Covers assembly and construction of set and prop pieces, hanging and focusing of lighting equipment. Studies the execution of lighting and sound plots, and theatrical ground plans. Includes running of live theatrical productions. Graded as Pass/Fail. Repeatable up to 3 credits. Prerequisite: permission of the instructor.

**THE 246 Costume Design (2-1-3).**

Explores techniques in developing rendering skills for costume designs. Addresses basic skills in transforming renderings into plots, patterns and costume pieces. Prerequisite: THE 101 or THE 102 or THE 141 or permission of the instructor. Lab/Tech fee rate B applies.

**THE 251 Rehearsal and**

**Performance (0-4-1).** Provides practical experience turning a dramatic script into a theatrical performance. Employs rehearsal and performance techniques used in professional

production. Emphasize full development of character creation. Explores the role of the stage manager in full detail. Graded as Pass/Fail. Repeatable up to 3 credits. Prerequisite: consent of instructor based on audition.

**THE 253 Musical Theatre**

**Production (6-0-3).** Provides experience in turning a musical script into a theatrical performance. Employs rehearsal and performance techniques used in professional production. Emphasizes study of texts, warm-up, reading, blocking, vocal study and development, audience-actor relationships, incorporation of director's guidance, the nuances of creating a character, analyzing a dramatic text, and stage management. Prerequisite: consent of instructor based on audition.

**THE 255 Voice and Movement**

**(3-0-3).** Introduces the study, analysis and application of various styles of movement required in theatrical productions, and how the voice and body work as one. Studies body language, analysis of movement, types and rhythms of movement and pantomime. Prerequisite: THE 101 or THE 102 or THE 141 or THE 245 or THE 251.

**THE 321 Arts Management (3-0-3).**

Examines fundamentals of management as it applies to the arts, including theater, children's theater, opera, concerts, museums, theme parks, trade shows, expo centers, cruise ships, film and other cultural events. Prerequisite: THE 101 or THE 102 or THE 141 or THE 150 or THE 242 or THE 250 or MGT 201 or permission of the instructor.

**THE 351 Advanced Rehearsal and Performance (0-4-1).**

Provides advanced experience turning a dramatic script into a theatrical performance. Employs rehearsal and performance techniques used in professional production. Emphasizes the full development of character creation, which includes creation of a researched character history profile. Explores the role of stage manager in full detail, which includes development of a complete prompt book. Grades as Pass/Fail. Repeatable up to 3 credits. Prerequisite: THE 251 (earned 3 credits).

**THE 352 Dance Styles for the Stage**

**(2-1-3).** Explores various styles of dance for the stage and examines the history of diverse techniques in dance. Covers methods and skills needed for dance performances through in-class dance activities and rehearsals. Addresses the factors that influence the development and performance of choreographed dance routines developed for the stage. Prerequisite: ENG 203 or ENG 204.

**THE 361 Playwriting (3-0-3).**

Explores the process of playwriting. Covers playwriting structure and implications of theatre spaces. Creates opportunities to workshop student plays. Examines well-known plays, as well as foundations laid by Aristotle. Develops student-written one-act plays. Culminates with a final stage reading of each play that is read by actors and classmates. Prerequisite: ENG 203 or ENG 204.

**THM**

**Theme**

**THM 310 Social Science Analysis of Environmental Issues I (3-0-3).**

Provides a broad overview of social science issues related to the use of environmental and natural resources. Provides an overview of current and historical environmental trends; a framework of environmental policy analysis; and an overview of environmental law, environmental ethics, special interest group politics, and the role of political and economy systems in determining environmental quality. Prerequisite: junior standing.

**THM 311 Social Science Analysis of Environmental Issues II (3-0-3).**

Uses the analytical tools and background studied in THM 310 to address specific environmental and natural resource problems. Addresses the environmental problems of global climate change, acid rain, ozone depletion, solid waste disposal, water resources, energy resources, fisheries, forests and biodiversity, among others. Prerequisite: THM 310.

**TRA**

**Translation and Interpreting**

**TRA 210 Introduction to**

**Translation (3-0-3).** Introduces the field of translation and the skills necessary to work as a successful translator. Emphasizes a problem-solving approach, supported by text analysis (both in the pre-translation phase and in subsequent editing and evaluation). Requires practical tasks that involve translation into and out of English and Arabic. Prerequisite/concurrent: WRI 101.

**TRA 220 Theoretical and Practical Issues in Translation (3-0-3).**

Views translation practice as seen in the light of various theories and models of translation. Invokes theories informed by modern linguistics, cultural studies and literary criticism with the aim of sensitizing the translator to the intricacies of the task. Assesses and examines at various levels of language

organization (word level, sentence level, text level, pragmatics, etc.) the key notion of "equivalence." Examines issues such as the translation of metaphor and idiomatic expressions, dealing with meaningful repetition and biased translation shifts. Prerequisite: WRI 102.

**TRA 230 Translating Arabic Literary Texts (3-0-3).** Introduces basic theories of literary translation and applies them to a selection of Arabic literary texts from different genres. Covers linguistic and non-linguistic (cultural) dimensions of literary translation. Highlights the role of literary translation in human interaction. Prerequisite: WRI 102.

**TRA 301 Modern Media Translation (3-0-3).** Focuses on those modes and situations that relate to the translation of the print media. Includes the processing and translation of advertisements, news reports, magazine articles, public relations and promotional literature, and publicity materials within a framework of media translation studies. Prerequisite: TRA 210 or TRA 220, or ARA 101 and MCM 150.

**TRA 303 Interpreting: Focus on the Community (3-0-3).** Introduces interpreting and distinguishes this skill from translation. Nurtures the ability to understand and analyze a message in the source language and convey it in the target language in a straightforward and clear manner. Develops the basic skills of liaison interpreting, with special emphasis on community interpreting (doctor-patient, court, official transactions, etc.) Prerequisite: TRA 210. Lab/Tech fee rate B applies.

**TRA 307 Screen Translation (3-0-3).** Introduces screen translation and the stylistic features and cultural aspects of screen productions. Provides training in the translation of scripts of various cinema and TV scripts from and into Arabic. Deals with the problems encountered by the translator in rendering these genres. Prerequisite: TRA 210 or TRA 220.

**TRA 401 Translation Evaluation and History (3-0-3).** Explores the conceptual map of translation studies and reflects on important points in the history of translation. Emphasizes both Western and Eastern translation traditions and the role of translation in the development of culture and identity. Introduces translation evaluation, and develops rigorous assessments schemes. Prerequisite: TRA 210.

## WRI

## Writing Studies

**WRI 001 Basic Academic Writing (3-0-3).** Introduces basic academic writing skills. Focuses on study skills, language usage and rhetorical strategies. Introduces the basics of critical thinking, reading and writing. Students must successfully complete WRI 001 by the end of Sophomore I standing. Prerequisite: EPT score less than 4.

**WRI 101 Academic Writing I (3-0-3).** Instructs how to write, read and critique academic essays. Emphasizes rhetorical forms of analysis, argumentation and persuasion, and critical thinking. Focuses on developing writing skills by emphasizing the writing process, peer review and critical reading skills. Introduces APA citation format. Students must successfully complete WRI 101 by the end of Junior I standing. Prerequisite: EPT score of 4 or ELPT score of 1 or WRI 001.

**WRI 102 Academic Writing II (3-0-3).** Introduces critical writing and research skills. Focuses on building arguments using inductive and deductive reasoning and support strategies using basic academic research and library skills. Builds on critical thinking and reading skills developed in WRI 101, including formal critique of academic essays. Introduces short argumentative research papers. Students must successfully complete WRI 102 by the end of Junior I standing. Prerequisite: EPT score of 5 or WRI 101.

**WRI 221 Peer Tutoring in Writing (3-0-3).** Focuses on issues and theories of writing and peer-collaboration as they relate to peer tutoring in writing. Involves readings and class discussion that encourages critical thinking about writing and the teaching and tutoring of writing. Explores the views of different writers towards their craft, writers as individuals, issues of writing in a second language, and the role of "talking" in writing. Provides preparation for the second part of the course in which students prepare for possible roles as Writing Center Tutors or Writing Fellows. Focuses largely on "hands-on" learning as students observe writing center tutorials, experience teaching each other, and comment on sample papers. Prerequisite/concurrent: ENG 203 or ENG 204.

## WST

## Women's Studies

**WST 240 Introduction to Women's Studies (3-0-3).** Introduces women's studies, its perspectives and its

interdisciplinary nature. Emphasizes feminist analysis and critical thought as a way of making knowledge. Draws on history, literature, popular culture and the arts to analyze the forces that shape women's lives and examine women's position in culture and society. Prerequisite: WRI 102.

**WST 250 Women's Voices Across Cultures (3-0-3).** Examines debates surrounding the genre of autobiographical writing by women across cultures. Considers the aspirations, frustrations and achievements of women as documented in their own words. Explores the ways in which language and representation in various cultures shape subjectivity, challenge and redefine the boundaries of the autonomous self. Prerequisite: WRI 102.

**WST 300 Women, Science and Technology (3-0-3).** Examines the relationships between gender and science and technology. Appraises the most notable achievements of women in science and technology across cultures. Investigates how scientific and technical power and knowledge operate in society. Analyzes the social barriers faced by women seeking a scientific career. Presents feminist critiques of science and technology. Prerequisite: ENG 203 or ENG 204 or HIS 208 or WST 240 or WST 250.

## AUS Courses Offered Abroad

AUS courses offered abroad provide students with the opportunity to complete and earn credits for AUS courses or AUS studios that are conducted in a regional or an international site.

**Course Abroad (1 to 3 credits).** Features on-site visits offering the opportunity to experience first-hand regional and international design practices or to engage in site-specific design projects, highlighting particular themes relevant to the specific location. Department permission is required for enrollment and credit. Can be repeated for credit. Prerequisites: topic specific. Lab/Tech fee may apply.

**Studio Abroad (3 to 6 credits).** Provides studio activities conducted in regional and international sites promoting a global-oriented approach to design. Prerequisite: studio specific.

Courses abroad are numbered as 193, 293, 393 or 493 courses. Studio abroad courses are numbered as 498. The three-letter course prefix reflects the field of study of the course.

Descriptions of AUS courses offered abroad are made available in the college during registration.

## Special Topic Courses

### Independent Study

Independent study is the umbrella term used to label two types of independent work: independent course and directed study.

Students are allowed to take one independent study. A second independent study could be approved by the student's associate dean for graduation purposes only.

**Independent Course (1 to 4 credits).** A course listed in the catalog but offered in an independent study format. The course is coded using the course number in the catalog.

Students are not allowed to repeat courses in an independent course format.

To be eligible to apply for an independent course, students must be in good standing.

**Directed Study (1 to 4 credits).** An investigation under faculty supervision beyond what is offered in existing courses. Prerequisites: minimum CGPA of 3.00, Junior II standing and consent of the instructor.

Directed study courses are numbered as 396 or 496 courses. The three-letter course prefix reflects the field of study of the course (e.g., directed study courses in Arabic are coded as ARA 396 or ARA 496).

For more details on independent study, please refer to Registration in Independent Study Courses in the Academic Policies and Regulations section of this catalog.

### Interdisciplinary Study Courses

Interdisciplinary study (IDS) courses provide opportunities for students to benefit from collaboration by faculty from a range of disciplines. Courses with an IDS course code are normally co-taught by two or more faculty members and focus on topics beyond those offered in existing courses. Prerequisites: topic specific. Lab/Tech fee may apply.

IDS courses at the 300 level require sophomore standing or above; 400-level IDS courses are restricted to junior standing and above.

Descriptions of particular IDS courses are made available during registration.

#### **Special Topic (1 to 4 credits).**

Presents a theoretical or practical topic proposed by the faculty beyond what is offered in existing courses. Can be repeated for credit. Prerequisites: topic specific. Lab/Tech fee may apply.

Special topic courses are numbered as 194, 294, 394 or 494 courses. The three-letter course prefix reflects the field of study of the course.

Special topic courses at the 300 level require sophomore standing or above; 400-level special topic courses are restricted to junior standing and above.

Descriptions of particular special topic courses are made available during registration in the college/school offering the course.

# College of Engineering

## ASE

### Aerospace Engineering

**ASE 415 Aircraft Stability and Control (3-0-3).** Covers reference frames, equations of motion for a rigid body, forces and moments, trim, linearization, dynamic response characteristics for aircraft and spacecraft. Includes aircraft stability derivatives, static longitudinal and lateral stability, handling qualities, phugoid, short period, spiral, roll subsidence, Dutch roll modes and the corresponding transfer functions. Prerequisite: MCE 328.

**ASE 450 Applied Aerodynamics (3-0-3).** Covers basic equations of aerodynamics, potential flow theory, incompressible flow over airfoils, incompressible flow over finite wings, three dimensional flows and panel techniques and elements of airplane performance: rate of climb, gliding flight, range and endurance, takeoff and landing performance. Prerequisite: MCE 240; prerequisite/concurrent: MCE 325.

**ASE 454 Thermal Design Issues for Aerospace Systems (3-0-3).** Deals with processes, systems, instruments and equipment for aerospace systems. Emphasizes issues of energy conversion and thermal design. Includes the following topics: thermodynamic concepts and heat transfer processes for aerospace systems, the space environment, influence of gravity on heat transfer, power generation for space systems (energy sources, solar cell arrays, energy storage), thermal control (analysis techniques, design procedures, active versus passive design, heating and refrigeration) and environmental effects. Prerequisite: MCE 344.

**ASE 470 Aircraft Structures (3-0-3).** Examines the characteristics of aircraft structures and materials; stress strain relationships in two and three dimensions; torsion, bending and flexural shear in thin-walled sections; buckling and fatigue analysis of thin wall structures; analysis of composite laminates; introduction to aeroelasticity and energy methods. Prerequisite: MCE 321.

**ASE 475 Aircraft Design (3-0-3).** Covers the theory, background and methods of aircraft design. Integrates aerodynamics, structure, propulsion, flight dynamics and control in the design of aircrafts. Prerequisites: ASE 415, ASE 470 and MCE 482.

## BME

### Biomedical Engineering

**BME 210 Biomedical Ethics (1-0-1).** Applies ethical principles and decision-making processes to selected problems in medicine, health care and biotechnology. Gives special attention to end-of-life choices, reproductive rights and technologies, organ transplantation, research ethics, genetic engineering and allocation of scarce resources. Focuses on social, legal, economic and scientific issues in ethical decisions in medicine. Prerequisites: BIO 101 and WRI 102.

**BME 410 Biomedical Systems Modeling I (3-0-3).** Introduces and applies engineering principles including biomechanics, fluid mechanics, heat transfer, chemical reaction kinetics and materials science to model physiological systems and solve medical problems. Prerequisite/concurrent: BIO 210.

**BME 411 Biomedical Systems Modeling II (3-0-3).** Applies principles of kinetics and mass transfer to model physiological systems including pharmacokinetics, membrane transport, renal filtration and gas exchange to design medical devices. Prerequisite/concurrent: BME 410.

**BME 420 Biomedical Electronics I (3-0-3).** (Equivalent to ELE 432). Covers biomedical sensors and instrumentation, biopotential electrode, chemical and clinical biosensors, bioelectric phenomena, the electrocardiograph, the electroencephalograph, blood pressure and cardiac output measurements, and electrical safety. Not open to electrical engineering students. Prerequisite: ELE 225 or ELE 341.

**BME 421 Biomedical Electronics II (3-0-3).** Covers pulmonary system measurements, blood gas analysis, clinical laboratory instrumentation, biomedical optics and lasers, and therapeutic and prosthetic devices and systems. Prerequisite: BME 420.

**BME 422 Biomedical Imaging (3-0-3).** Covers imaging techniques, including ultrasound imaging, x-ray imaging, computerized tomography, magnetic resonance imaging, microwave imaging, thermal imaging and nuclear imaging. Covers the following for each of the addressed imaging techniques: radiation propagation and interaction with materials, generation and detection, and image construction and reconstruction. Covers radiation

protection. Prerequisite: ELE 225 or ELE 341.

**BME 424L Biomedical Electronics Laboratory (0-3-1).** (Equivalent to ELE 439L). Explores data acquisition tools, medical signal processing, biopotential amplifiers, biopotentials, bioimpedance measurements, blood pressure measurements, respiratory measurements, ultrasonic measurements and electrical safety. Prerequisite/concurrent: BME 420. Lab/Tech fee rate B applies.

**BME 430 Biomechanics (3-0-3).** Presents the fundamentals of orthopedic biomechanics and the application of solid mechanics toward describing physiological systems. Emphasizes the interaction between biomechanical and physiologic factors (bone, connective tissue and muscle and joint physiology and structure) in the musculoskeletal system and application of engineering principles in clinical practice. Prerequisite: CHE 230 or MCE 222 or MCE 224 or MCE 225.

**BME 431 Biomaterials (3-0-3).** Provides an overview of materials used in biomedical applications, both internal and external to the human body. Covers structure and properties of biomaterials in addition to material performance in hostile environments. Prerequisite: BME 410 or BME 430.

**BME 432 Biothermofluids (3-0-3).** Discusses the fluid and thermodynamics principles underlying the operation of physiological systems, including the heart and circulatory system and the lungs and pulmonary system. Prerequisite: BME 410 or BME 430.

**BME 440 Bioinformatics (3-0-3).** Discusses elementary topics in bioinformatics. Includes the basics of molecular genetics, the biological aspects of bioinformatics, data searches, algorithms for pairwise alignments and substitution patterns. Prerequisites: BIO 210 and ELE 360.

## CHE

### Chemical Engineering

**CHE 205 Principles of Chemical Engineering I (2-1-2).** Introduces the analysis of chemical process systems using mass conservation equations, stoichiometry and steady state calculations. Covers unit conversions and process flow sheets. Introduces ideal and real gas relationships. Prerequisites: CHM 101 and MTH 103.



**CHE 206 Principles of Chemical Engineering II (2-2-3).** Covers material balances for multiphase systems, the application of energy balances to chemical engineering equipment and processes. Includes the following topics: steady state energy balances with and without chemical reactions, heat of solution and mixing, humidity charts and simultaneous material and energy balances. Introduces process simulation. Discusses contemporary issues in chemical engineering. Emphasizes the role of writing in the development of technical reports. Restricted to students formally admitted to the second-year level in chemical engineering. Prerequisite: CHE 205; prerequisites/concurrent: CHM 102 and WRI 102.

**CHE 214 Chemical Engineering Thermodynamics I (2-2-3).** (Formerly CHE 303). (Equivalent to MCE 241). Studies the first, second and third laws of thermodynamics and their application in chemical engineering; volumetric properties of pure fluids; definitions and use of internal energy, enthalpy, entropy and free energy; Maxwell relations; ideal and real cycles and processes; refrigeration and liquefaction. Restricted to students formally admitted to the second-year level in chemical engineering. Prerequisite: CHE 205.

**CHE 230 Materials Science (3-1-3).** Introduces material science, relationships between structure and properties of materials. Includes the following topics: atomic bonding, crystalline structures, crystal defects and imperfections; phase diagrams and equilibrium microstructural development; and properties of engineering materials. Prerequisite/concurrent: CHM 102. Lab/Tech fee rate B applies.

**CHE 240 Computer Methods in Chemical Engineering (3-1-3).** Covers the use of Matlab to solve chemical engineering problems. Includes the following numerical techniques: solution of linear and nonlinear algebraic equations, ordinary differential equations, and numerical integration and differentiation. Restricted to students formally admitted to the second-year level in chemical engineering. Prerequisite: CHE 205; prerequisites/concurrent: MTH 205 and MTH 221. Lab/Tech fee rate B applies.

**CHE 300 Fluid Mechanics (3-0-3).** (Formerly CHE 215). Explores introductory concepts of fluid mechanics and fluid statics, fluid properties, basic equations of fluid flow, flow of compressible and incompressible fluids in pipes and other shapes, velocity distribution, laminar and

turbulent flow, differential analysis of basic viscous incompressible flows, flow past immersed bodies and dimensional analysis. Prerequisites: PHY 101 and PHY 101L; prerequisites/concurrent: CHE 214 and MTH 205.

**CHE 304 Chemical Engineering Thermodynamics II (3-0-3).** Examines thermodynamic properties of fluids and mixtures, residual properties, excess properties, phase equilibria and chemical reaction equilibria for gases and liquids. Prerequisite: CHE 214; prerequisite/concurrent: MTH 203.

**CHE 307 Heat Transfer (3-0-3).** (Equivalent to MCE 344). Covers mechanism of heat transfer; heat transfer by conduction, convection and radiation; and analysis of heat transfer equipment used in chemical engineering. Prerequisites: CHE 206 and MTH 205; prerequisite/concurrent: CHE 300.

**CHE 321 Chemical Reaction Engineering (3-0-3).** Examines chemical reaction kinetics, interpretation of experimental rate data, design of batch and continuous reactors, effect of temperature and pressure, and heterogeneous catalysis. Prerequisite: CHE 240; prerequisites/concurrent: CHE 307 and CHM 331.

**CHE 329 Mass Transfer (3-0-3).** Covers mechanisms of mass transfer, laws of diffusion, mass transfer coefficients, theories of mass transfer, and mass transfer and chemical reactions. Prerequisite: CHE 307.

**CHE 332 Engineering Economy (3-0-3).** Covers topics in finance and economics involved in the design of chemical processes and equipment: time value of money, depreciation, profitability, evaluation of alternatives, replacement and capital analysis. Prerequisite: junior standing.

**CHE 350 Chemical Engineering Laboratory I (0-3-1).** Covers experiments in fluid flow, heat transfer, and thermodynamic measurement and analysis of devices. Includes experimental design, safety, and report writing. Prerequisite: NGN 111. Prerequisites/concurrent: CHE 214 and CHE 307. Lab/Tech fee rate B applies.

**CHE 397 Professional Training in Chemical Engineering (0-0-0).** Requires a minimum of five weeks of approved professional experience. Work undertaken must be documented in a formal report to the department by the beginning of the following term. Graded as Pass/Fail. Prerequisites: Junior II standing and approval of internship coordinator for the major. Registration fee applies.

**CHE 412 Separation Processes (3-0-3).** (Formerly CHE 342). Examines application of mass transfer principles to the design of multi-stage systems and countercurrent differential contacting operations. Prerequisites/concurrent: CHE 304, CHE 329 and CHM 217.

**CHE 421 Chemical Process Dynamics and Control (3-0-3).** Examines principles of process dynamics and control in chemical engineering applications; transfer functions; block diagrams; input disturbance; frequency response and stability criteria; single and multi-loops; P, PI and PID controllers; and process control software. Prerequisites/concurrent: CHE 321 and CHE 412.

**CHE 432 Process Design Safety and Economics (3-0-3).** Covers the application of chemical engineering principles to the design and integration of chemical equipment and processes. Includes the following topics: process safety, pollution prevention and waste minimization, plant economics and cost estimation. Prerequisites: CHE 230 and CHE 321; prerequisites/concurrent: CHE 332 and CHE 412.

**CHE 434 Petroleum Refining Processes (2-2-3).** Presents an overview of petroleum refining processes. Includes the following topics: introduction to petroleum, its origins and composition, basic principles of refining, the effect of feedstock on refinery design, selection of refinery units, design of major equipment and refinery economics. Prerequisite: CHM 215; prerequisite/concurrent: CHE 412. Lab/Tech fee rate B applies.

**CHE 436 Natural Gas Processing (3-0-3).** Provides basic and applied knowledge in natural gas processing. Includes the following topics: characterization of natural gas and its products, phase behavior of natural gas, water-hydrocarbon phase behavior, prevention of hydrate formation, gas sweetening, gas dehydration using glycol, gas dehydration using solid desiccants, natural gas liquids recovery, sulfur recovery and design and sizing of equipment. Prerequisite/concurrent: CHE 432.

**CHE 451 Chemical Engineering Laboratory II (0-3-1).** Comprises hands-on laboratory experiments illustrating the application of chemical engineering principles and calculations: mass transfer equipment, reaction kinetics and reactor design. Includes experimental design, safety and report writing. Prerequisites: CHE 321 and CHE 350; prerequisite/concurrent: CHE 412. Lab/Tech fee rate B applies.

**CHE 452 Unit Operations and Control Laboratory (0-3-1).** Covers laboratory experiments illustrating various applications of chemical engineering principles and calculations in process control and physical and chemical separation. Includes experimental design, safety and report writing. Prerequisite: CHE 350; prerequisite/concurrent: CHE 421. Lab/Tech fee rate B applies.

**CHE 461 Air Pollution (3-0-3).** Covers environmental pollution; acid gas removal; sulfur oxides, nitrogen oxides and carbon gases removal; removal of volatile organic compounds; design of main process equipment and control devices; and aerosols. Prerequisite/concurrent: CHE 412.

**CHE 467 Corrosion (2-3-3).** Examines electrochemical principles; galvanic cell; Nernst equation; electromotive force; corrosion mechanisms and techniques; corrosion due to dissimilar metal, differential aeration, strain and temperature; corrosion types, cavitation, fatigue, microorganisms; corrosion prevention, inhibitors, electrical protection; and corrosion case studies in petroleum industry. Prerequisite: CHM 101. Lab/Tech fee rate B applies.

**CHE 470 Waste Management and Control in Chemical Engineering (3-0-3).** Covers management and control of gaseous, liquid and solid wastes; regulation and management procedures; waste minimization and resource recovery; and separations and reaction engineering approaches. Prerequisite/concurrent: CHE 412.

**CHE 472 Water and Wastewater Treatment Design (2-2-3).** Covers design and selection of biological, physical and chemical processes used in water and wastewater treatment, disposal of treated effluent, water quality, and industrial wastewater characterization. Prerequisite/concurrent: CHE 329. Lab/Tech fee rate B applies.

**CHE 481 Fundamentals of Biomedical Engineering (3-0-3).** Uses chemical engineering principles including fluid mechanics, heat transfer, kinetics and material science to model physiological systems and solve medical problems. Prerequisite: CHE 300; prerequisite/concurrent: CHE 307.

**CHE 490 Senior Design Project I (1-2-1).** Requires a supervised design project of defined chemical engineering significance. Work includes data collection, analysis, calculation, design and presentation of the work in a detailed technical report. Requires oral presentation and defense of the project. Current practices in the chemical engineering field are discussed through

guest lectures. Prerequisite: ENG 207; prerequisite/concurrent: CHE 432.

**CHE 491 Senior Design Project II (0-6-2).** Continues the work of CHE 490. Prerequisite: CHE 490.

## CMP Computer Science

**CMP 120 Introduction to Computer Science I (2-3-3).** (Equivalent to COE 210). Provides an overview of computer architecture and programming. Examines elements of a C++ program, statements and expressions, data types, relational and logical operators, conditional and iterative control structures. Examines, file I/O, declaration and initialization of arrays and strings, pointers and function arguments. Covers program design and testing, and modular programming. Includes laboratory and programming assignments. Prerequisite: NGN 110 or sophomore standing. Lab/Tech fee rate A applies.

**CMP 210 Digital Systems (3-3-4).** (Equivalent to COE 221). Covers number systems, Boolean algebra, analysis and design of combinational circuits, minimization techniques, analysis and design of sequential circuits, and introduction to computer design. Not open to computer engineering students. Prerequisite: CMP 120. Lab/Tech fee rate A applies.

**CMP 213 Discrete Structures (3-0-3).** (Equivalent to MTH 213). Covers propositional and predicate calculus, sets, major classes of functions and related algorithms, asymptotic analysis of functions, principle of mathematical induction, proof techniques, recursive definitions, counting, relations, graphs and trees. Restricted to students formally admitted to the second-year level in computer science or computer engineering; to mathematics students; and to students pursuing a minor in computer science. Prerequisite: MTH 103.

**CMP 220 Introduction to Computer Science II (2-3-3).** (Equivalent to COE 211). Covers object-oriented programming concepts: constructors, destructors, objects, classes, functions and attributes, operator overloading and overriding, inheritance and polymorphism. Explores abstraction principles (interfaces, information hiding, encapsulation), templates, exception handling, I/O streams and advanced pointers. Uses the C++ programming language in laboratory work. Prerequisite: CMP 120 or COE 210. Lab/Tech fee rate A applies.

**CMP 235 Ethics for Computing and Information Technology (3-0-3).** (Equivalent to PHI 206). Examines ethical theories and ethical decision-making models applied for computing and information technology. Offers in-depth discussion of social, ethical and professional issues in computing, including the codes of ethics of computing professional societies; intellectual property defined by copyright, patent and trade secrets; privacy; confidentiality; conflict of interest; cybercrime; hacking; viruses; and identity theft. Prerequisite: WRI 102.

**CMP 240 Introduction to Computer Systems (3-3-4).** Examines hardware and software model of microprocessors; programming of microprocessors; memory systems, memory interface and memory access (DMA); input/output programming and interface; and design of microprocessors-based systems. Prerequisites: CMP 120 or COE 210 or MCE 226L, and CMP 210 or COE 221. Lab/Tech fee rate B applies.

**CMP 256 GUI Design and Programming (3-2-3).** Covers the design and implementation of interactive 2D graphical user interfaces. Explores the event-driven paradigm and its application in GUI development. Examines multi-threading and exception handling. Covers widget layout, dialog construction and elementary data visualization techniques. Covers essential functions such as drag-and-drop and basic graphics operations such as image I/O and 2D drawing. Addresses design, usability, standard interface building and cross-platform compatibility issues. Not open to computer engineering students. Prerequisite: CMP 220 or COE 211. Lab/Tech fee rate A applies.

**CMP 305 Data Structures and Algorithms (3-1-3).** (Equivalent to COE 311). Covers design and implementation of abstract data types, lists, stacks, queues and trees. Covers recursion and runtime stacks. Introduces the complexity of algorithms and data structures. Covers searching and sorting and basic graph algorithms. Laboratory work includes substantial programming assignments. Prerequisite: CMP 220 or COE 211; prerequisite/concurrent: CMP 213 or MTH 213. Lab/Tech fee rate A applies.

**CMP 310 Operating Systems (3-1-3).** (Equivalent to COE 381). Introduces operating systems, process management, process scheduling, interprocess communications, memory management techniques, virtual memory, I/O management, deadlock avoidance, file system design and security issues. Employs examples of

commonly used operating systems (e.g., Windows and UNIX). Prerequisites: CMP 305 or COE 311, and CMP 240 or COE 241. Lab/Tech fee rate A applies.

**CMP 320 Database Systems (3-1-3).** (Equivalent to COE 422). Introduces the basic principles of database management systems; data models, including conceptual and logical models; translation between data models; query languages; normalization of relations; and formal database design and database application development. Prerequisite: CMP 305 or COE 311. Lab/Tech fee rate A applies.

**CMP 321 Programming Languages (3-1-3).** Introduces the fundamental principles and techniques in the design and implementation of modern programming languages. Covers key topics such as syntax and semantics, binding and scope, data types, control structures and expressions. Discusses different programming paradigms, such as imperative, functional, logic and object-oriented. Prerequisites: CMP 256 or COE 312, and CMP 305 or COE 311. Lab/Tech fee rate A applies.

**CMP 340 Design and Analysis of Algorithms (3-0-3).** Covers algorithmic analysis; algorithmic strategies; advanced searching and sorting algorithms; hashing, graph and spanning trees algorithms; topological sort; pattern matching; numerical algorithms; matrix operations; complexity classes; approximation algorithms; and basic computability theory. Prerequisites: CMP 305 or COE 311, and NGN 111 or STA 201.

**CMP 350 Software Engineering (3-1-3).** (Equivalent to COE 420). Introduces the basic principles and practices of software engineering. Emphasizes the different phases of the software development process and quality issues. Includes the following topics: software life cycle models; general design, implementation and testing issues; specification and design methodologies; model-based approaches to software design; project management; and the use of various design and development tools. Prerequisites: CMP 256 or COE 312, and CMP 305 or COE 311. Lab/Tech fee rate A applies.

**CMP 352 Human Computer Interaction (3-0-3).** Examines human behavior in relation to user interface design. Analyzes the conceptual models formed by users and evaluates user interface design. Examines multimedia interfaces; usability engineering; user interface design; and project organization. Studies interface representation and user-centered prototyping tools. Examines a number

of case studies. Requires a project. Prerequisites: CMP 256 or COE 312, and CMP 305 or COE 311.

**CMP 354 Mobile Application Development (2-3-3).** Covers mobile application development with emphasis on object-oriented programming. Includes the following topics: mobile software development kits (SDK) and application programming interfaces (API); management of sensor and location-based data, user interactions and touch events; background processes and notifications; mobile persistence storage; and broadcast receivers. Prerequisite: CMP 256 or COE 312. Lab/Tech fee rate A applies.

**CMP 397 Professional Training in Computer Science (0-0-0).** Requires a minimum of five weeks of approved professional experience. Work undertaken must be documented in a formal report to the department by the beginning of the following term. Graded as Pass/Fail. Prerequisites: Junior II standing and approval of internship coordinator for the major. Registration fee applies.

**CMP 416 Internet and Network Computing (3-1-3).** Studies the design of Internet-based clients and servers, and multi-tiered applications, network application security, distributed object computing, remote method invocation, Internet technology standards such as XML and JavaScript, and building Internet-based applications. Prerequisites: CMP 310 or COE 381, CMP 320 or COE 422, and COE 371. Lab/Tech fee rate A applies.

**CMP 418 Multicore Computing (3-0-3).** Covers models of parallel computation and software development on multicore systems. Examines problem decomposition patterns including divide-and-conquer, geometric decomposition, task parallelism and pipelining. Covers program structure patterns such as master-worker, map-reduce and fork-join. Provides hands-on experience with high-performance multicore platforms, including both Central Processing Unit and Graphics Processing Unit architectures and state-of-the-art software tools. Prerequisite: CMP 310 or COE 381.

**CMP 433 Artificial Intelligence (3-0-3).** Introduces the fundamental concepts and techniques of artificial intelligence. Studies the structure and components of intelligent agents and systems. Includes problem-solving methods, knowledge representations, formal logic and probabilistic reasoning. Examines selected advanced topics such as expert systems, planning, machine learning and approximate reasoning, as well as case studies of AI

in the real world. Prerequisite: CMP 305 or COE 311.

**CMP 435 Computer Security (3-0-3).** (Equivalent to COE 444). Covers a broad variety of topics in computer security. Includes the following topics: authentication and authorization, introduction and application of cryptography, social engineering attacks, physical security, network security, application security (web, e-mail), wireless security, operating system security, program security, security management, and ethical and legal issues in computer security. Prerequisite: COE 370 or COE 371.

**CMP 450 Object-Oriented Software Engineering (3-0-3).** Explores object-oriented analysis and design. Covers topics in object-oriented analysis and design: object-oriented requirements capturing, modeling and refinement. Includes object-oriented design, design patterns and object-oriented testing. Requires completion of a substantial object-oriented software project. Prerequisite: CMP 350 or COE 420.

**CMP 451 Formal Specification Methods (3-0-3).** Explores requirements elicitation and modeling using formal specification models and languages. Covers finite state automata, extended and communicating finite state machines, labeled transition systems, process algebra and Petri nets. Covers selected topics of the LOTOS, UML Statecharts and Z specification languages. Prerequisite: CMP 350 or COE 420.

**CMP 452 Compiler Construction (3-0-3).** (Equivalent to COE 445). Analyzes issues associated with the implementation of high-level programming languages. Covers fundamental concepts, functions and structures of compilers, and basic program optimization techniques. Includes the following topics: parsing, abstract syntax representation, semantic analysis and code generation. Discusses run-time organization and various interpretive techniques to support execution of compiled programs. Prerequisites: CMP 256 or COE 312, and CMP 305 or COE 311.

**CMP 454 Software Testing and Quality Engineering (3-0-3).** Provides an overview of software engineering. Covers software quality assurance; black-box and white-box testing; integration and regression testing; and selected topics from the following: object-oriented software testing, acceptance testing, conformance testing, diagnostic testing, test execution, distributed systems testing, test languages and test tools, GUI testing, interoperability testing, test metrics, and standards for software

quality and testing. Prerequisite: CMP 305 or COE 311; prerequisite/concurrent: CMP 350 or COE 420.

**CMP 472 Multimedia Computing (3-0-3).** Studies hardware and software components and processes involved in multimedia development. Covers digital representation and coding of multimedia building blocks (text, images, graphics, video and sound), hypertext and hypermedia concepts, compression and decompression techniques, multimedia authoring tools and building web applications. Includes selected multimedia applications. Prerequisite: CMP 310 or COE 381.

**CMP 490 Project in Computer Science I (0-3-1).** Includes faculty-supervised projects on special topics of current interest. Requires both oral and written presentations on the topics. Prerequisites: CMP 235, CMP 350 or COE 420, ENG 207 and senior standing.

**CMP 491 Project in Computer Science II (0-6-2).** Continues the work of CMP 490. Prerequisite: CMP 490.

## COE Computer Engineering

**COE 210 Programming I (2-3-3).** (Equivalent to CMP 120). Provides an overview of computer architecture and programming. Examines elements of a C++ program, statements and expressions, data types, relational and logical operators, conditional and iterative control structures. Examines file I/O, declaration and initializations of arrays and strings, pointers and function arguments. Covers program design and testing, and modular programming. Includes laboratory and programming assignments. Prerequisite: NGN 110 or sophomore standing. Lab/Tech fee rate A applies.

**COE 211 Programming II (2-3-3).** (Equivalent to CMP 220). Covers object-oriented programming concepts: constructors, destructors, objects, classes, functions and attributes, operator overloading and overriding, inheritance and polymorphism. Explores abstraction principles (interfaces, information hiding, encapsulation), templates, exception handling, I/O streams and advanced pointers. Uses the C++ programming language in laboratory work. Prerequisite: COE 210 or CMP 120. Lab/Tech fee rate A applies.

**COE 221 Digital Systems (3-3-4).** (Equivalent to CMP 210). Covers number systems, representation of information, introduction to Boolean

algebra, and combinational and sequential circuits analysis and design. Prerequisites: PHY 102 and PHY 102L. Lab/Tech fee rate A applies.

**COE 241 Microcontrollers: Programming and Interfacing (3-3-4).** Examines the basic hardware building blocks, addressing modes and instruction sets of microprocessors and microcontrollers. Introduces selection criteria for microcontrollers. Covers digital and analog input/output, timers, interrupts and serial communications, programming and interfacing. Restricted to students formally admitted to the second-year level in computer engineering or electrical engineering, and to students pursuing a minor in computer engineering or mechatronics engineering. Prerequisites: COE 210 or CMP 120 or MCE 226L, COE 221 or CMP 210, and ELE 211 or ELE 225. Lab/Tech fee rate B applies.

**COE 311 Data Structures and Algorithms (3-1-3).** (Equivalent to CMP 305). Covers design and implementation of abstract data types, lists, stacks, queues and trees. Covers recursion and runtime stacks. Introduces the complexity of algorithms and data structures. Covers searching and sorting and basic graph algorithms. Laboratory work includes substantial programming assignments. Prerequisite: COE 211 or CMP 220; prerequisite/concurrent: CMP 213 or MTH 213. Lab/Tech fee rate A applies.

**COE 312 Software Design for Engineers (1-3-2).** Covers basic software design patterns; implementation of communication interfaces including reading and writing, serial, parallel, synchronous and asynchronous streams and sockets; implementation of graphical user interfaces including menus, dialogs, windows, call-back functions and simple event-driven programming. Provides an overview of device drivers, persistence storage techniques and software component technologies. Not open to computer science students. Prerequisites: COE 211 or CMP 220, and COE 241 or CMP 240. Lab/Tech fee rate B applies.

**COE 341 Computer Architecture and Organization (3-0-3).** Covers CPU organization and microarchitectural level design; RISC design principles; memory, peripheral devices and input/output busses; DSP processor architectures; and introduction to parallel computing. Prerequisite: COE 241 or CMP 240.

**COE 370 Communications Networks (3-0-3).** Examines the principles of communications networks. Includes the following topics: OSI and TCP/IP reference models, line coding, analog

and digital modulation, transmission media, multiplexing, circuit and packet switching, routing and addressing, error and flow control, multiple access, and LAN technologies. Prerequisites: COE 221 or CMP 210, and MTH 104.

**COE 371 Computer Networks I (2-3-3).** Provides an overview of computer networks and the Internet, application layer services and protocols, transport layer services, principles of flow and congestion control, network layer addressing, forwarding and routing, link layer protocols, addressing and multiple access, computer networks security. Prerequisites: COE 221 or CMP 210, and MTH 104. Lab/Tech fee rate B applies.

**COE 381 Operating Systems (3-1-3).** (Equivalent to CMP 310). Introduces operating systems, process management, process scheduling, interprocess communications, memory management techniques, virtual memory, I/O management, deadlock avoidance, file system design and security issues. Employs examples of commonly used operating systems (e.g., Windows and UNIX). Prerequisites: COE 311 or CMP 305, and COE 241 or CMP 240. Lab/Tech rate A applies.

**COE 397 Professional Training in Computer Engineering (0-0-0).** Requires a minimum of five weeks of approved professional experience. Work undertaken must be documented in a formal report to the department by the beginning of the following term. Graded as Pass/Fail. Prerequisites: Junior II standing and approval of internship coordinator for the major. Registration fee applies.

**COE 410 Embedded Systems: Design and Applications (2-3-3).** Introduces embedded systems computing platforms and examines their basic building blocks. Covers programming and interfacing, process-controlled and time-controlled interrupt handling. Explores communication methods and real-time operating systems. Evaluates embedded systems design requirements and specifications, reviews embedded systems emerging applications. Includes laboratory work and team projects. Prerequisites: COE 241, and ELE 225 or ELE 241. Lab/Tech fee rate B applies.

**COE 420 Software Engineering (3-1-3).** (Equivalent to CMP 350). Introduces the basic principles and practices of software engineering. Emphasizes the different phases of the software development process and quality issues. Includes the following topics: software life cycle models; general design, implementation and testing issues; specification and design methodologies; model-based

approaches to software design; project management; and the use of various design and development tools. Prerequisites: COE 311 or CMP 305, and COE 312 or CMP 256. Lab/Tech fee rate A applies.

**COE 422 Database Systems (3-1-3).** (Equivalent to CMP 320). Introduces the basic principles of database management systems; data models, including conceptual and logical models; translation between data models; query languages; normalization of relations; introduction to formal database design and/or database application development. Prerequisite: COE 311 or CMP 305. Lab/Tech fee rate A applies.

**COE 423 Computer Networks II (3-0-3).** Examines selected topics in communication networks, including the following: cellular networks, wireless LAN, SONET and WDM optical networks, QoS for multimedia networks, network management and network performance issues such as error performance in noisy channels, delay models and throughput. Prerequisite: COE 370 or COE 371; prerequisite/concurrent: ELE 360.

**COE 424 Advanced Digital System Design (3-2-3).** Covers advanced digital design techniques, structured design methods for advanced digital design, case studies of complex digital circuits, hardware description languages (HDL) and PLD implementations, reliable design and testing techniques. Prerequisite: COE 341. Lab/Tech fee rate B applies.

**COE 425 Modern Computer Organizations (3-0-3).** Covers performance measures, RISC processors, datapath and control units design, memory hierarchy, pipelining, I/O systems and multiprocessors. Prerequisite: COE 341.

**COE 427 Internet Computing (3-0-3).** Introduces the underlying infrastructure of the Internet and the World Wide Web. Covers Internet protocols that support a variety of applications, including file transfer, client-server computing, peer-to-peer computing, and Internet messaging and web syndication. Covers front, middle and back-end technologies for non-trivial Internet applications. Introduces service-oriented architectures and web services and the semantic Internet. Includes and Internet programming project. Prerequisites: COE 312 and COE 370.

**COE 428 VLSI Design (3-0-3).** Covers CMOS technology, layout rules and techniques, CMOS logic and circuit design, circuit characterization and performance estimation, and design

methodologies and tools. Prerequisites: COE 221 or CMP 210, and ELE 241.

**COE 431 Industrial Computer Systems (3-1-3).** Covers microprocessor-based data acquisition units and their industrial applications, programmable logic controllers and their industrial applications, web-based monitoring and control of industrial plants. Includes a class project. Prerequisite: COE 410 or ELE 341. Lab/Tech fee rate B applies.

**COE 434 Wireless and Mobile Networks (3-0-3).** Covers wireless communications and networks, location management, routing in ad hoc wireless network, file systems issues and caching strategies. Prerequisite: COE 370 or COE 371.

**COE 444 Computer Security (3-0-3).** (Equivalent to CMP 435). Covers a broad variety of topics in computer security. Includes the following topics: authentication and authorization, introduction and application of cryptography, social engineering attacks, physical security, network security, application security (web, e-mail), wireless security, operating system security, program security, security management, and ethical and legal issues in computer security. Prerequisite: COE 370 or COE 371.

**COE 445 Compiler Design (3-0-3).** (Equivalent to CMP 452). Analyzes issues associated with the implementation of high-level programming languages. Covers fundamental concepts, functions and structures of compilers, and basic program optimization techniques. Includes the following topics: parsing, abstract syntax representation, semantic analysis and code generation. Discusses run-time organization and various interpretive techniques to support execution of compiled programs. Prerequisites: COE 311 or CMP 305, and COE 312 or CMP 256.

**COE 481 Real-time Industrial Networks (3-0-3).** Explores industrial computer network principles, commercial industrial networks, third-generation industrial networks, network layout and intrinsic safety considerations, software issues, real-time data processing and case studies. Prerequisite: COE 370 or COE 371.

**COE 482 Soft Computing (3-0-3).** Introduces theories and methods for automating the solution of problems with inexact specifications, input, processing models or output. Covers fuzzy logic, neural networks and genetic algorithms and implements examples using CAE tools. Prerequisite/concurrent: ELE 360.

**COE 490 Design Project I (0-3-1).** Introduces design methodology in computer engineering through lectures and an open-ended, in-depth design project of significance in computer engineering. Includes the design of a system process or component to achieve the functional objectives representative of problems encountered by practicing computer engineers. Requires students to work in teams in close accord with one or more faculty members to define, complete, validate and document their design project. Emphasizes engineering ethics and communication skills. Prerequisites: COE 241, COE 311 or CMP 305, COE 370, ENG 207 and senior standing.

**COE 491 Design Project II (0-6-2).** Continues the work of COE 490. Prerequisite: COE 490.

## CVE Civil Engineering

**CVE 202 Construction Materials Laboratory (0-3-1).** Focuses on the application of basic measurement techniques and instrumentation to the experimental investigation of construction materials: aggregate, bitumen, pavement materials, asphalt mixes, cement, concrete materials, concrete mixes, mild and high tensile steel testing, non-destructive testing. Includes timber and metals tests. Requires written reports covering the planning, execution, results and conclusions of the investigation. Emphasizes teamwork. Prerequisite/concurrent: CVE 221. Lab/Tech fee rate B applies.

**CVE 211 Fundamentals of Graphics and Computer Programming (2-3-3).** Covers graphical communication including lettering, drawing equipment and techniques. Includes the following topics: orthographic projections, sections and technical sketching; isometric and oblique projections; communication and documentation of engineering design through engineering drawing; computer-aided design; and elements of computer programming and problem-solving techniques. Uses computer tools in data analysis, data display and visualization techniques. Prerequisite: NGN 111. Lab/Tech fee rate A applies.

**CVE 220 Statics (3-1-3).** (Equivalent to MCE 220). Covers fundamental concepts and principles of mechanics, vectors and force systems; concepts of free-body diagram; principle of equilibrium of particles and rigid bodies in two and three dimensions; analysis of structures (trusses, frames and machines); shear and bending moment in beams, center of gravity, centroids

and area moment of inertia; and friction. Not open to mechanical engineering students. Prerequisites: PHY 101 and PHY 101L.

**CVE 221 Construction Materials and Quality Control (3-0-3).** Examines properties of construction materials (aggregate, Portland cement, admixtures, concrete and bituminous materials used in construction and maintenance of structures, roads and pavements); design of concrete mixes including admixtures; concrete trial mixes on construction site; concrete curing methods; concrete strength and durability; design of paving mixtures; and production, specifications, tests and quality control of various construction materials. Prerequisite: CHM 101; prerequisites/concurrent: CVE 202 and CVE 223.

**CVE 223 Mechanics of Materials (3-1-3).** (Equivalent to MCE 223). Covers stress and strains; mechanical properties of materials; axial load, torsion, bending and transverse shear; combined loading; stress transformation; deflection of beams and shafts; and buckling of columns. Restricted to students formally admitted to the second-year level in civil engineering. Prerequisite: CVE 220 or MCE 220 or MCE 224.

**CVE 231 Geology (3-0-3).** Covers the nature and structure of earth, formation of rocks, chemical and physical properties of minerals, weathering, volcanoes, earthquakes and tectonic movements, types of mountains and their formation, groundwater and surface water process, and rock mass instabilities. Prerequisite: NGN 110.

**CVE 240 Fluid Mechanics (2-3-3).** (Equivalent to MCE 240). Examines fundamental concepts including properties of fluids (specific gravity, viscosity and surface tension); fluid statics (pressure and its measurement, hydrostatics forces on submerged surfaces, stability of floating bodies); basic equations of motion (continuity, momentum and energy equations, Bernoulli's equation); measurement of static and stagnation pressure, velocity and flow rate in closed conduits (internal flow), laminar and turbulent flow; flow over immersed bodies (external flow); lift and drag; and dimensional analysis and dynamic similitude. Restricted to students formally admitted to the second-year level in civil engineering. Prerequisites: CVE 220 and MTH 104. Lab/Tech fee rate B applies.

**CVE 241 Elementary Surveying (3-0-3).** Introduces geodetic positions, coordinate systems, datum, basic measurement procedures and use of surveying instruments. Covers principles and practice in measuring

distance, elevation, and angles; and leveling, traverse, and earth work computations. Introduces GPS and GIS. Prerequisite: MTH 104; prerequisite/concurrent: CVE 242.

**CVE 242 Field Plane Surveying (0-3-1).** Covers fundamental principles of surveying; basic measuring procedures and use of surveying instruments; and use of surveying equipment for leveling, traverse and area/volume computations. Prerequisite/concurrent: CVE 241. Lab/Tech fee rate B applies.

**CVE 263 Urban Transportation Planning (3-0-3).** Examines urban transportation systems planning techniques: data collection, trip generation, trip distribution, factors underlying the choice of mode, traffic assignment, modeling and evaluation techniques, use of planning software packages, development of alternatives, and evaluation of civil engineering projects. Introduces Intelligent Transportation Systems (ITS). Restricted to students formally admitted to the second-year level in civil engineering, and to students pursuing a minor in urban planning. Prerequisites: CVE 241 and NGN 111.

**CVE 267 Civil Engineering Cost Analysis (3-0-3).** Covers economic analysis and evaluation of civil engineering proposals utilizing time-value and related factors, time value of money, worth of investments and economic evaluation of alternative choices, replacement and retention decisions, selection from independent projects, inflation, cost estimating fundamentals, parametric cost estimating, depreciation methods, breakeven analysis and benefit cost analysis. Restricted to students formally admitted to the second-year level in civil engineering. Prerequisites: CVE 221 and NGN 111.

**CVE 301 Theory of Structures (3-0-3).** Covers stability and determinacy of structures; force calculation in trusses; axial load, shear and bending moment diagrams for beams and frames; approximate analysis of indeterminate frames; analysis of cables and arches; deflection calculations; influence lines for determinate structures; and analysis of statically indeterminate structures using classical methods. Uses commercial software for structural analysis. Prerequisite: CVE 223.

**CVE 303 Geotechnical Engineering Laboratory (0-3-1).** Includes experiments in soil mechanics. Laboratory experiments cover geotechnical test equipment and techniques. Includes the applications of testing principles to the measurement of fundamental aspects of soil behavior

from classification to engineering properties. Emphasizes rigorous techniques to measure mechanical behavior under various boundary conditions. Provides exposure to error estimation. Utilizes standard test methods and equipment to assess physical, mechanical, chemical and hydraulic properties of soils for application in civil engineering design. Includes laboratory work on classification and engineering tests on intact and weathered rock. Prerequisite/concurrent: CVE 331. Lab/Tech fee rate B applies.

### **CVE 304 Environmental and Water Engineering Laboratory (0-3-1).**

Includes experiments in environmental engineering, hydraulic engineering and surface and ground water hydrology. Includes sampling, physical, chemical and bacteriological analysis of water and wastewater. Utilizes standard test methods and equipment for measurement of important environment parameters. Covers sampling methods and data presentation. Includes experiments in water surface run off and subsurface infiltration and flow, experiments in closed conduit, open channel tests and related hydraulic structures. Prerequisite/concurrent: CVE 351. Lab/Tech fee rate B applies.

### **CVE 310 Fundamentals of Structural Dynamics (3-0-3).**

Examines fundamental concepts of kinetics of particles and sources and types of dynamic forces in structures. Introduces earthquake nature, causes and effects; types of dynamic forces and the basic concepts of structural dynamics; equations of motion of single degree of freedom systems, free and forced vibration; response to earthquake loading. Introduces multi-degree of freedom systems and applications to civil engineering disciplines. Uses relevant computer modeling and dynamic analysis programs. Prerequisites: CVE 301 and MTH 205.

### **CVE 312 Structural Steel Design (3-0-3).**

Covers loads on structures; design criteria and philosophies; and analysis and design of structural steel elements found in buildings and bridges including tension members, compression members, beams, columns, beam columns and connections. Requires a design project and use of computer software. Prerequisite: CVE 301.

### **CVE 313 Reinforced Concrete**

**Design (3-0-3).** Covers loads on structures; design criteria and factors of safety; analysis and design of reinforced concrete beams, short columns, one-way slabs and footings using ultimate strength method; and bond development of reinforcement.

Requires a design project and use of computer software. Prerequisites: CVE 221 and CVE 301.

**CVE 325 Numerical Methods in Engineering (3-1-3).** (Equivalent to MCE 325). Covers basic concepts of computational methods; errors, accuracy and precision; numerical solution of non-linear equations; direct and iterative methods for solving systems of linear algebraic equations; numerical differentiation and integration; and interpolation, approximation and curve fitting. Includes numerical solutions of ordinary differential equations and introduces partial differential equations. Includes applications of computational methods using computers. Prerequisites: CVE 211, MTH 205 and MTH 221. Lab/Tech fee rate A applies.

**CVE 331 Geotechnical Engineering Principles (3-0-3).** Studies physical properties of soils, classification systems, soil structure and soil water systems, effective stress principle and stresses in soil due to applied loads. Includes the following topics: compressibility, consolidation and swell; permeability and seepage analysis; soil compaction; stress-strain-shear strength relationships of soils; failure criteria; direct and triaxial shear testing; and soils used in construction. Introduces lateral earth pressures. Uses computer software for geotechnical analysis. Prerequisites: CVE 223 and CVE 231; prerequisite/concurrent: CVE 303.

**CVE 333 Geotechnical Engineering Design (3-0-3).** Covers subsurface exploration and site investigation and evaluation; bearing capacity of shallow foundations in different types of soils; settlement analysis (consolidation and immediate); design of shallow foundations including footings and rafts; design of deep foundations including driven piles, shafts and drilled piers; pile load tests; end bearing and friction of deep foundations under axial loading; settlement of piles; bearing capacity and settlement of pile groups; piles subjected to lateral loading and moments; and design of pile foundations. Introduces design of retaining walls. Requires extensive use of computer-aided design in team projects. Prerequisite: CVE 331.

**CVE 341 Water Resources Engineering (3-0-3).** Introduces flow of water through pipes and channels, over the ground surface, and through the subsurface. Covers incompressible flow in pipes, methods of energy loss computations, pumps, steady flow in pipe networks, and design of pipe networks using computer applications. Includes open channel hydraulics, design of water supply canals, bridge

and culvert hydraulics, and open channel flow modeling. Introduces surface hydrology including runoff modeling. Covers subsurface flow and wells hydraulics. Includes team projects, and analysis and design using computer software. Prerequisite: CVE 240.

**CVE 351 Environmental Engineering (3-0-3).** Covers materials balance, reaction kinetics and reactor theory. Introduces water quality parameters, modeling, and source assessment; and planning and design of water and wastewater treatment methods and unit operations. Includes physical, chemical and biological phenomenon governing water and wastewater treatment steps; air quality standards and air quality treatment and control; solid waste planning and management; and hazardous waste treatment and management. Prerequisite: CHM 101; prerequisites/concurrent: CVE 304 and CVE 341.

**CVE 363 Highway Design (3-0-3).** Explores driver and vehicle characteristics, stopping and passing sight distances, cross section elements, vertical and horizontal alignment, intersections and interchanges, surface drainage, types of pavements, and principles, theoretical concepts and design of flexible and rigid pavements. Prerequisite: CVE 263.

**CVE 367 Project Estimating, Planning and Control (3-0-3).** Covers the application of cost estimating and planning techniques for construction projects. Introduces construction project management; quantity surveying; labor, material and equipment costing; indirect and general overhead costs; preparation of approximate and definitive estimates; work breakdown structures; project scheduling; network modeling; critical path method; linear scheduling, resource leveling, time-cost tradeoff; earned value; project controls and project closeout. Prerequisite: CVE 267.

**CVE 397 Professional Training in Civil Engineering (0-0-0).** Requires a minimum of five weeks of approved professional experience. Work undertaken must be documented in a formal report to the program by the beginning of the following term. Graded as Pass/Fail. Prerequisites: Junior II standing and approval of internship coordinator for the major. Registration fee applies.

**CVE 410 Computer Methods in Structural Analysis (3-0-3).** Introduces matrix algebra, degrees of freedom and system coordinates. Explores virtual work method, stiffness and flexibility methods, matrix formulation of the stiffness and flexibility methods, direct stiffness

method, introduction to finite element method, computer analysis of 2D and 3D framed structures. Emphasizes team-based learning through projects. Prerequisites: CVE 301 and MTH 221.

**CVE 411 Structural Concrete Design (3-0-3).** Introduces flooring and structural systems. Covers design of reinforced concrete members including beams subjected to torsion, two-way slabs, column under biaxial bending, slender columns, combined footings and shear walls. Introduces pre-stressed concrete, pre-stress materials and losses. Includes design of pre-stressed beams and computer analysis and design of structures. Emphasizes team-based learning through specific design projects. Prerequisite: CVE 313.

**CVE 414 Prestressed Concrete Design (3-0-3).** Covers the analysis and design requirements for prestressed concrete members; materials, prestressing systems and methods; prestress losses; flexural design for service stresses at transfer and at service; ultimate flexural and shear strength design; composite construction and secondary moments. Prerequisite: CVE 313.

**CVE 431 Fundamentals of Earthquake Engineering (3-0-3).** Introduces the fundamental principles and practical methods in geotechnical earthquake engineering. Presents basic concepts of vibratory motion, dynamics, seismology, earthquakes and strong ground motion. Develops procedures of deterministic and probabilistic seismic hazard analysis. Explores the concepts of wave propagation that are used to develop procedures for site response analysis and site amplification factors. Prerequisite/concurrent: CVE 331.

**CVE 437 Advanced Concrete Technology (3-0-3).** Covers mix design, production, applications and quality control of high performance concrete in hot and cold climates. Includes the following topics: concrete strength, durability, deterioration, maintenance and repair materials and methods; application of admixtures and cement replacement in various advanced concrete types; and the prediction of service life and cost of repair. Prerequisites: CVE 202 and CVE 221.

**CVE 441 Coastal Engineering (3-0-3).** Covers wave theories and their characteristics; wave transformation (wave refraction, diffraction and reflection); wave forces and concepts and theories of wave structure interactions; water level fluctuations (tides); coastal and ocean structures; design of seawalls, breakwater and shore protection systems; design of selected coastal structures; and hydraulic

considerations. Introduces selected coastal engineering problems. Prerequisite: CVE 341.

**CVE 442 Advanced Foundation Engineering (3-0-3).** Includes site investigation with emphasis on in-situ testing. Covers computer-aided profile data reduction and recording; interpretation of field and laboratory data; design of retaining structures, earth structures, braced cut excavations, sheet-pile walls and reinforced earth structures; offshoring; problematic soil and ground improvement; and the design of staged construction embankments. Introduces seismic behavior of ground and geotechnical earthquake engineering, and design with geotextiles. Emphasizes design of locally used geotechnical structures. Requires extensive use of computer-aided design in team-projects. Prerequisite: CVE 333.

**CVE 446 Geotechnical Dam Engineering (3-0-3).** Examines regional geoscience and seismotectonic investigations; related subsurface exploration programs; in-situ permeability testing; and seepage in composite sections, anisotropic and multi-layered materials; flow through earth dams; methods of stability analysis of soils and rocks slopes; design of dam foundations; foundation treatment; and grouting in the ground. Introduces earthquake analysis and design of earth and rockfill dams. Special considerations include liquefaction problems, sinkholes, land subsidence, foundation defects and dispersive soils. Covers compaction methods, monitoring and staged construction. Includes case studies and computer-aided design projects. Prerequisite/concurrent: CVE 331.

**CVE 450 Physical and Chemical Processes in Environmental Engineering (3-0-3).** Covers fundamental physical and chemical processes as applied within environmental engineering, including water treatment, wastewater treatment, air pollution control, and water quality management. Includes the following topics: reactor theory, mixing, gravity separation, centrifugation, adsorption, Ion exchange, disinfection kinetics, acid/base chemistry, neutralization, precipitation and corrosion. Prerequisites: CVE 304 and CVE 351.

**CVE 451 Urban Water Infrastructure Management (3-0-3).** Introduces drinking water, wastewater and stormwater infrastructures. Includes water quality management of water infrastructures, waste solids handling and disposal practices and integrity of water

infrastructures, design approach and construction of infrastructure, and operations, maintenance and renewal of water, sewer and stormwater systems. Introduces financial management, asset management, risk management and the use of information technology in water management. Prerequisites/concurrent: CVE 341 and CVE 351.

**CVE 452 Water Supply and Sewerage Engineering (3-0-3).** Introduces water demand, water supply sources, water use trends and forecasting. Includes fundamentals of surface water and groundwater collection and transportation; design of wells and water distribution systems; estimation of industrial, domestic and fire demands; water meters; and leak detection. Identifies processes for sustainable water use and economics of water supply. Covers wastewater generation, construction and maintenance of sanitary sewer and plumbing systems in buildings. Prerequisite/concurrent: CVE 341.

**CVE 456 Traffic Engineering (3-0-3).** Explores characteristics of road users and the characteristics of the traffic stream: speed-flow-density, traffic volume, traffic accidents, travel time and delay, parking, capacity and level of service of freeways, signalized intersections and at-grade intersection design. Also covers transportation models. Prerequisite: CVE 263.

**CVE 457 Airport Planning and Design (3-0-3).** Examines airport master planning, forecasting air travel demand and design of airports, including lighting, terminal facilities, noise-level control, aircraft control, airspace utilization and automobile parking. Prerequisite: CVE 263.

**CVE 463 Construction Management (3-0-3).** Examines management in the construction industry; construction delivery systems; management organizations; construction contracts; preconstruction planning and scheduling; bidding and award; contract administration and control; managing submittals, drawings, communications, progress payments, cash flow and site materials; and progress monitoring and control. Introduces construction quality and safety management. Prerequisite: CVE 367.

**CVE 467 Building Construction Materials and Methods (3-0-3).** Covers traditional and alternative building systems, the principles, materials, methods, codes and standards, and discusses their advantages and limitations. Encompasses aspects of site preparation, excavation and formwork, foundation choices, different elements of frame construction, scaffolding,

thermal and moisture protection, electrical wiring, heating ventilation and air-conditioning (HVAC), plumbing, roofing, cladding systems, and external and internal finishes. Prerequisites: CVE 211 and CVE 267.

**CVE 472 Geographic Information Systems (3-0-3).** Introduces the concept and use of Geographic Information Systems (GIS). Covers assorted topics in GIS including map generation and analysis, vector and raster GIS, spatial databases and query, spatial data display, simple spatial analysis, data in GIS, GIS capabilities, GIS data structures and sources of data, GIS tools, GIS analysis, GIS applications and GIS visualization. Prerequisites: CVE 241, CVE 242 and senior standing.

**CVE 490 Civil Engineering Design Project I (0-3-1).** Requires preparing a proposal for an open-ended, in-depth design project of civil and/or environmental engineering significance that includes the analysis and design of a civil engineering system meeting desired objectives within one, or more, of the civil engineering practice areas. Requires students to work in close accord with one or more faculty members in a team environment with emphasis on communication, independent study and ethics. The project outcomes must demonstrate that students have attained the level of competency needed for entry into the civil engineering profession. Introduces basic concepts in business, public policy and leadership skills. Prerequisites: ENG 207, PHY 102 and senior standing.

**CVE 491 Civil Engineering Design Project II (0-6-2).** Continues the work of CVE 490. Prerequisite: CVE 490.

## EGM

## Engineering Management

**EGM 361 Management for Engineers (3-0-3).** Focuses on engineers as managers. Includes the following topics: nature and functions of organizations; the tools of engineering management; engineering organizational models, including cluster and matrix organization; leadership; teamwork and creativity; personnel management; finance; communication skills; and ethical and professional standards. Introduces total quality management. Includes case studies. Prerequisites: NGN 110 and WRI 102.

**EGM 362 Engineering Project Management (3-0-3).** Covers projects in engineering organizations. Includes the following topics: project initiation; effective project management; project



life cycle, planning and scheduling; resourcing; cost estimating; and project monitoring and control. Introduces computer packages. Includes case studies. Prerequisites: NGN 110 and ECO 201.

**EGM 364 Engineering Economy (3-0-3).** Explores the economics concepts and theories of planning. Covers the bases and methods of economic analysis of engineering projects and the application of these principles in understanding economic activity of private and public engineering companies at various micro- and macroeconomic levels. Not open to civil engineering or chemical engineering students. Prerequisites: NGN 111 and ECO 201.

## ELE Electrical Engineering

**ELE 211 Electric Circuits I (3-2-3).** Examines physical concepts and mathematical analysis of electric circuits. Includes DC, transient and sinusoidal steady state circuit analysis. Covers single phase AC power analysis. Includes laboratory experiments and use of modern software tools. Prerequisites: PHY 102 and PHY 102L. Lab/Tech fee rate B applies.

**ELE 212 Electric Circuits II (3-2-3).** Covers magnetically coupled inductors and ideal transformers, frequency response analysis, Laplace transform, application of Laplace transform in circuit analysis, two port networks. Introduces three phase circuits. Includes laboratory experiments. Restricted to students formally admitted to the second-year level in electrical engineering, and to students pursuing a minor in electrical engineering or mechatronics engineering. Prerequisites: ELE 211 and MTH 205. Lab/Tech fee rate B applies.

**ELE 225 Electric Circuits and Devices (3-2-3).** Covers electrical quantities and variables; circuit principles; signal processing circuits; DC and AC circuit analysis; and diodes, transistors, operational amplifiers and digital devices. Not open to electrical engineering or computer engineering students. Prerequisites: PHY 102 and PHY 102L. Lab/Tech fee rate B applies.

**ELE 241 Electronics I (3-0-3).** Reviews semiconductor physics. Covers PN junction; diode circuits; special diodes; bipolar junction transistor (BJT); biasing, small signal analysis and design of BJT amplifiers; MOSFET transistor; biasing, simple current mirror; small signal analysis and design of MOSFET amplifiers; optoelectronic devices; and digital electronics.

Restricted to students formally admitted to the second-year level in electrical engineering or computer engineering, and to students pursuing a minor in electrical engineering. Prerequisite: ELE 211; prerequisite/concurrent ELE 241L.

**ELE 241L Electronics I Laboratory (0-3-1).** Laboratory to accompany ELE 241. Prerequisite/concurrent: ELE 241. Lab/Tech fee rate B applies.

**ELE 311 Electromagnetics (3-0-3).** Covers vector algebra, vector calculus, electrostatic boundary conditions, magnetostatic fields, magnetic materials, Maxwell's equations, electromagnetic wave propagation and transmission lines. Restricted to students formally admitted to the second-year level in electrical engineering or computer engineering, and to students pursuing a minor in electrical engineering. Prerequisites: MTH 203, MTH 205, PHY 102 and PHY 102L.

**ELE 321 Signals and Systems (3-0-3).** Covers classification and manipulation of continuous-time and discrete-time signals, linear time invariant system modeling, convolution of discrete-time and continuous signals, Fourier representation of signals (Fourier series, Fourier transform and discrete-time Fourier transform), applications of Fourier representations in signals and systems. Prerequisite: ELE 212.

**ELE 323 Signal Processing (3-0-3).** Covers signal classification and system behavior, impulse response and convolution, signals and systems analysis and representation via the Fourier transform and the Z transform, sampling of band-limited signals, and FIR and IIR Digital filters and their design. Not open to electrical engineering students. Prerequisites: ELE 211 or ELE 225, and MTH 205.

**ELE 324 Digital Signal Processing (3-0-3).** Covers treatment of sampling/reconstruction, quantization, discrete-time signals and systems, digital filtering, Z-transforms, transfer functions, digital filter realizations, discrete Fourier transform (DFT) and fast Fourier transform (FFT), finite impulse response (FIR) and infinite impulse response (IIR) filter design, and digital signal processing (DSP) applications. Prerequisite: ELE 321.

**ELE 332L Measurements and Instrumentation Laboratory (0-3-1).** Includes error analysis, linear displacement transducers, strain gauge, rotational speed measurement, capacitive and inductive transducers, temperature measurement, measurement of pressure and flow, and ultrasonic measurement systems.

Prerequisite: ELE 341. Lab/Tech fee rate B applies.

**ELE 341 Electronics II (3-0-3).** Covers differential pair, operational amplifiers, power amplifiers, review of Bode Plots, frequency response characteristics of amplifiers, feedback and stability, oscillators, active filters, timing circuits, digital to analog conversion (D/A), and analog to digital conversion (A/D). Prerequisite: ELE 225 or ELE 241.

**ELE 341L Electronics II Laboratory (0-3-1).** Laboratory to accompany ELE 341. Prerequisite: ELE 241L; prerequisite/concurrent: ELE 341. Lab/Tech fee rate B applies.

**ELE 351 Electrical Energy Conversion (3-2-3).** Covers magnetic circuits, single-phase transformer and equivalent circuit, autotransformer, basic concepts of electromechanical energy conversion, and DC and AC machines modeling and steady state analysis. Includes laboratory experiments on transformers and electrical machines. Prerequisite: ELE 212 or ELE 225 for non-electrical engineering majors only. Lab/Tech fee rate B applies.

**ELE 353 Control Systems I (3-0-3).** (Equivalent to MCE 410). Examines mathematical models of systems, feedback control system characteristics, transient response analysis, performance and stability of feedback control systems, root locus analysis, frequency response analysis and design of feedback control systems. Prerequisite: ELE 212; prerequisite/concurrent: MCE 224 or MCE 225.

**ELE 353L Control Systems I Laboratory (0-3-1).** Laboratory to accompany ELE 353. Prerequisite: ELE 353. Lab/Tech fee rate B applies.

**ELE 360 Probability and Stochastic Processes (3-0-3).** (Equivalent to MTH 360). Covers set theory, preliminaries of probability theory and random variables, stochastic processes, spectral characteristics, Markov chains and applications to systems. Prerequisites: NGN 111 or STA 201, and ELE 323 or MTH 312 or MTH 351 or prerequisite/concurrent: ELE 321.

**ELE 361 Communications (3-0-3).** Covers signals and systems concepts, communication systems and signal transmission through linear systems; continuous wave modulation schemes including amplitude modulation (AM), frequency modulation (FM) and phase modulation (PM); detection schemes for analog modulation systems and superheterodyne receivers; and noise modeling and performance of various analog modulation schemes in the

presence of noise. Includes fundamentals of digital communications. Prerequisite: ELE 321 or ELE 323; prerequisite/concurrent: ELE 360.

#### **ELE 361L Communications**

**Laboratory (0-3-1).** Laboratory to accompany ELE 361. Prerequisite: ELE 361. Lab/Tech fee rate B applies.

#### **ELE 371 Power Systems Analysis**

**(3-0-3).** Examines power system concepts and per unit quantities; transmission line, transformer and rotating machine modeling; steady-state analysis and power flow; balanced fault analysis; theory of symmetrical components; and unbalanced fault analysis. Prerequisite: ELE 351; prerequisite/concurrent: MTH 221.

#### **ELE 371L Electric Machines and Power Systems Laboratory (0-3-1).**

Laboratory to accompany ELE 371. Prerequisite/concurrent: ELE 371. Lab/Tech fee rate B applies.

#### **ELE 397 Professional Training in Electrical Engineering (0-0-0).**

Requires a minimum of five weeks of approved professional experience. Work undertaken must be documented in a formal report to the department by the beginning of the following term. Graded as Pass/Fail. Prerequisites: Junior II standing and approval of the internship coordinator for the major. Registration fee applies.

#### **ELE 432 Medical Instrumentation (3-0-3).**

(Equivalent to BME 420). Examines principles of medical instrumentation. Covers biomedical sensors and transducers; temperature, displacement, acoustical, chemical and radiation measurements; bio-potential amplifiers and signal processing; origin of bio-potentials; bio-potential electrodes; measurement of bio-potentials such as ECG, EEG and EMG; blood pressure measurements; and electrical safety. Prerequisite: ELE 341.

#### **ELE 439L Medical Electronics Systems Laboratory (0-3-1).**

(Equivalent to BME 424L). Explores data acquisition tools, medical signal processing, biopotential amplifiers, biopotentials, bioimpedance measurements, blood pressure measurements, respiratory measurements, ultrasonic measurements and electrical safety. Prerequisite/concurrent: ELE 432. Lab/Tech fee rate B applies.

#### **ELE 441 Microelectronic Devices**

**(3-0-3).** Covers conceptual and functional description of the physics, characteristics and fabrication of microelectronic devices as it applies to current and future integrated circuits (IC) and systems. Includes properties and dynamics of semiconductor

carriers, P-N junctions, MOSFETs, BJTs and modern FETs. Uses of the state-of-the-art technology CAD/CAE simulation tools, analytical techniques for device design, layout, fabrication and testing. Prerequisite: ELE 341.

#### **ELE 442 Photovoltaic**

**Semiconductors (3-0-3).** Covers semiconductor physics, energy bands and Schrodinger's equation, light emitting diodes. Photovoltaic (PV) cell operation and architecture, PV analysis and design, solar cell system engineering and manufacturing. Prerequisite: ELE 225 or ELE 241.

#### **ELE 444 Control Systems II**

**(3-0-3).** Covers state-space modeling and analysis, controllability, observability, state feedback design and pole placement, dynamic observers, output feedback design and stability analysis. Prerequisite: ELE 353.

#### **ELE 451 Wireless Communications**

**(3-0-3).** Provides an overview of wireless networks, design considerations of cellular systems, frequency reuse, multiple access interference, wireless channel characterization, Rayleigh fading, shadowing, modulation techniques for mobile radio, diversity schemes, multiple access techniques, wireless systems and standards. Prerequisite: ELE 361.

#### **ELE 452 Digital Communications**

**(3-0-3).** Covers model of digital communication systems, base-band transmission and line coding techniques, geometric interpretation of signals, band-pass transmission and digital modulation techniques, optimum detection of known signals in AWGN channels, error correcting codes, and modulation and coding trade-off. Prerequisite: ELE 361.

#### **ELE 453 Microwave Engineering**

**(3-0-3).** Examines electromagnetic plane waves, microwave transmission lines, Smith charts and stubs, microwave waveguides and components, microwave measurements and applications, and microwave generators. Prerequisite: ELE 311.

#### **ELE 454 Antennas and Wave**

**Propagation (3-0-3).** Covers radiation pattern, directivity and gain, half-power beam width and beam efficiency, antenna bandwidth, polarization, input impedance, radiation efficiency, wire antennas, loop antennas, array antennas, aperture antennas and reflector antennas. Prerequisite: ELE 311.

#### **ELE 455 Digital Image Processing**

**(3-0-3).** Covers mathematical representation and fundamentals of digital images. Also includes image enhancement, image restoration, image

compression, image segmentation and color representation. Prerequisite: ELE 323 or ELE 324.

#### **ELE 456 Pattern Recognition (3-0-3).**

Covers fundamentals of pattern recognition. Explores the following topics: Bayesian decision theory and parameter estimation, maximum likelihood estimation, linear discriminant analysis, Fisher discriminant analysis, dimensionality reduction via principle component analysis, and neural networks. Includes unsupervised learning and clustering. Prerequisites: ELE 360, COE 210 and MTH 221.

#### **ELE 457 Satellite Communications**

**(3-0-3).** Explores the technical and economical aspects of satellite communication. Includes the following topics: design considerations of low, medium and high power transponders, antenna types, and ground station design. Prerequisites: ELE 311 and ELE 361.

#### **ELE 458 Multimedia Communications and Networking**

**(3-0-3).** Provides an overview of multimedia information (text, video, audio and images). Explains the fundamentals of image and video compression. Introduces underlying concepts and principles of multimedia technologies and networking. Demonstrates basic understanding of Quality of Service (QoS) and QoS Routing network protocols, routing, operating systems and human computer interaction. Includes multimedia streaming standards and techniques over wired and wireless networks. Prerequisite/concurrent: ELE 360.

#### **ELE 458L Communications Systems Laboratory (0-3-1).**

Examines practical aspects of digital communications, antennas and microwave engineering. Topics include pulse code modulation (PCM), modulation schemes, pulse shaping, noise effects, optical fiber link, time division multiplexing, antenna parameters measurements, microwave reflection and transmission parameter measurements, and real-time DSP programming and applications. Prerequisites: ELE 311 and ELE 361; prerequisite/concurrent: ELE 324. Lab/Tech Fee Rate B applies.

#### **ELE 459 Introduction to Radar**

**Systems (3-0-3).** Explores the nature of radars. Includes the following topics: radar antennas, the radar equation, range prediction, minimum detectable signal and receiver noise, radar cross section of targets, CW and FM-CW radars, moving target indicator and pulse Doppler radars, tracking radars, remote sensing, SLARs and SARs. Prerequisite: ELE 311.

**ELE 471 Digital Control Systems (3-0-3).** Covers discrete-time system models, open-loop and closed-loop discrete-time systems, time-response characteristics, stability analysis techniques, digital controller design and implementation techniques, state-space representations of discrete-time systems, state-feedback, pole-placement design and state estimation. Prerequisites: ELE 324 and ELE 353.

**ELE 473 Industrial Instrumentation and Control (3-0-3).** Reviews measurement systems. Covers field instrumentation, input/output instruments characteristics, instruments grounding and cabling techniques, signal processing and transmission, smart sensors, data acquisition and display, general purpose control devices, programmable logic controllers and industrial controllers, and DCS, SCADA and Fieldbuses in industrial control. Prerequisite: ELE 353; prerequisite/concurrent: ELE 332L.

**ELE 476L Instrumentations and Control Systems Laboratory (0-3-1).** Reviews measurement systems. Explores programmable logic controllers programming, PC-based data acquisition and control, Electro-Pneumatic System Control and Electro-Hydraulic System Control. Prerequisites: ELE 332L and ELE 353L. Lab/Tech fee rate B applies.

**ELE 478L Design Laboratory (0-3-1).** Focuses on the development of advanced engineering solutions to contemporary challenges in a collaborative environment. Considers the complete product development cycle, including requirements specifications, system decomposition, design of subsystems and interfaces, experimentation, simulation for design validation, and system integration. Prerequisite: permission of the department. Lab/Tech fee rate B applies.

**ELE 481 Power System Protection (3-0-3).** Covers unsymmetrical fault analysis, fuses, voltage and current transducers, fundamental relay operating principles and characteristics, over current protection, comparators and static relay circuits, differential protection and its application to generators, transformers and bus bars, motor protection, system grounding, standard protective schemes for system coordination of relays. Prerequisite: ELE 371.

**ELE 482 Electric Power Distribution Systems (3-0-3).** Examines concepts and techniques associated with the design and operation of electrical distribution systems. Includes the following topics: load characteristics, distribution substations, choice of voltage levels, loss minimization and

voltage control, calculation of impedances of unbalanced three-phase systems, and analysis techniques of radial systems. Prerequisite: ELE 371.

**ELE 485 Power Electronics (3-0-3).** Covers operating characteristics of power semiconductor devices such as bipolar junction transistors (BJTs), insulated gate bipolar transistors (IGBTs), metal-oxide semiconductor field-effect transistors (MOSFETs) and Thyristors. Covers the fundamentals of power converter circuits including dc/dc converters, phase controlled ac/dc rectifiers and dc/ac inverters. Addresses practical issues in the design and implementation of power converters. Prerequisites: ELE 212 and ELE 241, or ELE 225.

**ELE 486 Electric Drives (3-0-3).** Covers the application of semiconductor switching power converters to adjustable speed DC and AC motor drives. Includes the following topics: steady state theory and analysis of electric motion control in industrial, robotic and traction systems. Prerequisites: ELE 225 or ELE 241, and ELE 351.

**ELE 487 Power Conversion in Renewable Energy Systems (3-0-3).** Includes modeling and control of renewable energy sources such as wind generation, solar panels and fuel cells; power electronics topologies and interfaces for renewable energy systems; and integration of renewable energy systems with the distribution grid. Prerequisite: ELE 371.

**ELE 488L Power Engineering Laboratory (0-3-1).** Explores various power systems and power electronics applications including issues related to power transmission and distribution and adjustable speed motor drives. Prerequisites: ELE 371 and ELE 371L. Lab/Tech fee rate B applies.

**ELE 490 Electrical Engineering Design Project I (0-6-2).** Introduces design methodology in electrical engineering through lectures and an open-ended, in-depth design project of significance in electrical engineering. The project includes the design of a system, process or component to achieve the functional objectives representative of problems encountered by practicing engineers. Realistic constraints and standards are considered in the design. Collaborative teams define, complete, validate and document their design project under the supervision of one or more faculty members. Emphasizes engineering ethics and communication skills. Prerequisites: ENG 207, senior standing and permission of the department.

**ELE 491 Electrical Engineering Design Project II (0-6-2).** Continues

the work of ELE 490. Prerequisite: ELE 490.

## **EWE** Environmental and Water Engineering

**EWE 331 Introduction to Environmental and Water Engineering (3-0-3).** Introduces different components of water resources engineering and environmental engineering, environmental sustainability, environmental and social impact assessment, and environmental risk assessment. Covers surface and groundwater hydrology, quantity and quality of water resources, water supply systems and pollution originating from air, noise and solid waste. Prerequisite: CHM 101.

**EWE 333 Water Quality and Treatment (3-0-3).** Introduces water quality criteria, standards, water sampling and testing methods. Covers pollution sources in water bodies and their impacts on aquatic life. Covers water demand, forecasting and waste generation, and provides a guide to selecting water and wastewater treatment processes. Introduces resource recovery options from water and wastewater treatment facilities. Introduces water re-use options, the importance of pretreatment and quality requirements. Prerequisite: CHM 101.

## **INE** Industrial Engineering

**INE 222 Operations Research I (3-1-3).** Introduces deterministic models in operations research with special emphasis on linear programming. Covers graphical solutions, simplex method, duality, sensitivity analysis, transportation and assignment problems, shortest path problem, CPM/PERT, maximum flow problem, and minimum spanning tree problem. Provides real modeling of various industrial problems as linear programs. Prerequisite: MTH 221.

**INE 311 Quality Engineering (3-0-3).** Emphasizes the importance of quality management and control. Deals with statistical methods relevant to process control, control charts for variables and attributes, process capability analysis, acceptance sampling plans. Introduces process improvement techniques and six sigma concepts and their applications. Prerequisites: MCE 331 and NGN 111.

**INE 322 Operations Research II (3-0-3).** Covers deterministic models

in operations research and their solution methods. Introduces integer programming formulation and branch and bound method, deterministic dynamic programming, nonlinear programming formulation and unconstrained and constrained optimization techniques. Provides real applications of integer, dynamic and nonlinear programs to industrial and engineering problems. Restricted to students formally admitted to the second-year level in industrial engineering. Prerequisite: INE 222; prerequisite/concurrent: MTH 203.

**INE 323 Stochastic Processes and Simulation (3-0-3).** Introduces stochastic processes and simulation modeling and techniques. Covers discrete and continuous Markov chains, Poisson processes, renewal reward processes, discrete event simulation, simulation languages, model verification and validation. Discusses applications to queuing, reliability and inventory systems. Prerequisites: INE 222 and NGN 111.

**INE 331 Analysis of Production Systems (3-0-3).** Covers design and analysis of production systems. Introduces the managerial concepts and quantitative techniques required in production planning and inventory control. Includes aggregate production planning, master production scheduling, material requirement planning, single and multiple products inventory control in both certain and uncertain environments. Restricted to students formally admitted to the second-year level in industrial engineering. Prerequisites: INE 222 and NGN 111.

**INE 332 Analysis of Supply Chains (3-0-3).** Presents various concepts, tools and techniques of supply chain management (SCM). Deals with development and application of supply chain decision models with special emphasis on supply network design, forecasting, supply chain performance metrics, transportation, and green supply chain. Explores various SCM initiatives such as vendor managed inventory, postponement, consignment stock and third-party logistics. Prerequisite: INE 331; prerequisite/concurrent: INE 322.

**INE 333 Facility Design and Operations (3-0-3).** Deals with principles and practices of facility design and planning and materials handling equipment for manufacturing and service systems. Includes analytical approaches in site location, facility design and layout, materials handling and storage systems. Emphasizes quantitative methods for warehouse layout and facility location theory. Prerequisite: INE 331.

**INE 397 Professional Training in Industrial Engineering (0-0-0).** Requires a minimum of five weeks of approved professional experience. Work undertaken must be documented in a formal report to the department by the beginning of the following term. Graded as Pass/Fail. Prerequisites: Junior II standing and approval of internship coordinator for the major. Registration fee applies.

**INE 413 Maintenance Engineering (3-0-3).** Covers maintenance workload analysis and calculations, capacity planning of maintenance resources, maintenance work scheduling, maintenance auditing and the measurement of maintenance operations performance, and computerized maintenance management systems (CMMS). Explores recent maintenance concepts and techniques such as predictive maintenance and enterprise asset management. Prerequisites: INE 322 and INE 323.

**INE 415 Design of Experiments (3-0-3).** Introduces the planning, design and statistical analysis of experiments. Includes analysis of variance (ANOVA), randomized block design, factorial and fractional design, random and mixed models, and response surface methods. Stresses the application of the learned techniques to various engineering problems. Prerequisite: INE 311.

**INE 416 Reliability Engineering (3-0-3).** Covers the concepts of reliability and failure analysis. Addresses hazard and reliability functions, reliability data analysis and reliability modeling. Explores recent reliability concepts and techniques such as reliability-centered maintenance. Prerequisite: INE 323.

**INE 417 Six Sigma Methodology (3-0-3).** Covers the concepts of Six Sigma methodology for both manufacturing and service organizations. Introduces lean, six sigma and the DMAIC problem-solving methodology. Discusses continuous process improvement techniques such as process definition, process flow diagrams, data collection, measurement techniques, causes of process variation, Pareto diagrams, cause and effect diagrams, and statistical-based techniques. Prerequisite: INE 311.

**INE 425 Decision Analysis (3-0-3).** Introduces judgment and decision making of individuals, groups and organizations. Includes structured decision problems, decision trees, Bayesian decision analysis, utility theory and multi-criteria decision making. Covers practical applications from various engineering areas. Prerequisite: INE 323.

**INE 431 Industrial Scheduling (3-0-3).** Examines scheduling applications in manufacturing and services. Covers practical scheduling problems such as single machine, parallel machines, flow shop, job shop and project scheduling with unconstrained and constrained resources. Discusses both exact and approximate procedures to solve such problems. Prerequisite: INE 332.

**INE 433 Logistics Engineering (3-0-3).** Provides an overview of transportation activities related to design, evaluation and performance of logistics systems. Develops an understanding of the physical and information flows in supply chains and the economic drivers of logistic choices. Includes methods to analyze and improve logistics and transportation systems, technology and infrastructure. Prerequisite: INE 332.

**INE 435 Warehousing Systems (3-0-3).** Offers an overview of the design and management of warehousing systems. Includes warehousing management systems, warehouse operations, packaging, warehouse location analysis and material handling. Prerequisite: INE 331.

**INE 439 Fundamentals of Manufacturing Systems (3-0-3).** Covers fundamentals and basic principles associated with manufacturing systems and their automation. Discusses quantitative models and metrics to describe and compare production performance in various types of manned and automated systems. Includes manned and automated single station, assembly and production lines; group and flexible manufacturing systems; material handling systems; process planning and control; and lean and sustainable manufacturing. Prerequisite: MCE 331.

**INE 450 Safety Engineering (3-0-3).** Introduces safety regulations and standards, industrial hazard avoidance concepts and techniques, and plant safety applications. Covers process safety, analytical trees and fault tree analysis, risk assessment, and emergency planning. Prerequisite: INE 311.

**INE 490 Senior Design Project I (0-3-1).** Covers problem-solving methodology through an open-ended, in-depth design project within the field of industrial engineering. Applies industrial engineering-specific techniques and concepts to problem definition, design and analysis, and evaluation of alternatives. Emphasizes teamwork, engineering ethics, and the skills and abilities necessary for entry into the industrial engineering profession. Addresses the role of

effective communication through a report presented orally and in writing. Prerequisites: ENG 207, senior standing, and permission of the department.

**INE 491 Senior Design Project II (0-6-2).** Continues the work of INE 490. Prerequisite: INE 490.

## MCE Mechanical Engineering

**MCE 216L Introduction to Engineering Drawing and Workshop (0-3-1).** Covers descriptive geometry, orthographic projections, and computer-aided drafting using commercial computer-aided design software. Introduces the use of basic machines, the development of hand skills and safety in the workshop. Covers basic hand tools, basic machining operations, welding, casting, woodwork, sheet metal work and measuring instruments. Lab/Tech fee rate B applies.

**MCE 220 Statics (3-1-3).** (Equivalent to CVE 220). Covers fundamental concepts and principles of mechanics, vectors and force systems. Topics include concepts of free-body-diagram; principles of equilibrium of particles and rigid bodies in two and three dimensions; analysis of structures: trusses, frames and machines; shear and bending moment in beams; center of gravity; centroids; area moment of inertia; and friction. Not open to civil engineering students. Prerequisites: PHY 101 and PHY 101L.

**MCE 222 Dynamics (3-1-3).** Examines fundamental concepts of kinematics and kinetics with application to motion of particles and plane motion of rigid bodies. Includes the following topics: rectilinear and curvilinear motion of particles; Newton's second law, impulse and momentum methods; impact, dynamics of systems of particles; kinematics of rigid bodies; plane motion of rigid bodies; forces and accelerations; and energy and momentum methods. Restricted to students formally admitted to the second-year level in mechanical engineering, and to students pursuing a minor in mechanical engineering. Prerequisites: MCE 220 and MTH 205.

**MCE 223 Mechanics of Materials (3-1-3).** (Equivalent to CVE 223). Covers stress and strain; mechanical properties of materials; axial load, torsion, bending and transverse shear; combined loadings; stress transformation; deflection of beams and shafts; and buckling of columns. Restricted to students formally admitted to the second-year level in

mechanical engineering, and to students pursuing a minor in mechanical engineering or mechatronics engineering. Prerequisite: MCE 220 or MCE 224 or MCE 225.

**MCE 224 Engineering Mechanics– Statics and Dynamics (3-1-3).** Covers statics and dynamics of particles and rigid bodies, vector mechanics, free body diagrams, force equilibrium systems, rectilinear and curvilinear motion, Coriolis effects, considerations of work and energy, and rigid body motion. Not open to mechanical engineering or civil engineering students. Prerequisites: MTH 104, PHY 101 and PHY 101L.

**MCE 225 Statics and Dynamics for Computer Engineers (2-1-2).** Covers particle statics and dynamics, vector mechanics, free body diagrams, two-dimensional force equilibrium systems, internal forces, moments of inertia, rectilinear and curvilinear motion, considerations of work and energy. Not open to mechanical engineering, civil engineering or electrical engineering students. Prerequisites: MTH 104, PHY 101 and PHY 101L.

**MCE 226L Computer Applications in Mechanical Engineering I (0-3-1).** Covers Boolean algebra, numbering systems, basic computer hardware, C-programming with focus on input-output, logic statements, loops, arrays, pointers and computer interfacing. Lab/Tech fee rate A applies.

**MCE 230 Materials Science (3-0-3).** Introduces material science; relationships between structure and properties of materials; atomic bonding, crystalline structures, crystal defects and imperfections; phase diagrams and equilibrium; microstructural development; properties of engineering materials; and corrosion. Prerequisite: CHM 101.

**MCE 236L Solid Modeling (0-3-1).** Covers dimensioning, an introduction to fits and tolerances, detailed and assembly drawings, solid modeling and computer-aided drafting using commercial computer-aided design software. Prerequisite: MCE 216L. Lab/Tech fee rate A applies.

**MCE 240 Fluid Mechanics (3-1-3).** (Equivalent to CVE 240). Covers fundamental concepts and properties of fluids; fluid statics, forces on planar and curved surfaces, and buoyancy; kinematics of fluid motion; conservation equations with applications; continuity, momentum and energy equations, and Bernoulli's equation; velocity and flow rate measurements; dimensional analysis and modeling; frictional losses in pipes and introduction to fluid dynamic forces on immersed bodies and turbomachinery. Restricted to

students formally admitted to the second-year level in mechanical engineering, and to students pursuing a minor in mechanical engineering or a minor in mechatronics engineering. Prerequisites: MCE 220 or MCE 224 or MCE 225, and MTH 104.

**MCE 241 Thermodynamics I (3-1-3).** (Equivalent to CHE 214). Covers basic concepts of thermodynamics, properties of matter, processes and cycles, energy transfer, first law of thermodynamics for closed systems and control volumes, second law of thermodynamics, entropy and availability analyses, applications on engineering devices, basics of vapor power and gas power cycles. Not open to chemical engineering students. Prerequisites: PHY 101 and PHY 101L.

**MCE 311 Engineering Measurements (2-3-3).** Examines basic concepts of measuring methods; static and dynamic characteristics of signals; types of errors; assessing and presenting experimental data; uncertainty analysis; measurement system behavior; sampling; signal conditioning; data acquisition; and selection and use of temperature, pressure, fluid flow, force, stress, strain, torque and power instrumentation. Includes laboratory experiments with emphasis on fluid flow experiments, temperature measurements, motion measurements and solid mechanics experiments. Prerequisites: MCE 222, MCE 240, ELE 225 and NGN 111. Lab/Tech fee rate B applies.

**MCE 321 Mechanical Design I (3-0-3).** Examines the process of materials selection in design. Explores the concepts of stress, strain and deformation analysis of solid elements as applied to mechanical design, and the analysis of long and intermediate compression members. Includes design to prevent static and fatigue failures. Covers the design of mechanical elements, including power screws, bolted and welded joints and springs. Prerequisites: MCE 223 and MCE 230; prerequisite/concurrent: MCE 236L.

**MCE 322 Mechanical Design II (3-0-3).** Covers the design of clutches, brakes and couplings; power transmission equipment (shafts, axles and spindles); flexible mechanical elements (flat and V-belts, wire ropes and chains); rolling and journal bearings; spur, helical, bevel and worm gears; and utilization of commercial computer-aided design software. Requires a design project. Prerequisite: MCE 321; prerequisite/concurrent: MCE 331.

**MCE 325 Numerical Methods in Engineering (3-0-3).** (Equivalent to CVE 325). Covers computational

methods and error analysis; numerical solutions of non-linear equations; direct and iterative methods for solving systems of linear algebraic equations; numerical differentiation and integration; regression and interpolation; numerical solutions of ordinary and partial differential equations; and initial and boundary-value problems, eigenvalue problems and applications of numerical methods in solving engineering problems using computers. Prerequisites: MCE 326L, MTH 205 and MTH 221.

**MCE 326L Computer Applications in Mechanical Engineering II (0-3-1).**

Covers Matlab programming software, input-output, loops functions, s-functions and embedded Matlab functions. Introduces Simulink Matlab toolbox for mechanical simulations. Includes a term project on interfacing a mechanical system to computer hardware. Prerequisite: MCE 226L. Lab/Tech fee rate A applies.

**MCE 328 Dynamic Systems (3-0-3).**

Covers modeling and analysis of mechanical, electromechanical and fluidic systems. Covers forced and free vibrations in single and multiple degree-of-freedom dynamic systems, energy storage and dissipation, transfer functions, state space model representations, system stability, and time domain and frequency domain analysis. Utilizes block diagram simulation tools. Prerequisites: MCE 222, MCE 326L and ELE 225.

**MCE 331 Manufacturing Processes (3-0-3).**

Covers the fundamentals of manufacturing processes, including casting, forming, welding and machining operations. Introduces basics of economics of metal cutting, statistical quality control, non-metals manufacturing and other contemporary topics in manufacturing. Restricted to students formally admitted to the second-year level in mechanical engineering or industrial engineering. Prerequisites: MCE 216L, MCE 220 or MCE 224, and MCE 230.

**MCE 332L Materials and Manufacturing Processes Laboratory (0-3-1).**

Covers experimental determination of mechanical properties of engineering materials. Includes experiments covering different manufacturing processes such as casting, welding, forming and machining. Introduces new experiments on contemporary topics in materials and manufacturing. Prerequisite/concurrent: MCE 331. Lab/Tech fee rate B applies.

**MCE 341 Thermodynamics II (3-0-3).**

Covers energy system analysis including modified power cycles, refrigeration and heat pump cycles, and air conditioning processes;

thermodynamic relations and development of thermodynamic properties; and thermodynamics of non-reacting and reacting mixtures, combustion fundamentals and chemical reaction. Restricted to students formally admitted to the second-year level in mechanical engineering, and to students pursuing a minor in mechanical engineering or a minor in renewable energy. Prerequisite: MCE 241.

**MCE 344 Heat Transfer (3-0-3).**

(Equivalent to CHE 307). Covers mechanisms of heat transfer, steady-state conduction solution in various geometries, electric network analogy, fins, numerical methods in heat transfer, transient conduction, internal and external forced and natural convection with applications to heat exchangers, and fundamentals of thermal radiation. Prerequisites: MCE 240 and MCE 241.

**MCE 345L Thermofluids Laboratory (0-3-1).**

Includes the experimental evaluation and analysis of the performance of energy systems, the thermal conductivity of solids and fluids, and the performance curves of pumps; and experiments on fluid flow, heat exchangers, cooling towers, internal combustion engines, and refrigeration and air conditioning systems. Prerequisites/concurrent: MCE 341 and MCE 344. Lab/Tech fee rate B applies.

**MCE 397 Professional Training in Mechanical Engineering (0-0-0).**

Requires a minimum of five weeks of approved professional experience. Work undertaken must be documented in a formal report to the department by the beginning of the following term. Prerequisites: Junior II standing and approval of internship coordinator for the major. Registration fee applies.

**MCE 410 Control Systems (3-0-3).**

(Equivalent to ELE 353). Covers feedback system response, feedback control system characteristics, performance and stability of feedback control systems, root-locus techniques, frequency domain analysis and design of feedback control systems. Prerequisites: MCE 311 and MCE 328.

**MCE 415L Dynamics and Control Systems Laboratory (0-3-1).**

Covers experiments on system dynamics, vibration and control systems. Includes experiments on dynamic systems' response in the time and frequency domains, and open loop and closed loop control of various mechanical systems. Uses CAD software for dynamic response and controller design. Prerequisite/concurrent: MCE 410. Lab/Tech fee rate B applies.

**MCE 416 Kinematics and Dynamics of Machinery (3-0-3).**

Explores kinematics and dynamic analysis and synthesis of linkages (displacement, velocity, acceleration and force analysis), cam-follower, gear-train systems, and balancing of rotating systems. Prerequisite/concurrent: MCE 328.

**MCE 418 Vehicle Dynamics (3-0-3).**

Focuses on the development of dynamics models and equations of motion for road vehicles. Covers analysis of tire behavior, acceleration and braking performance, road loads, and steady-state cornering models. Examines vehicle suspension design and steering system arrangement impact on vehicle performance. Prerequisite: MCE 328.

**MCE 423 Mechanical Vibrations (3-0-3).**

Provides a review of single and two degree-of-freedom vibration time and frequency response (free, transient and harmonic forcing). Includes analysis of multi-degree of freedom system (mass, stiffness and damping matrices). Covers modal analysis and frequency response functions (FRF), vibration analysis of continuous structures and finite element method. Covers vibration measurements and testing: vibration signal analysis, vibration isolation techniques, vibration measurements of active structures, including vibrating machines and rotating machinery. Prerequisite: MCE 328.

**MCE 434 Fundamentals of Computer-Aided Design and Manufacturing (2-3-3).**

Introduces computer-aided design (CAD) and computer-aided manufacturing (CAM) technologies. Includes the following topics: the role of CAD/geometric modeling, parametric representation of curves and surfaces, viewing transformations, finite element analysis and optimization techniques, computer numerical control (CNC), part programming, and introduction to rapid prototyping. Prerequisites: MCE 326L and MCE 331. Lab/Tech fee rate B applies.

**MCE 435 Advanced Mechanics of Materials (3-0-3).**

Examines basic material properties and their use in design. Includes the following topics: stress-strain-temperature relations, inelastic material behavior, energy methods, torsion of non-circular bars, non-symmetric bending of straight beams, curved beam theory and thick-walled cylinders. Prerequisite: MCE 321.

**MCE 439 Computer Integrated Manufacturing (3-0-3).**

Covers fundamentals and principles associated with computer integrated manufacturing (CIM). Includes the following topics: computer-aided

process planning (CAPP), production planning and control, programming principles of numerical controlled and computer numerical controlled systems, manufacturing systems design, manufacturing cells and flexible manufacturing systems. Prerequisite: MCE 331.

**MCE 445 Energy Systems (3-0-3).**

Covers types of power plants, thermodynamics of power plants, combined power plants, systems components, design parameters, plant evaluation, efficiency calculations methods, modifications to improve system performance, cogeneration plants, thermodynamics and economics of cogeneration plants, system equipment, practical schemes of cogeneration plants, power plant economics, power plant planning, design concepts, power plant control, burner management and environmental impact of power plants. Prerequisites: MCE 341 and MCE 344.

**MCE 446 Refrigeration and Air Conditioning (3-1-3).**

Introduces ventilation, air conditioning and refrigeration; classification of air conditioning systems; applied psychrometrics, design conditions, design of conventional and non-conventional systems; human thermal comfort and indoor air quality; load estimating fundamentals; heating and cooling loads calculations; vapor compression refrigeration cycles; refrigeration equipment and systems; energy estimation methods; air distribution systems and duct design; and system selection and design. Uses commercial software to solve various design problems. Prerequisites: MCE 341 and MCE 344. Lab/Tech fee rate A applies.

**MCE 447 Internal Combustion Engines (3-0-3).**

Covers fundamental principles of engine operation and applications, engine classifications, engine design and operating parameters, engine cycles, thermo-chemistry and fuels, air and fuel induction systems, fluid motion within combustion chambers, combustion in spark ignition engines, combustion in compression ignition engines, exhaust system, engine emission and air pollution, methods of emission control, engine friction and lubrication, and engine operating characteristics. Introduces modeling of real engine flow and combustion processes, as well as new trends in internal combustion engines. Prerequisite: MCE 341.

**MCE 450 Energy Conservation and Management (3-0-3).**

Analyzes energy systems, including fossil fuels, steam, cogeneration, waste heat recovery, refrigeration and air conditioning systems; total energy

management; energy management organization and approach; energy conservation in electrical load; lighting, building envelop, and insulation; economic energy analysis; energy auditing; monitoring and targeting; technical approaches and analyses; control; and energy management systems. Prerequisite: MCE 341.

**MCE 451 Renewable Energy Systems (3-0-3).**

Evaluates the effects of fossil fuels-based energy systems on the environment and society. Focuses on the fundamentals and main characteristics of renewable energy technologies such as solar (thermal and photovoltaic), hydropower, wind, geothermal, biomass, ocean thermal, wave, tidal and nuclear energies, as well as hydrogen systems and fuel cells. Addresses comparative environmental assessments between renewable energy systems and conventional fossil fuel systems. Considers the design of renewable/hybrid energy systems that meet specific energy demands, are economically feasible and have a minimal impact on the environment. Prerequisite: MCE 341.

**MCE 452 Fuel Cells and Hydrogen Systems (3-0-3).**

Covers the basic concepts of fuel cells and fuel cell stacks. Discusses the design of various types of fuel cells such as phosphoric acid, alkaline, proton exchange membrane, molten carbonate, solid oxide and direct methanol fuel cells. Studies the technical aspects of fuel cells with respect to thermodynamics, transport phenomena and electrochemistry. Prerequisites: MCE 341 and MCE 344.

**MCE 464 Introduction to Robotics (3-0-3).**

Gives an overview of robotics, robot coordinate systems, and direct and inverse kinematics. Introduces manipulator dynamics and force control and compliance. Includes robot sensors and control strategies, and requirement of digital control of robots. Prerequisite: MCE 328 or ELE 353.

**MCE 466 Introduction to**

**Mechatronics (2-3-3).** Introduces the application of microprocessors and digital electronics to the design and application of control systems embedded in smart products. Covers sensors, actuators, software, system hardware and interfacing for mechanical engineering applications, as well as smart product design. Prerequisites: MCE 311 and MCE 328, or ELE 332L and ELE 353. Lab/Tech fee rate B applies.

**MCE 473 Applied Finite Element Analysis (2-3-3).** Introduces Finite Element Method (FEM) and its application in different mechanical engineering problems. Includes

theoretical and computational basics of finite element method, element formulation and assembly of global matrices. Uses commercial software to solve various engineering problems. Applications include solid mechanics, 2-D steady state heat conduction and fluid problems. Prerequisite: MCE 321; prerequisites/concurrent: MCE 328 and MCE 344. Lab/Tech fee rate B applies.

**MCE 477 Composite Materials (3-0-3).**

Examines advanced composite materials and applications. Covers stress-strain relationship for an orthotropic lamina, laminate analysis, static strength of laminates, analysis of laminated beams, introduction to micro-mechanical analysis of laminae, design applications and computer program applications. Prerequisites: MCE 230, MCE 321 and MTH 221.

**MCE 482 Intermediate Fluid Mechanics (3-0-3).**

Covers basic equations of fluid mechanics; differential relations of fluid flow, Navier-Stokes equations and solution of simple flows; viscous flow, Von Karman integral method, boundary layer equations with applications; potential flow, stream function, velocity potential, plane flow past closed-body shapes, fundamentals of compressible fluid flow, isentropic flow, normal shock waves and supersonic nozzles; and friction and heat interaction (Fanno and Rayleigh flows). Introduces computational fluid dynamics and use of commercial CFD software. Prerequisites/concurrent: MCE 325, MCE 345L and MTH 203.

**MCE 485 Hydraulics of Pipeline Systems (3-0-3).**

Covers fundamentals of piping systems, hydraulic and mechanical design considerations, pipe sizing and selection, constant and telescopic wall thickness, pipe network design, pipeline economics, transient pipe flow, pumps performance, affinity laws, cavitations and net positive suction head. Introduces drag reduction techniques, thermal hydraulics and natural gas transmission. Prerequisite: MCE 344.

**MCE 487 Turbomachines (3-0-3).**

Explores classification of turbomachines, dimensional analysis and model testing; basic equations of fluid mechanics and Euler's theory; incompressible flow turbomachines (centrifugal and axial flow pumps), system matching, performance characteristics and cavitation; hydraulic turbines; compressible flow turbomachines (centrifugal and axial flow compressors), reaction ratio, stage loading, stage efficiency, surge and choking limits; and axial flow gas turbines. Prerequisites: MCE 240 and MCE 341.

**MCE 488 Introduction to Computational Fluid Dynamics (CFD) (2-3-3).** Explores discretization techniques and solution algorithms; finite difference solutions to classical model equations pertinent to wave phenomena, diffusion phenomena, or equilibrium, boundary and initial conditions and stability considerations, application into equations of fluid mechanics and heat transfer, using software packages in solving CFD problems. Prerequisite: MCE 325; prerequisite/concurrent: MCE 344. Lab/Tech fee rate B applies.

**MCE 490 Design Project I (1-0-1).** Addresses the role of design methodology in mechanical engineering through an open-ended, in-depth design project. Includes the design, manufacturing and testing of a complete system using relevant professional standards. Covers concept generation techniques and design for manufacturability, reliability and sustainability. Considers alternative design evaluation and selection techniques, collaborative design and product dissection. Focuses on the economic impact of design decision. Emphasizes the role of intellectual property, ethical issues, and verbal and written communication skills in mechanical engineering. Prerequisites: MCE 311, MCE 322, MCE 345L, ENG 207 and senior standing.

**MCE 491 Design Project II (0-6-2).** Continues the work of MCE 490. Prerequisite: MCE 490.

## NGN Engineering

**NGN 110 Introduction to Engineering and Computing (1-2-2).** Examines common concepts in the engineering and computer science disciplines at AUS. Introduces word processing and spreadsheet software, team concepts, the roles and responsibilities of engineers and computer scientists, problem solving, principles of the design process, written and oral communication, professional ethics and sketching. Includes selected laboratories in different disciplines. Requires a design project meeting desired objectives in a team environment. Prerequisite: admission to the College of Engineering.

**NGN 111 Introduction to Statistical Analysis (2-1-2).** Covers descriptive statistics, graphical and numerical representation of information, measures of location and variation, elementary probability theory, and discrete and continuous probability models. Introduces statistical inference (estimation and hypothesis testing). Includes simple regression and

correlation, designing experiments and use of statistical software. Presents examples from the engineering and related disciplines. Not open to students who have completed QBA 201 or STA 201 or STA 202. Prerequisite/concurrent: MTH 103.

**NGN 497 Professional Experience in Engineering (3-0-3).** Requires a minimum of 10 continuous weeks of approved professional experience related to the student's major. Students are placed in industry, working full-time under the supervision of an academic coordinator and an industry mentor. Restricted to College of Engineering students. Prerequisites: junior II standing and approval of internship coordinator for student's major.

## PET Petroleum Engineering

**PET 305 Fundamentals of Petroleum Operations (3-0-3).** Introduces fundamental principles of oil and gas production and recovery. Includes the following topics: petroleum geology, fluid zonation in the traps and reservoir statics, description of drilling, production and reservoir engineering, petroleum fluid properties, and petrophysics. Prerequisite: CHE 300 or CVE 240 or MCE 240.

**PET 365 Petroleum Reservoir Engineering (3-0-3).** Introduces concepts and methods of petroleum reservoir engineering. Covers reservoir energies and drive mechanisms, general material balance equation (MBE), and MBE applications to oil and gas in place estimations and reservoir performance evaluation, decline curve analysis, single-phase reservoir fluid flow fundamentals, and applications to reservoir/well performance, water influx, and two-phase flow in porous media and immiscible displacement fundamentals. Prerequisites: PET 305 and MTH 205.

**PET 375 Petroleum Drilling and Production (3-0-3).** Covers rotary drilling system fundamentals, drilling fluids, formation pressures and casing setting, well completions, inflow performance modeling and causes of low productivity, wellbore flow mechanics and well deliverability, and well productivity improvement. Prerequisite: MTH 205; prerequisite/concurrent: PET 305.

**PET 385 Formation Evaluation (3-0-3).** Explores well testing and well logging as formation evaluation techniques. Covers topics such as solutions to reservoir fluid flow equations, including skin and storage; dimensionless variables and the

superposition principle; interpretation of pressure build up, drawdown and interference tests using manual and application software techniques; logging environments; permeable zone logs (SP and Gamma Ray); resistivity log; porosity logs (neutron, density and acoustic); Nuclear Magnetic Resonance (NMR) log; and interpretation of various log-suits using manual and application software techniques. Prerequisite: PET 305.

**PET 414 Enhanced Oil Recovery (3-0-3).** Introduces reservoir screening criteria for enhanced oil recovery methods, immiscible displacement, mobility control processes, thermal recovery, miscible displacement and chemical flooding methods. Prerequisite: PET 305.

## Independent Study

Independent study is the umbrella term used to label two types of independent work: independent course and directed study.

Students are allowed to take one independent study. A second independent study could be approved by the student's associate dean for graduation purposes only.

**Independent Course (1 to 4 credits).** A course listed in the catalog but offered in an independent study format. The course is coded using the course number in the catalog.

Students are not allowed to repeat courses in an independent course format.

To be eligible to apply for an independent course, students must be in good standing.

**Directed Study (1 to 4 credits).** An investigation under faculty supervision beyond what is offered in existing courses. Prerequisites: minimum CGPA of 3.00, Junior II standing and consent of the instructor.

Directed study courses are numbered as 396 or 496 courses. The three-letter course prefix reflects the field of study of the course (e.g., directed study courses in chemical engineering are coded as CHE 396 or CHE 496).

For more details on independent study, please refer to Registration in Independent Study Courses in the Academic Policies and Regulations section of this catalog.



## Interdisciplinary Study Courses

Interdisciplinary study (IDS) courses provide opportunities for students to benefit from collaboration by faculty from a range of disciplines. Courses with an IDS course code are normally co-taught by two or more faculty members and focus on topics beyond those offered in existing courses. Prerequisites: topic specific. Lab/Tech fee may apply.

IDS courses at the 300 level require sophomore standing or above; 400-level IDS courses are restricted to junior standing and above.

Descriptions of particular IDS courses are made available during registration.

## Special Topic Courses

### **Special Topic (1 to 4 credits).**

Presents a theoretical or practical topic proposed by the faculty beyond what is offered in existing courses. Can be repeated for credit. Prerequisites: topic specific. Lab/Tech fee may apply.

Special topic courses are numbered as 194, 294, 394 or 494 courses. The three-letter course prefix reflects the field of study of the course.

Special topic courses at the 300 level require sophomore standing or above; 400-level special topic courses are restricted to junior standing and above.

Descriptions of particular special topic courses are made available during registration in the college/school offering the course.

# School of Business Administration

## ACC

## Accounting

**ACC 201 Fundamentals of Financial Accounting (3-0-3).** Introduces the principles and concepts underlying financial statements. Includes an introduction to the accounting profession, control, concepts, business entities and all elements of basic financial statements. The additional sessions consist of discussion and application of the principles and concepts of the course. Prerequisite: MTH 101 or MTH 103 or MTH 111.

**ACC 202 Fundamentals of Managerial Accounting (3-0-3).** Introduces the principles and concepts underlying managerial accounting. Course includes an introduction to management accounting information and cost accounting. Prerequisite: ACC 201.

**ACC 230 Accounting and Finance for Non-Business Majors (3-0-3).** Introduces basic concepts of financial accounting, managerial accounting and finance to non-business majors. Provides a basic understanding of the information contained in financial statements without undertaking an extensive study of accounting and financial principles. Not open to SBA students. Prerequisite: MTH 100 or MTH 101 or MTH 103 or MTH 111.

**ACC 301 Intermediate Financial Accounting I (3-0-3).** Begins a two-course sequence providing an in-depth study of principles and elements associated with financial statements. Includes financial statement analysis, income measurement, valuation of assets and equities, and generally accepted accounting principles. Prerequisite: ACC 202.

**ACC 302 Intermediate Financial Accounting II (3-0-3).** Continuation of Intermediate Financial Accounting I; focuses on accounting for long-term liabilities, stockholder's equity, cash flow analysis and international financial statements. Prerequisites: ACC 301 and FIN 201.

**ACC 303 Cost Accounting (3-0-3).** Covers the uses of accounting data for planning control and decision-making. Topics include budgets and cost concepts, techniques and behavior. Prerequisite: ACC 202.

**ACC 305 Income Tax I (3-0-3).** Introduces the US federal income tax system as it applies to personal income taxes and examines the legislative, judicial and regulatory bases of the

code, as well as exposure to the tax accounting concepts of income, examinations, exclusions, losses, expenses, credits, property transactions and AMT as they apply to theory and practice. Prerequisite: ACC 301.

**ACC 306 Income Tax II (3-0-3).** Introduces the US federal income tax system as it applies to corporations, partnerships, estates and trusts. Includes a comparison and contrast of personal and corporate taxation, as well as an examination of corporate organization and capital structure, distributions and reorganizations and accumulated earnings rules. Prerequisite: ACC 301.

**ACC 310 Analysis of Financial Statements (3-0-3).** (Equivalent to FIN 310). Provides the skills needed to read, analyze and interpret the information contained in a company's financial statements. Integrates accounting and financial principles and discusses the ethics of both professions. Not open to BSBA accounting major students. Prerequisites: ACC 202 and FIN 201.

**ACC 360 Accounting Information Systems (3-0-3).** Provides an overview of current accounting information systems concepts, web technology, online auditing issues and contemporary accounting issues. Includes the following topics: e-business, computer hardware and software issues, accounting cycles, systems development, computer crime, auditing and expert systems. Prerequisites: ACC 202 and junior standing.

**ACC 370 Accounting in Islamic Financial Institutions (3-0-3).** Focuses on the accounting and reporting practices in Islamic financial institutions. Explores the theoretical basis of Islamic accounting standards and regulations, and accounting concepts and principles underlying these standards. Not open to BSBA accounting major students. Prerequisites: ACC 201 and junior standing.

**ACC 401 Advanced Financial Accounting (3-0-3).** Covers theory and practices of accounting for partnerships, business combinations and consolidated financial statements, and advanced topics in financial accounting. Prerequisite: ACC 302.

**ACC 410 Auditing (3-0-3).** Studies auditing theory, generally accepted auditing standards, audit procedures, audit reports and the responsibilities and ethics of the auditing profession.

Includes the following topics: risk, evidence, internal controls, sampling, audit testing, subsequent events, professional liability, reporting statutory provisions, compilation and review services, and reporting under government auditing standards. Prerequisite: ACC 302.

**ACC 413 Introduction to Accounting for Government and Non-Profit Entities (3-0-3).** Introduces accounting practices and fund management planning, financial control, and the usefulness of accounting data for evaluating program inputs and outcomes. Prerequisite: ACC 301.

**ACC 420 International Accounting Standards (3-0-3).** Introduces comparative global business; international accounting systems; harmonization of accounting standards; international financial reporting and disclosure issues; international financial statement analysis; and international auditing, tax, and management accounting issues. Prerequisite: ACC 301.

## BIS

## Business Information Systems

**BIS 101 Business Information Systems (3-0-3).** Provides technical proficiency and expertise in office tools as well as important computer skills. Presents analytical techniques and essential knowledge to enhance productivity in higher-level courses. Enhances the ability to apply advanced features of spreadsheet software to business case assignments. Not open to computer science and computer engineering students. Prerequisite: any AUS math placement test or SAT Subject Test–Math level 1 with a minimum score of 600, or prerequisite/concurrent: any preparatory math course. Lab/Tech fee rate A applies.

## BLW

## Business Legal Issues

**BLW 301 Business Law (3-0-3).** Examines business legal issues such as legal concepts, philosophy and functions of court systems. Surveys contracts, sales, agents, legal forms of business and the regulation of businesses. Focuses on US law but also considers international and global legal

perspectives. Prerequisites: ACC 201 and ECO 202; prerequisite/concurrent: ENG 204 or ENG 208.

**BLW 303 Legal Issues in Management (3-0-3).** Continues and builds on the introductory business law course. Examines the following areas of law: professional liability, including directors, officers and shareholders; regulation of employment including labor law and employment discrimination, comparative international law and other special topics. Prerequisite: BLW 301.

## BUS Business

**BUS 100 Introduction to Business (3-0-3).** Introduces the basic principles of business, including the economic setting in which business operates, types of business ownership and business structure. Explains the role of management, marketing, finance and accounting, as well as the distribution of goods and services. Explores the evolution of business enterprise. Not open to SBA students or design management students. Prerequisite/concurrent: WRI 101.

**BUS 300 International Study Tour (3-0-3).** Provides a firsthand opportunity to learn by experiencing the world of international business. Includes a visit to the headquarters of multinational organizations and seminars given by the professionals from these corporations. Prerequisites: good academic standing, and junior standing or sophomore standing with permission of instructor.

**BUS 497 Business Practicum (3-0-3).** Provides opportunities for application of theory to actual problems in real-life business settings. Enhances research, writing, technical, presentation and soft skills through practical experience. Reinforces objective-setting and performance measurement through a structured reporting process. Requires a minimum of 12 weeks (480 hours) of on-the job experience with an approved organization. Graded as Pass/Fail. Repeatable up to 6 credits. Prerequisites: junior II standing and permission of internship manager.

## ECO Economics

**ECO 201 Principles of Microeconomics (3-0-3).** Introduces the basic principles of microeconomics and their applications: supply and demand, operation of markets, consumer and enterprise behavior, competition and monopoly, income

distribution and international trade. Prerequisite: ELPT score of 1 or EPT score of 4 or WRI 001.

**ECO 202 Principles of Macroeconomics (3-0-3).** Introduces the basic principles of macroeconomics, stressing national income, unemployment, inflation, economic growth, business cycles and open economies. Prerequisite: ELPT score of 1 or EPT score of 4 or WRI 001.

**ECO 301 Intermediate Microeconomics (3-0-3).** Studies consumer and firm optimization. Emphasizes applications to different market structures, in addition to uncertainty and asymmetric information. Prerequisites: ECO 201, ECO 202, MTH 102 or MTH 103 or MTH 111, and WRI 102.

**ECO 302 Intermediate Macroeconomics (3-0-3).** Examines macroeconomic theory and its application to factors that determine the level of income, employment, output and prices in an economic system. Emphasizes stabilization policies and empirical applications. Prerequisites: ECO 201, ECO 202 and WRI 102.

**ECO 305 International Trade (3-0-3).** Introduces the economics of international trade, including why countries trade, commercial trade policies and their effects, growth and international trade, and multinational firms. Prerequisites: ECO 201, ECO 202 and WRI 102.

**ECO 306 International Monetary Economics (3-0-3).** Starts with basics of international capital flows, exchange rate determination and the analysis of the international monetary system. Uses theory to analyze contemporary issues such as globalization and liberalization of capital flows. Addresses the stability of foreign exchange markets with reference to currency crises in emerging markets. Prerequisites: ECO 201, ECO 202 and WRI 102.

**ECO 310 Development Economics (3-0-3).** Studies the economic transformation of developing countries. Examines both standard models of economic growth and micro-level foundations of economic development; among the latter are the role of institutional arrangements, the absence of fully functioning markets and the functional role of income distribution. Prerequisites: ECO 201, ECO 202 and WRI 102.

**ECO 312 Economics of Labor (3-0-3).** Provides an economic analysis of employment and wages, including the economics of education, unemployment, labor unions,

discrimination and income inequality. Prerequisites: ECO 201, ECO 202 and WRI 102.

**ECO 315 Economics of the Middle East (3-0-3).** Provides a detailed historical and contemporary investigation of the Middle Eastern economies, including the role of oil in economic growth, trade relations, development patterns, labor and financial flows. Prerequisites: ECO 201, ECO 202 and WRI 102.

**ECO 320 History of Economic Thought (3-0-3).** Analyzes the development of economic theory. Uses specific historical contexts and also explores the major figures and schools in economic thought. Prerequisites: ECO 201, ECO 202 and WRI 102.

**ECO 321 Comparative Economic Systems (3-0-3).** Examines the major economic systems with emphasis on implications for resource allocation, income distribution and economic growth. Uses an evolutionary/institutional approach to examine the unique cultural and historical factors that shape a particular economy. Examines and compares various economic systems beginning with those of ancient Rome and Medieval England and then moves toward the modern social economies present today. Prerequisites: ECO 201, ECO 202 and WRI 102.

**ECO 325 Public Economics (3-0-3).** Examines the microeconomic theory as a framework for understanding the problems of public managers. Considers resource scarcity, consumer behavior, production costs, economics of efficient management, operation of product markets under competition and monopoly, labor markets, market failure and public goods. Prerequisites: ECO 201, ECO 202 and WRI 102.

**ECO 326 Economics and the Law (3-0-3).** Examines property rights, contract rights and liability rules. Analyzes both efficiency and fairness. For efficiency, emphasis is placed upon the incentive effects that legal rulings create for economic behavior in the future. Analyzes fairness mostly in terms of the effects that legal rulings have upon the distribution of wealth. Prerequisites: ECO 201, ECO 202 and WRI 102.

**ECO 327 Industrial Organization (3-0-3).** Studies the theory and the empirical evidence concerning the organization of firms and industries. Focuses on industry structure, on conduct and performance, and on more recent advances based on microeconomic theory, including transactions cost economics, game theory, strategic behavior and

information theory. Prerequisites: ECO 201, ECO 202 and WRI 102.

### **ECO 330 Money and Banking**

**(3-0-3).** Examines the role of money and credit in the economy. Includes the following topics: the structure and operations of commercial banks, central banking and the operation of monetary policy, non-banking institutions and the structure of financial markets, and elements of monetary theory. Prerequisites: ECO 201, ECO 202 and WRI 102.

### **ECO 333 Islamic Economics**

**(3-0-3).** Introduces the positive and normative principles of Islamic economics from a historical and history of thought perspective. Examines the role of the state in economic activity, comparing the Islamic economic system with contemporary systems such as capitalism and Marxism. Prerequisites: ECO 201, ECO 202 and WRI 102.

### **ECO 340 Economics of Real Estate**

**(3-0-3).** Examines the spatial pattern of economic activities and commercial and residential real estate in urban areas. Analyzes the markets for real estate and related public policies using urban economic theories and financial economic tools. Considers how demand for space varies by location characteristics, such as transportation costs, schooling, crime and pollution. Explains the concepts of real estate investments and the supply of residential and commercial real estate by emphasizing the durability and reusability of real estate properties. Prerequisites: ECO 201, ECO 202 and sophomore standing.

### **ECO 345 Public Choice (3-0-3).**

Explores a range of economic theories that contribute to an understanding of the scope and limits of collective decision making in a mixed economy. Includes welfare economics, transactions costs and the new institutional economics. They are used to identify issues where collective decision making is intrinsic and to offer insight into the design and assessment of such decision-making processes. Prerequisites: ECO 201, ECO 202 and WRI 102.

### **ECO 351 Introduction to**

**Econometrics (3-0-3).** Reviews the theory of statistics and statistical techniques. Emphasizes the application of statistical models to economics. Covers regression analysis and estimation of economic models, including violations of the basic assumptions of the regression model, dummy variables, analysis of variance, cross section and time series data analysis, and index numbers. Prerequisites: ECO 201, ECO 202, WRI 102 and any one of QBA 201, NGN 111, STA 201 or STA 202.

### **ECO 360 Economics of Multinational**

**Corporations (3-0-3).** Examines the origin and development of multinational firms, recent trends and facts concerning the flow of foreign direct investment and the effect of the activities of multinational corporations on both parent and host countries. Prerequisites: ECO 201, ECO 202 and WRI 102.

### **ECO 401 Managerial Economics**

**(3-0-3).** Managerial decision making is considered from the perspective of the economic theory of the firm. Integrates the traditional topics in the theory of the firm, production, cost and price with finance and internationalization of firms, product markets, financial markets and production. Prerequisite: ECO 301.

### **ECO 404 Economics of Environmental and Natural Resources (3-0-3).**

Deals with the economic issues that arise in the use of environmental resources. Begins with an economic analysis of the contention that markets fail to adequately control environmental pollution. Addresses alternative policy mechanisms that have been proposed for control on environmental pollution. Covers topics such as water and air pollution, global climate change, temperate and tropical forest management, fisheries, biodiversity and habitat preservation. Prerequisites: ECO 201, ECO 202 and WRI 102.

### **ECO 410 Urban and Regional**

**Economics (3-0-3).** Analyzes the economics of the location and growth of urban and regional areas with emphasis on public policy issues. Includes discussion of land-use patterns, measurements and change in regional economic activity, and urban problems such as transportation, housing, poverty and crime. Prerequisite: ECO 301.

### **ECO 412 Monetary Economics**

**(3-0-3).** Emphasizes an intermediate to advanced treatment of topics related to money, banking, monetary theory and monetary policy in the context of fully specified monetary economies with microeconomic foundations. Prerequisites: ECO 301 and ECO 302.

### **ECO 451 Advanced Econometrics**

**(3-0-3).** Continues the development of statistical methods in economics initiated in ECO 351. Covers nonlinear models, limited dependent variables, endogeneity and panel data. Treats both theoretical underpinnings of models and also estimation using computer software. Emphasizes interpretation of econometric results and limits to causal inference. Prerequisite: ECO 351.

### **ECO 452 Economic Forecasting**

**(3-0-3).** Constructs, estimates, and tests univariate and multivariate forecasting models. Evaluates forecasts in terms of unbiasedness, efficiency and predictive information content. Prerequisite: ECO 351.

### **ECO 495 Senior Seminar in**

**Economics (3-0-3).** Investigates special topics in economics chosen by the instructor. Prerequisites: ECO 301, ECO 302, ECO 351, and Junior II standing.

## **FIN**

## **Finance**

### **FIN 201 Fundamentals of Financial Management (3-0-3).**

Introduces business finance, including global aspects; acquisition and use of short-term funds and long-term capital; overview of money and capital markets; management of assets, liabilities and capital accounts; financial analysis and time value of money; cash operation and long-range budgeting; leasing; corporate securities; dividend policy; and cost of capital. Prerequisites: ACC 201, MTH 102 or MTH 103 or MTH 111, and QBA 201 or NGN 111 or STA 201 or STA 202.

### **FIN 304 Real Estate Investing**

**(3-0-3).** Covers terminology, legislation, principles and analytical techniques pertaining to financing of real estate. Includes the perspective of lender, residential borrower and income property borrowers. Prerequisites: ACC 202, FIN 201 and WRI 102; prerequisite/concurrent: SCM 202.

### **FIN 306 Wealth Management for**

**Individuals (3-0-3).** Introduces insurance and risk management and personal financial planning with specific applications to property, disability, health and life insurance. Also covers aspects of financial planning including mutual funds, retirement planning, offshore banking and investment objectives. Prerequisites: ACC 202, FIN 201 and WRI 102.

### **FIN 310 Analysis of Financial**

**Statements (3-0-3).** (Equivalent to ACC 310). Provides the skills needed to read, analyze and interpret the information contained in a company's financial statements. Integrates accounting and financial principles and discusses the ethics of both professions. Not open to BSBA accounting major students. Prerequisites: ACC 202 and FIN 201.

### **FIN 320 Banking (3-0-3).**

Provides an overview of the banking industry with an emphasis on commercial bank management. Specific topics include the duration and term structure of interest rates, asset/liability

management, and risk and credit management. Prerequisites: FIN 201 and WRI 102; prerequisite/concurrent: MIS 201.

**FIN 330 Investments (3-0-3).**

Covers investment objectives, mechanics of buying and selling financial assets, and portfolio management. Focuses on risk versus return in investment theory, as well as on constructing and managing real-time hypothetical investment portfolios. Prerequisites: ACC 202, FIN 201 and WRI 102

**FIN 350 Mergers and Acquisitions (3-0-3).**

Covers mergers and acquisitions along several dimensions: motivations of mergers, valuation of targets, estimating synergies, and other financial, strategic and legal aspects of mergers. Examines hostile mergers and international cross border transactions. Prerequisite: FIN 201.

**FIN 360 Behavioral Finance (3-0-3).**

Studies the impact of psychology and human emotions on investment and financial decision-making processes. Examines the validity of the traditional assumptions of market efficiency and individual rationality so pervasive in the finance literature. Prerequisite/concurrent: FIN 330.

**FIN 370 Fundamentals of Islamic Finance (3-0-3).**

Studies the origin and contemporary development of Islamic banking and finance. Examines case studies of the experience of Islamic finance in several countries. Explores current and future challenges to Islamic finance in an integrated world economy. Prerequisite: ECO 330 or FIN 201.

**FIN 375 Trading and Financial Markets (3-0-3).**

Relies on market trading and computer intensive industry tools to integrate theory into practice. Covers a broad base of financial assets including equities, derivatives (options and futures contracts) and fixed income instruments. Centers around computerized simulations, interactive discussions, Excel programming, decision-making under pressure and research-based assignments. Focuses on the comprehensive application of acquired financial knowledge in a stimulating, fast-paced, real-world setting. Prerequisite: FIN 330.

**FIN 389 Advanced Financial Modeling (3-0-3).**

Addresses computer skills in finance to support decision making by financial managers. Emphasizes software applications in the areas of time-value of money, capital budgeting, cost of capital, valuation and rates of return, risk, portfolio diversification and option hedging. Prerequisite: FIN 330.

**FIN 401 International Finance (3-0-3).**

Covers financing of international trade and investment, foreign exchange markets and exchange rate determination, and balance of payments. Focuses on international financial management within the firm. Prerequisites: FIN 330 and SCM 202; prerequisite/concurrent: FIN 320.

**FIN 402 Futures and Options (3-0-3).**

Covers conceptual and practical aspects of the functioning of speculative markets for various derivatives. Examines futures, options, swaps, and other products. Prerequisites: FIN 330 and SCM 202; prerequisite/concurrent: FIN 320.

**FIN 404 Portfolio Management (3-0-3).**

Provides the theoretical and operative framework for portfolio and advanced investment management. Requires the application of portfolio models and concepts to live market data to perform analytical skills and evaluate equities, fixed income securities and other investments. Covers asset pricing, diversification and other financial models in detail. Prerequisites: FIN 330 and SCM 202.

**FIN 406 Investment Banking (3-0-3).**

Covers the role of investment banks, the functions performed by investment banking professionals, and the strategic issues confronting the industry. Prerequisites: FIN 320, FIN 330 and junior standing.

**FIN 430 Financial Forecasting (3-0-3).**

Illustrates how to use statistical models and technical analysis to forecast future movements of financial variables such as stock prices, exchange rates and interest rates. Prerequisite: FIN 201.

**FIN 440 Asset Valuation (3-0-3).**

Covers concepts and techniques for analyzing financial decisions and asset valuation. Topics include valuation techniques for various asset classes, forecasting and estimation of free cash flow, estimating the cost of capital and real options. Valuation is applied to single and multiple projects, individual businesses, subsidiaries and diversified companies. Prerequisite: FIN 330; prerequisite/concurrent: FIN 320.

**FIN 450 Case Studies in Corporate Finance (3-0-3).**

Emphasizes the case study approach to intermediate financial management (corporate finance). Includes the following topics: capital budgeting, corporate governance, mergers, capital structure, dividend policy and short-term financial management. Prerequisites: FIN 320 and FIN 330.

## MGT

## Management

**MGT 201 Fundamentals of Management (3-0-3).**

Surveys the basic concepts and ideas of organizational behavior and the various functions and activities of the manager through global perspective. Includes the following topics: plans, goals, decision making, change, motivation, human resources, ethics and social responsibility, groups and teams, organization design, leadership and control. Prerequisite/concurrent: WRI 102.

**MGT 300 Management of Public Organizations (3-0-3).**

(Formerly PBA 300). Introduces the challenges and problems of management in public organizations, including the need for effective leadership, appropriate motivational techniques and various communication styles. Positions the public agency in an environment of competing interests, politics, power relations and disjointed policy processes. Explores current trends in balancing the need for efficiency with a desire to be responsive to the needs of the public. Considers alternative perspectives on the role of public administrators. Prerequisite: MGT 201 or UPL 201; prerequisite/concurrent: ENG 203 or ENG 204.

**MGT 301 Organizational Behavior (3-0-3).**

Takes an in-depth look at human behavior in organizations. Incorporating current management theory and research, the course looks into the factors that influence individual and group performance. Topics may include perception, personality, attitudes, values, motivation, decision making, leadership, power and politics, conflict and negotiation, groups and culture. Prerequisite: MGT 201; prerequisite/concurrent: ENG 203 or ENG 204.

**MGT 302 Managing Human Resources (3-0-3).**

Examines the foundations, functions and activities involved in the managing of human resources, striking a balance between current theory and practice. Includes the following topics: manpower planning, recruitment and selection, policy and procedures, performance appraisal, compensation and benefits, training, safety and industrial relations. Prerequisites: MGT 201 and ENG 204.

**MGT 303 Management and Leadership Development (3-0-3).**

Focuses on the necessary skills and abilities of the successful leader and manager. Introduces success factors and addresses the assessment and development of managerial and leadership skills throughout the course. Prerequisites: MGT 201 and ENG 204.

**MGT 305 International Business (3-0-3).** Examines the nature and scope of international trade and investment, international institutions, the international monetary system and exchange markets and some of the major issues involved in the functional aspects of international business and management. Prerequisites: MGT 201, and ENG 203 or ENG 204.

**MGT 306 Cross-Cultural Management (3-0-3).** Introduces culture as an important variable in international management and examines its impact on organizations, strategy, negotiations, management of human capital, leadership, team building and ethics. Applies a metaphor approach to explore key differences among cultures and examine their relevance for international management practice. Prerequisite: MGT 301.

**MGT 310 Fundamentals of Family Business (3-0-3).** Introduces the unique challenges faced by family businesses and the potential solutions to these issues. Examines the characteristics that define family businesses and the potential risks and benefits these bring to family businesses in the UAE. Discusses issues such as family dynamics, generational gaps, leadership, the role of non-family members, governance and succession planning. Prerequisites: ACC 201, MGT 201 and QBA 201; prerequisite/concurrent: ENG 204.

**MGT 312 Negotiation and Conflict Management (3-0-3).** Examines conflict as a management issue in business organizations and explores techniques and methods for reaching effective agreements. Employs case studies, role playing and other experiential learning tools to develop analytical problem solving abilities and enhance conflict resolution skills. Prerequisite: MGT 201.

**MGT 313 Managing Change and Innovation (3-0-3).** Explores the importance of innovation to business success and considers current trends in technology, society, consumer expectations and the workforce. Examines strategies for enabling innovation and overcoming obstacles to change. Presents the concept of a learning organization in the context of transformational leadership. Prerequisite: MGT 201.

**MGT 314 Management Intervention and Consultation (3-0-3).** Introduces the management consulting industry and explores key activities associated with the consulting process. Considers the consultant as an advisor and change agent. Examines topics such as problem analysis, proposal development, project initiation, management of expectations,

reputation and expertise, and knowledge transfer. Prerequisite: MGT 201.

**MGT 315 Enterprise Resource Planning (3-0-3).** Introduces Enterprise Resource Planning (ERP) and the deployment and usage of ERP software. Examines the deployment and usage of ERP software and considers how ERP software links operations, marketing, finance, accounting, human resources and information technology into a cohesive framework. Prerequisites: MGT 201, MIS 201 and ACC 201, or CHE 332 or EGM 361 or EGM 364 or INE 332. Registration fee applies.

**MGT 316 Career Management (3-0-3).** Provides a structured approach to making career choices and decisions and explores personal development opportunities to identify strengths, professional interests and values as a basis for career planning and management. Prerequisites: MGT 201, and ENG 203 or ENG 204.

**MGT 317 Management for Sustainability (3-0-3).** Examines the management of a company's financial, social and environmental risks, obligations and opportunities. Examines both the foundations of environmental protection as well as current management theory and research pertaining to social issues of sustainable management. Prerequisites: MGT 201, and ENG 203 or ENG 204.

**MGT 321 Women in Leadership (3-0-3).** Introduces the skills and development necessary for female leaders to succeed in the today's environment. Examines the factors for leadership success in a multicultural, global environment and challenges students to assess and develop their own leadership potential. Provides a clear framework for identifying issues germane to female leadership in the 21st century. Prerequisites: MGT 201, and ENG 203 or ENG 204.

**MGT 360 Business Ethics and Social Responsibility (3-0-3).** Introduces the ethical dimensions of business as they relate to the various stakeholders inside and outside the organization. Includes topics such as business ethical theory, ethical decision making, typical dilemmas and corporate social responsibility. Prerequisite: MGT 201; prerequisite/concurrent: ENG 203 or ENG 204.

**MGT 364 Introduction to Corporate Governance (3-0-3).** Introduces concepts for the top-level control of professional managers, especially by the board of directors, in modern corporations and other organizations. Examines the results of both good and bad governance. Covers topics such as

the separation of ownership from control; agency, stakeholder and stewardship theories of governance; and their application to large and small businesses and non-profit organizations. Prerequisites: BLW 301 and MGT 360.

**MGT 380 Project Management (3-0-3).** Examines the concepts and techniques of managing projects in service and manufacturing settings. Includes the following topics: project selection and evaluation, dynamics, motivation and evaluation of team members, scheduling, budgeting and closure. Prerequisites: ACC 202, ENG 204, FIN 201, MIS 201, and MGT 301 or MIS 303 or COE 420 or CMP 350.

**MGT 403 Entrepreneurship (3-0-3).** Focuses on the creation of new ventures: the people, the process and the dynamics. Includes topics such as identifying and evaluating opportunities, success and failure factors, attitudes and characteristics of entrepreneurs, stand-alone and internal corporate ventures, and local and global issues in entrepreneurship. Requires the development of a viable business plan in the course. Prerequisites: senior standing; ENG 204; and all of FIN 201, MGT 201 and MKT 201, or both EGM 361 and EGM 364.

**MGT 406 Business Policy and Strategy (3-0-3).** Applies the functional knowledge acquired in previous coursework to the analysis of strategic-level business problems and decisions. Uses business cases extensively to highlight the diversity and complexity of organizational environments and systems. Includes the following topics: missions and objectives; environmental analysis; formulating, implementing and assessing strategies and policies; and international, social and ethical issues. Prerequisites: business senior standing; FIN 201, MGT 201, MIS 201, MKT 201 and ENG 204; or by permission of department.

## MIS Management Information Systems

**MIS 201 Fundamentals of Management Information Systems (3-0-3).** Covers information as an organizational resource. Focuses primarily on the organizational foundation of management information systems by establishing a link between business processes and information technology. Includes the following topics: decision-making frameworks, transaction processing systems, decision support systems, inter-

organizational information systems, office automation, strategic information systems, enterprise systems, systems development, networks and IT infrastructure, social impacts of IT and more. Provides a technology update in hardware and software basics, database management and telecommunications. Prerequisite: BIS 101 or NGN 110.

**MIS 203 Software Development for Business Applications (3-0-3).**

Analyzes business problems to design and implement the software component of an information system. Introduces application development using an object-oriented language/event-driven language. Emphasizes the concepts and techniques for developing business applications, as well as an overview of object-oriented programming techniques and visual programming techniques. Illustrates various aspects of visual programming languages, as well as testing and debugging. Prerequisite: MIS 201.

**MIS 300 Data Communications and Networking (3-0-3).**

Provides a basic understanding of the technical and management aspects of business data communications and networking. Includes the following topics: telecommunications services, technology and policy; standards organizations that contribute to global telecommunications technology specification; signaling and switching; physical transmission media; wireless transmission services; network access and transmission methods; data network topologies and network access methods (e.g., Ethernet and ATM); network transmission methods (e.g., T-carriers, DSL and ISDN); data network connectivity; and networking in open source environments. Prerequisites: MIS 201 and WRI 102.

**MIS 301 Fundamentals of Database Management (3-0-3).**

Covers information as an organizational resource. Addresses the beginning technical, business and application development issues associated with managing and using an organization's data resources. Employing SQL as the database language, the course covers organizational data management, data analysis and modeling with the entity relationship model, database design with SQL, normalization and the relational model. Prerequisites: MIS 201 and WRI 102.

**MIS 302 Advanced Database Management (3-0-3).**

Provides an overview of database management, including the database development process, physical database design, database implementation with client/server and middleware technology, database access, data administration and business analytics.

Covers object-oriented database management systems. Prerequisite: MIS 301 or CMP 320 or COE 422.

**MIS 303 Introduction to Systems Analysis and Design (3-0-3).**

Examines traditional analysis, logical design through a data flow analysis and the system development life cycle approach. Covers methods for structured analysis and design. Addresses data structures, definitions and normalization. Emphasizes gaining the ability to use the various tools associated with systems analysis. Prerequisites: MIS 201 and WRI 102; prerequisite/concurrent: MGT 201.

**MIS 305 E-Commerce (3-0-3).**

(Formerly MIS 404). (Equivalent to MKT 303). Examines how the Internet and the World Wide Web are used for marketing and business purposes. Covers well-established companies based in the United Arab Emirates that have established a marketing presence on the Internet. Projects include building a website to market a specific product and establishing a simulated business on the Internet. Prerequisites: MIS 201 and MKT 201.

**MIS 312 Business Intelligence (3-0-3).**

Develops the understanding of business intelligence through data exploration and visualization, as well as through the identification of relationship and trends, thereby improving overall decision making for the enterprise. Involves an iterative process of assessing and analyzing data to derive insights, draw conclusions and communicate findings. Prerequisites: MGT 201, MIS 201, MKT 201 and QBA 201. Registration fee applies.

**MIS 402 Technology and Knowledge Management (3-0-3).**

Explores the theoretical foundation of technology and knowledge management and its value to the organization. Examines the nature of technological change, innovation and intellectual capital, and the valuation of an organization's knowledge assets. Prerequisites: MGT 360, and MIS 301 or CMP 320 or COE 422.

**MIS 403 Applied Systems Design (3-0-3).**

(Formerly MIS 304). Follows the life cycle process to produce specifications for a current system, develop the physical design for the system and implement the system. Integrates knowledge of databases, systems analysis and design, and project management. Emphasizes the application of IT to solve business problems as well as project teamwork. Prerequisites: MIS 301 or CMP 320 or COE 422, and MIS 303 or CMP 350 or COE 420.

**MIS 405 Information Systems Strategy (3-0-3).**

This is the capstone

course in MIS. Discusses strategic IS issues, including planning IT infrastructures and architectures, business process reengineering, supply chain management, enterprise computing and systems integration. Covers emerging issues such as e-government and cyber ethics. Prerequisites: MIS 303 or CMP 350 or COE 420, and senior standing.

**MIS 406 Information Systems Auditing and Control (3-0-3).**

Introduces the general concepts of information systems auditing, security and control. Aims to provide skills in systems auditing in functional areas within the organization where information technology is predominantly used. Introduces the use of information systems audit software, where the practical nature of the subject will be developed through its use. Uses cases and job simulation throughout the course. Builds on knowledge and skills acquired in prior IS courses and provides preparation for CISA certification. Prerequisites: MIS 301 or CMP 320 or COE 422, and MIS 303 or CMP 350 or COE 420.

**MKT**

**Marketing**

**MKT 201 Fundamentals of Marketing (3-0-3).**

Introduces the concept of making marketing decisions in business and non-profit organizations within the global context. Devotes particular attention to analyzing consumer needs, segmenting markets, and developing product, promotion, pricing and distribution strategies. Relationships between consumers, business and governments are explored. Prerequisite: WRI 102.

**MKT 301 Consumer Behavior (3-0-3).**

Studies marketing, psychology, sociology and cultural anthropology to determine motivations for product purchases. Uses a multimedia approach to illustrate the use of behavioral science theory to create new products and promotional campaigns. Prerequisite: MKT 201.

**MKT 302 Marketing Research (3-0-3).**

Examines research tools used to help make marketing decisions. Teaches how to define research problems, to select projects and to analyze data. Requires the execution of a consumer survey as a major component of the course. Uses computer statistical packages to analyze surveys. Prerequisites: MKT 201, and QBA 201 or NGN 111 or STA 201 or STA 202.

**MKT 303 E-Commerce (3-0-3).**

(Equivalent to MIS 305). Examines how the Internet and the World Wide Web

are used for marketing and business purposes. Covers well-established companies based in the United States and United Arab Emirates that have established a marketing presence on the Internet. Projects include building a website to market a specific product and establishing a simulated business on the Internet. Prerequisites: MIS 201 and MKT 201.

**MKT 305 Retail Marketing (3-0-3).** Explores marketing in large and small retail institutions. Includes the following topics: retail strategy, store layout, buying, merchandising, pricing, promotion, inventory management, customer service, control, store image, trading area and location selection. Prerequisite: MKT 201.

**MKT 307 B2B Marketing and Negotiations (3-0-3).** Provides an in-depth understanding of the unique aspects of marketing in a business-to-business environment through the use of lectures, cases, guest speakers and media presentations. Focuses on organizational buying, buyer-seller relationships, market analysis and planning, demand and sales estimation and marketing-mix decisions. Considers a variety of business situations, such as marketing to manufacturers, other commercial organizations, government and institutions. Prerequisites: MKT 201 and ENG 204.

**MKT 308 Sports Marketing (3-0-3).** Builds knowledge, skills and practical understanding of the nature, contexts and dynamics of sports marketing. Uses critical analysis to incorporate decision making and action in sports business as they relate to general marketing theories and practice. Addresses the application of leading-edge methods of sports marketing to sport. Covers theories on the local growth and development of the sports. Prerequisites: MKT 201, and ENG 203 or ENG 204.

**MKT 309 International Marketing (3-0-3).** Provides a comprehensive understanding of the issues and challenges inherent in the formulation and implementation of international marketing strategies. Examines and analyzes environmental forces affecting international marketing decisions, selection of international target markets and the design and development of international marketing plans. Prerequisites: MKT 201 and ENG 204.

**MKT 310 Marketing Communications (3-0-3).** Introduces the creation and management of integrated marketing communications campaigns to promote a variety of products. Considers the selection of promotional tools such as advertising, public relations, consumer and trade promotions, sponsorships, databases

and direct marketing. Provides simulations demonstrating the competitive nature of marketing communications. Explores methods for assessing campaign effectiveness. Prerequisites: MKT 201, and ENG 203 or ENG 204.

**MKT 311 Marketing Management Simulation (3-0-3).** Explores the interrelated dynamic nature of elements of the marketing strategy in a simulation environment. Focuses on marketing plans and strategies for a company based on analysis of marketing data, and reviews the performance of the company in a simulated market environment. Emphasizes application of concepts in marketing management, focusing on financial implications of marketing decisions. Prerequisites: FIN 201 and MKT 302. Lab/Tech fee rate A applies.

**MKT 365 Services Marketing (3-0-3).** Examines service-related issues, practice and strategy in business organizations. Includes the following topics: marketing analysis of service quality, service gaps, consumer expectations, service delivery strategies and customer relationship management. Builds on marketing concepts from other courses and applies them specifically to service industry settings. Prerequisite: MKT 201.

**MKT 370 Brand Management (3-0-3).** Introduces the steps involved in building strong brands and maximizing the value of existing brands. Examines a framework for understanding when and why consumers care about brands, and introduces tools for measuring brand equity. Presents the business process of mission and strategy creation through brand and identity development and execution, and reinforces the concepts through readings, case studies and two course projects for practical applications and experiential learning. Prerequisite: MKT 201.

**MKT 372 Tourism Destination Marketing (3-0-3).** Addresses how local government authorities responsible for tourism develop and market tourism clusters in order to appeal to consumers in high-potential feeder markets. Explores how executives in privately owned destinations and tourism service organizations identify profitable markets and create promotional appeals based on an understanding of shifting social values and lifestyles. Examines the role that consumer thought processes play in evaluating and selecting destinations. Prerequisites: MKT 201 and ENG 204.

**MKT 375 Event Marketing (3-0-3).** Provides an in-depth understanding of

the various tools and techniques in event marketing and the roles they play in the firm's communication strategy. Employs foundational event marketing concepts to examine event marketing cases in both public and private contexts. Prerequisites: MKT 201, and ENG 203 or ENG 204.

**MKT 381 Fashion Marketing (3-0-3).** Provides a theoretical and practical understanding of product development, pricing, distribution and communication in the fashion industry. Presents marketing concepts such as segmentation, targeting and positioning in fashion through readings, case studies, videos and a course project for practical application and experiential learning. Introduces leaders of the fashion industry in the Middle East. Examines the wide variety of career opportunities available in the fashion industry and related fields. Prerequisites: MKT 201, and ENG 203 or ENG 204.

**MKT 401 Marketing Strategy (3-0-3).** Analyzes current marketing management issues. Requires the development of a marketing plan for an outside organization, analysis of case studies and participation in computer simulation exercises. Prerequisites: MKT 301, MKT 302 and senior standing.

**MKT 405 Luxury Brand Management (3-0-3).** Provides a theoretical and practical understanding of product development, pricing, accessibility (distribution) and communication when seeking to gain access to consumers in luxury industries. Presents and reinforces new luxury business models grounded in anti-laws of marketing through readings, case studies and a course project for practical application and experiential learning. Introduces leaders of the luxury industry in the Middle East. Illustrates the wide variety of career opportunities available in the luxury industry and related fields. Prerequisites: MKT 301 or MKT 305 or MKT 370, and senior standing.

## QBA Quantitative Business Analysis

**QBA 201 Quantitative Business Analysis (3-0-3).** Covers descriptive and inferential statistics. Introduces the use of statistical software. Includes the following topics: descriptive statistics, probability distributions, estimation and hypothesis testing, correlation, and simple and multiple linear regression. Not open to students who have completed NGN 111 or STA 201 or STA 202. Prerequisite: MTH 101.



## SCM Supply Chain Management

### SCM 202 Operations Management (3-0-3).

Introduces the basic principles, functions and concepts involved in the design, management and control of operations in contemporary organizations. Covers topics such as production planning, quality control and materials management, and stresses tools and techniques required to improve the efficiency, effectiveness and competitiveness of both service- and manufacturing-based organizations. Prerequisite: QBA 201 or NGN 111 or STA 201 or STA 202.

### SCM 310 Management of the Supply Chain (3-0-3).

Demonstrates the strategic importance of the supply chain and emphasizes the overall reach of supply chain management. Synthesizes supply chain management principles to deliver cost-effective customer service through integration of functional areas including marketing, information systems management and purchasing/procurement. Examines supply chain performance metrics, and takes a closer look at identifying and managing suppliers and the role of purchasing. Considers issues such as strategic sourcing, supplier selection and development, collaborative planning, just-in-time, customer relationship management and enterprise resource planning. Prerequisite: SCM 202.

### SCM 311 Logistics Management (3-0-3).

Covers and applies the basic modeling and solution techniques for planning and executing the decisions in logistics and supply chain management. Uses optimization and simulation techniques to extend the understanding of planning, organizing, operating and controlling the supply chain operations. Brings together the principles of logistics management to deliver cost-effective customer service through the integration of transportation, inventory management and materials handling. Examines inbound (purchasing and materials management) and outbound (demand management and customer service) logistics, inventory management, warehousing, transportation systems and preliminary concepts in logistics network design. Prerequisite: SCM 202.

### SCM 320 Quality Management and Service Organizations (3-0-3).

Introduces the field of operations management as it applies to service organizations. Covers the basic principles, functions and concepts involved in quality management, and the design, operation and control of

service operations, within contemporary organizations. Prerequisite: SCM 202.

## Independent Study

Independent study is the umbrella term used to label two types of independent work: independent course and directed study.

Students are allowed to take one independent study. A second independent study could be approved by the student's associate dean for graduation purposes only.

**Independent Course (1 to 4 credits).** A course listed in the catalog but offered in an independent study format. The course is coded using the course number in the catalog.

Students are not allowed to repeat courses in an independent course format. To be eligible to apply for an independent course, students must be in good standing.

**Directed Study (1 to 4 credits).** An investigation under faculty supervision beyond what is offered in existing courses. Prerequisites: minimum CGPA of 3.00, Junior II standing and consent of the instructor.

Directed study courses are numbered as 396 or 496 courses. The three-letter course prefix reflects the field of study of the course (e.g., directed study courses in accounting are coded as ACC 396 or ACC 496).

For more details on independent study, please refer to Registration in Independent Study Courses in the Academic Policies and Regulations section of this catalog.

## Interdisciplinary Study Courses

Interdisciplinary study (IDS) courses provide opportunities for students to benefit from collaboration by faculty from a range of disciplines. Courses with an IDS course code are normally co-taught by two or more faculty members and focus on topics beyond those offered in existing courses. Prerequisites: topic specific. Lab/Tech fee may apply.

IDS courses at the 300 level require sophomore standing or above; 400-level IDS courses are restricted to junior standing and above.

Descriptions of particular IDS courses are made available during registration.

## Special Topic Courses

### Special Topic (1 to 4 credits).

Presents a theoretical or practical topic proposed by the faculty beyond what is offered in existing courses. Can be repeated for credit. Prerequisites: topic specific. Lab/Tech fee may apply.

Special topic courses are numbered as 194, 294, 394 or 494 courses. The three-letter course prefix reflects the field of study of the course.

Special topic courses at the 300 level require sophomore standing or above; 400-level special topic courses are restricted to junior standing and above.

Special topic courses in accounting are restricted to students in accounting and finance.

Descriptions of particular special topic courses are made available during registration in the college/school offering the course.



# Full-Time Faculty

## A

**Abdalla, Jamaleldin**, PhD, University of California at Berkeley, 1989; Professor in Civil Engineering

**Abdallah, Abed Al-Nasser**, PhD, University of Lancaster, 2004; Associate Professor in Accounting (on sabbatical Spring 2017)

**Abdelfatah, Akmal**, PhD, University of Texas at Austin, 1999; Associate Professor in Civil Engineering

**Abdel-Hafez, Mamoun**, PhD, University of California at Los Angeles, 2003; Associate Professor in Mechanical Engineering and Head, Department of Mechanical Engineering

**Abdel-Jabbar, Nabil**, PhD, University of Michigan, 1996; Professor in Chemical Engineering

**Abdel Naby, Shahin**, PhD, Western Michigan University, 2010; Assistant Professor in Physics

**AbdulHadi, Zayid**, PhD, Laval University, 1987; Professor in Mathematics and Statistics

**Abdul-Latif, Akrum**, PhD, University of Technology of Compiègne, 1994; Visiting Professor in Mechanical Engineering

**Abed, Farid**, PhD, Louisiana State University, 2005; Professor in Civil Engineering

**Abouelnasr, Dana**, PhD, Georgia Institute of Technology, 1984; Professor in Chemical Engineering

**Abouleish, Mohamed Yehia**, PhD, Tennessee Technological University, 2003; Associate Professor in Biology, Chemistry and Environmental Sciences

**Abu Al-Foul, Bassam**, PhD, University of Utah, 1994; Associate Professor in Economics

**Abualrub, Taher**, PhD, University of Iowa, 1998; Professor in Mathematics and Statistics

**Abukhaled, Marwan**, PhD, Texas Tech University, 1995; Professor in Mathematics and Statistics

**Abu-Lebdeh, Ghassan**, PhD, University of Illinois at Urbana-Champaign, 1999; Associate Professor in Civil Engineering

**Abu-Muhanna, Yusuf**, PhD, State University of New York at Albany, 1979; Professor in Mathematics and Statistics

**Abu-Nabah, Bassam**, PhD, University of Cincinnati, 2007; Assistant Professor in Mechanical Engineering

**Abu-Rukba, Ra'afat**, PhD, Western Michigan University, 2013; Assistant Professor in Computer Science and Engineering

**Abusalim, Alaanoud**, MA, Southern Illinois University, Carbondale, 2006; Senior Instructor in Writing Studies

**Abu-Yousef, Imad**, PhD, McGill University, 1996; Professor in Biology, Chemistry and Environmental Sciences

**Abuzaid, Wael**, PhD, University of Illinois, 2012; Assistant Professor in Mechanical Engineering

**Aghasi, Maya**, PhD, University of Wisconsin Madison, 2012; Assistant Professor in English

**Aguir, Innes**, MS, Suffolk University, 2007; Instructor in Finance

**Ahmad, Norita**, PhD, Rensselaer, 2001; Associate Professor in Marketing and Information Systems

**Ahmed, Khawlah**, PhD, State University of New York at Buffalo, 1998; Associate Professor in English

**Ahmed, Mohammad**, PhD, McMaster University, 2008; Visiting Assistant Professor in Mechanical Engineering

**Ahmed, Rana**, PhD, Duke University, 1991; Associate Professor in Computer Science and Engineering

**Ahmed, Saad**, PhD, Georgia Institute of Technology, 1981; Professor in Mechanical Engineering

**Ajsic, Adnan**, PhD, Northern Arizona University, 2015; Assistant Professor in English

**Al-Ali, Abdul-Rahman**, PhD, Vanderbilt University, 1990; Professor in Computer Science and Engineering

**Al-Aomar, Raid**, PhD, Wayne State University, 2000; Associate Professor in Industrial Engineering

**Al-Asheh, Sameer**, PhD, University of Ottawa, 1997; Professor in Chemical Engineering

**Al-Assadi, Wesam**, MA, American University of Sharjah, 2004; Instructor in Arabic and Translation Studies

**Albasha, Lutfi**, PhD, University of Leeds, 1995; Associate Professor in Electrical Engineering

**AlHamaydeh, Mohamed**, PhD, University of Southern California, 2005; Associate Professor in Civil Engineering

**Ali, Ahmed**, PhD, University of Durham, 1999; Associate Professor in Arabic and Translation Studies

**Ali, Naghmana**, PhD, University of Toronto, 2004; Assistant Professor in English

**Ali, Tarig**, PhD, The Ohio State University, 2003; Associate Professor in Civil Engineering

**Al-Issa, Ahmad**, PhD, Indiana University of Pennsylvania, 1998; Professor in English and Associate Dean, College of Arts and Sciences

**Al-Jabouri, Firas**, PhD, Newcastle University, 2011; Assistant Professor in English

**Alkafaji, Yass**, DBA, Mississippi State University, 1983; Associate Professor in Accounting

**Al-Kaisi, Meis**, PhD, University of London, 2006; Assistant Professor in Arabic and Translation Studies

**Al-Khader, Maen**, PhD, Illinois Institute of Technology, 2008; Assistant Professor in Mechanical Engineering

**Al-Khazali, Osamah**, PhD, University of Memphis, 1997; Professor in Finance

**Al-Najjar, Abeer**, PhD, University of Edinburgh, 2003; Associate Professor in Mass Communication

**Alnaser, Ali Sami**, PhD, Western Michigan University, 2002; Professor in Physics and Head, Department of Physics

**Al-Nashash, Hasan**, PhD, Kent University, 1988; Professor in Electrical Engineering

**Alobaidi, Ghada**, PhD, University of Western Ontario, 2000; Associate Professor in Mathematics and Statistics

**Al-Othman, Amani**, PhD, University of Ottawa, 2012; Assistant Professor in Chemical Engineering

**Aloul, Fadi**, PhD, University of Michigan, 2003; Professor in Computer Science and Engineering and HP Institute Director and Head, Department of Computer Science and Engineering

**AlQassemi, Salem**, MFA, Rhode Island School of Design, 2011; Assistant Professor in Art and Design

**Al-Sayah, Mohamed**, PhD, University of Alberta, 2002; Professor in Biology, Chemistry and Environmental Sciences

**Al Shaar, Nuha**, PhD, University of Cambridge, 2010; Assistant Professor in Arabic and Translation Studies

**Al-Tamimi, Adil**, PhD, Strathclyde University, 1990; Professor in Civil Engineering

**Amador, Victoria**, PhD, University of Denver, 1986; Assistant Professor in English

**Anabtawi, Mahmoud**, PhD, University of Texas, 1998; Professor in Mathematics and Statistics and Dean, College of Arts and Sciences

**Anderson, Pia-Kristina**, PhD, University of California at Berkeley, 2001; Assistant Professor in International Studies

**Angell, Linda**, DBA, Boston University, 1996; Director, Office of International Exchange Programs

**Arenfeldt, Pernille**, PhD, European University Institute, 2006; Associate Professor in International Studies

**Arzaghi, Mohammad**, PhD, Brown University, 2005; Associate Professor in Economics

**As'ad, Rami**, PhD, Concordia University, 2011; Assistant Professor in Industrial Engineering

**Asa'd, Randa**, PhD, University of Cincinnati, 2012; Assistant Professor in Physics

**Ashill, Nicholas**, PhD, University of Bradford, 2004; Professor in Marketing and Information Systems

**Aslan, Neslihan**, MA, Bosphorus University, 2006; Instructor in Writing Studies

**Assaleh, Khaled**, PhD, Rutgers University, 1993; Professor in Electrical Engineering;

Director of Graduate Studies; Interim Vice Provost for Research and Graduate Studies

**Atabay, Serter**, PhD, University of Birmingham, 2001; Associate Professor in Civil Engineering

**Attom, Mousa**, PhD, Kansas State University, 1989; Professor in Civil Engineering

**Audi, Diana**, MS, American University of Beirut, 2005; Senior Instructor in Mathematics and Statistics

**Aveyard, Mark**, PhD, Florida State University, 2007; Assistant Professor in International Studies

**Awad, Mahmoud**, PhD, Wayne State University, 2005; Assistant Professor in Industrial Engineering

**Ayar, Tahir**, PhD, Polytechnic Institute, 1988; Visiting Assistant Professor in Industrial Engineering

**Ayish, Mohammad**, PhD, University of Minnesota, 1986; Professor in Mass Communication and Head, Department of Mass Communication

**Ayogu, Melvin**, PhD, The Ohio State University, 1989; Visiting Professor in Economics

## B

**Badawi, Ayman**, PhD, University of North Texas, 1993; Professor in Mathematics and Statistics

**Badni, Kevin**, MA, De Montfort University, 1996; Associate Professor in Art and Design and Head, Department of Art and Design

**Badry, Fatima**, PhD, University of California at Berkeley, 1983; Professor in English

**Bae, Sun-Hee**, PhD, Harvard University, 2015; Assistant Professor in English

**Baghestani, Hamid**, PhD, University of Colorado, 1982; Professor in Economics

**Bahloul, Maher**, PhD, Cornell University, 1994; Associate Professor in English

**Bahrour, Zied**, PhD, University of Franche-Comté, Besançon, 2000; Associate Professor in Industrial Engineering

**Baker, Cynthia**, MBA, Texas Tech University, 1997; Senior Instructor in Management

**Baker, Jeffrey**, PhD, Texas Tech University, 2008; Associate Professor in Marketing and Information Systems

**Bakri-Kassem, Maher**, PhD, University of Waterloo, 2007; Assistant Professor in Electrical Engineering

**Banerjee, Madhumita**, PhD, University of Strathclyde, 2006; Associate Professor in Marketing and Information Systems

**Barlas, Gerassimos**, PhD, National Technical University, Athens, 1996; Professor in Computer Science and Engineering

**Bartholomew, Aaron**, PhD, College of William and Mary, 2001; Professor in Biology, Chemistry and Environmental Sciences

**Beheiry, Salwa**, PhD, University of Texas at Austin, 2005; Associate Professor in Civil Engineering

**Bejtac, Zinka**, MA, International University of Sarajevo, 2012; Associate Professor in Art and Design; and Associate Dean, College of Architecture, Art and Design

**Belhamadia, Youssef**, PhD, Laval University, 2004; Assistant Professor in Mathematics and Statistics

**Belkhdja, Omar**, PhD, Laval University, 2006; Associate Professor in Management

**BenDaya, Mohamed**, PhD, Georgia Tech USA, 1998; Professor in Industrial Engineering

**Bennett, Haydn**, PhD, Strathclyde University, 2002; Visiting Associate Professor in Management

**Billikozan, Neslihan**, MA, Bogazici University, 2006; Senior Instructor in Writing Studies

**Blank, Leland T.**, PhD, Oklahoma State University, 1970; Professor in Industrial Engineering and Interim Provost and Chief Academic Officer

**Bley, Jörg**, PhD, Florida Atlantic University, 2000; Professor in Finance and Interim Dean, School of Business Administration

**Bodolica, Virginia**, PhD, HEC Montreal Business School, 2006; Professor in Management

**Boisvert, Jean**, PhD, Macquarie Graduate School of Management, 2007; Associate Professor in Marketing and Information Systems

**Boubakri, Narjess**, PhD, Laval University, 2000; Professor in Finance; Head, Department of Finance; and Director, Interactive Trading Floor

**Bou-Mehdi, Randa**, MA, American University of Sharjah, 2010; Instructor in Writing Studies

**Brand, Aaron**, PhD, American University of Beirut, 2014; Assistant Professor in International Studies

**Breslow, Harris**, PhD, University of Illinois, Champaign-Urbana, 1995; Associate Professor in Mass Communication

**Brodtkorb, Tor**, LLB, McGill University, 2000; Assistant Professor in Management

## C

**Carlow, Jason**, MArch, Yale University, 2002; Assistant Professor in Architecture

**Cerro, Camilo**, MArch, Columbia University, 1997; Assistant Professor in Architecture

**Chappell, Henry**, PhD, Yale University, 1979; Professor in Economics

**Chathoth, Prakash**, PhD, Virginia Polytechnic Institute and State University, 2002; Professor in Marketing and Information Systems

**Chatterjee, Ujjal**, MS, University of Illinois, 2009; Instructor in Finance (on leave Academic Year 2016–2017)

**Chazi, Abdelaziz**, PhD, University of North Texas, 2004; Associate Professor in Finance

**Chebbi, Rachid**, PhD, Colorado School of Mines, 1991; Professor in Chemical Engineering

**Ciftci, Mustafa**, PhD, The University of Texas at Dallas, 2006; Assistant Professor in Accounting

**Conty, Arianne**, PhD, University of California, 2009; Assistant Professor in International Studies

**Craven, Laurence**, MA, Oxford Brookes University, 2009; Instructor in Writing Studies

**Crompton, Peter**, PhD, Lancaster University, 2003; Associate Professor in English

**Curabba, Brad**, MAT, SIT Graduate Institute, 2006; Instructor in Writing Studies

**Curiel, Igor**, PhD, Kumamoto University, 1989; Visiting Assistant Professor in Architecture

## D

**Daghfous, Abdelkader**, PhD, Pennsylvania State University, 1997; Professor in Marketing and Information Systems

**Dahdal, Suheil**, PhD, University of Technology, Sydney, 2000; Instructor in Mass Communication

**Dalibalta, Sarah**, PhD, University of Leicester, 2008; Assistant Professor in Biology, Chemistry and Environmental Sciences

**Danila, Liliana**, MA, Clemson University, 2005; Assistant Professor in Economics

**Darayseh, Musa**, PhD, University of Nebraska-Lincoln, 1990; Professor in Accounting

**Darras, Basil**, PhD, University of Kentucky, 2008; Associate Professor in Mechanical Engineering

**Darwish, Naif**, PhD, Oklahoma State University, 1991; Professor in Chemical Engineering and Head, Department of Chemical Engineering

**Davey, Angelina**, MA, The University of Auckland, 2013; Visiting Instructor in Performing Arts

**Desai, Gaurang**, PhD, University of Western Sydney, 2009; Assistant Professor in Art and Design

**Dezhbakhsh, Ibrahim**, PhD, The Ohio State University, 1989; Professor in Economics

**Dhaouadi, Rached**, PhD, University of Minnesota, 1990; Professor in Electrical Engineering

**Dougan, Brian**, MArch, Texas A&M University, 1989; Associate Professor in Architecture (on sabbatical Fall 2016)

**Dupuis, Daniel**, PhD Concordia University, 2014; Assistant Professor in Finance

**Duran, Gregory**, MA, Portland State University, 1999; Instructor in Writing Studies

## E

**Efimov, Dmitry**, PhD, Moscow State University, 2008; Assistant Professor in Mathematics and Statistics

**Egilmez, Mehmet**, PhD, University of Alberta, 2009; Assistant Professor in Physics

**El-Assadi, Ahmad**, MBA, American University of Sharjah, 2009; Senior Instructor in Management and Senior Program Officer, EMBA Program

**El-Baz, Hazim**, PhD, University of Missouri, Rolla, 1991; Associate Professor in Industrial Engineering

**El Didi, Amer**, PhD, République Française, 2015; Assistant Professor in Performing Arts

**Eleftheriou, Maria**, PhD, University of Leicester, 2011; Assistant Professor in Writing Studies

**El-Emam, Magdi**, PhD, Queen's University, 2003; Associate Professor in Civil Engineering

**El-Fakih, Khaled**, PhD, University of Ottawa, 2002; Associate Professor in Computer Science and Engineering

**El-Hag, Ayman**, PhD, University of Waterloo, 2004; Professor in Electrical Engineering

**El Kadi, Hany**, PhD, University of Alberta, 1993; Professor in Mechanical Engineering and Associate Dean, College of Engineering

**El-Kadri, Oussama**, PhD, Wayne State University, 2006; Associate Professor in Biology, Chemistry and Environmental Sciences (on sabbatical Fall 2016)

**El-Khatib, Sami**, PhD, New Mexico State University, 2007; Associate Professor in Physics

**El-Saadi, Reem**, MA, University of London, 2002; Instructor in Writing Studies

**El-Sakran, Aya**, MA, Salford University, 2012; Visiting Instructor in Writing Studies

**El-Sakran, Tharwat**, PhD, University of Bangor, 1990; Professor in English (on sabbatical Fall 2016)

**El-Sayed, Yehya**, PhD, City University of New York, 2006; Associate Professor in Biology, Chemistry and Environmental Sciences

**El-Sayegh, Sameh**, PhD, Texas A&M University, 1998; Associate Professor in Civil Engineering

**El-Tarhuni, Mohamed**, PhD, Carleton University, 1997; Professor in Electrical Engineering; Associate Dean, College of Engineering; Director, CEN Graduate Programs

**Erice, Leopoldo**, DMA, Stony Brook University, 2008; Associate Professor in Performing Arts

## F

**Fahim, Abeer**, MA, University of Durham, 2007; Instructor in English

**Fahim Aly, Elrefaie**, PhD, Polytechnic Institute of New York, 1993; Visiting Professor in Electrical Engineering

**Faiq, Said**, PhD, Salford University, 1991; Professor in Arabic and Translation Studies

**Farr, Marcus**, MArch, Rice University, 2004; Assistant Professor in Architecture

**Fath, Hassan**, PhD, McMaster University, 1981; Visiting Professor in Mechanical Engineering

**Fattah, Kazi**, PhD, University of British Columbia, 2010; Assistant Professor in Civil Engineering

**Fedtke, Jana**, PhD, University of South Carolina, 2012; Assistant Professor in English

**Filipović, Zlatan**, MFA, Alfred University, 2001; Associate Professor in Art and Design

**Formanek, Steven**, PhD, University of Waterloo, 2009; Assistant Professor in Marketing and Information Systems

**Fredrick, Daniel**, PhD, Texas Christian University, 2003; Assistant Professor in Writing Studies and Interim Head, Department of Writing Studies

## G

**Gadalla, Mohamed**, PhD, University of Alabama, 1988; Professor in Mechanical Engineering

**Gahramanov, Emin**, PhD, Colorado State University, 2007; Associate Professor in Economics

**Gally, Thomas**, PhD, Texas A&M University, 1992; Senior Lecturer in Mechanical Engineering

**Gandhi, Neena**, PhD, University of Delhi, 2006; Assistant Professor in Writing Studies

**Gannon, James**, PhD, University of Houston, 1981; Professor in Biology, Chemistry and Environmental Sciences; and Head, Department of Biology, Chemistry and Environmental Sciences

**Gatenby, Bruce**, PhD, University of Arizona, 1992; Assistant Professor in Writing Studies

**Gavassa, Ana Milena**, MBA, Troy University, 1999; Senior Instructor in Mass Communication

**Gaybulloev, Khusrav**, PhD, University of Texas at Dallas, 2009; Associate Professor in Economics

**Genc, Ismail**, PhD, Texas A&M University, 1999; Professor in Economics and Head, Department of Economics

**Ghani, Usman, PhD**, University of Exeter, 2013; Assistant Professor in Arabic and Translation Studies

**Ghommam, Mehdi**, PhD, Virginia Polytechnic Institute and State University, 2011; Assistant Professor in Mechanical Engineering

**Gibbs, Joseph**, PhD, Boston University, 1994; Professor in Mass Communication

**Giesen, Martin**, PhD, Heidelberg University, 1973; Professor in Art and Design

**Golley, Nawar Al-Hassan**, PhD, Nottingham University, 1994; Professor in English

**Gorla, Narasimhaiah**, PhD, University of Iowa, 1986; Professor in Marketing and Information Systems

**Gouia Ep Zarrad, Rim**, PhD, University of Texas at Arlington, 2011; Assistant Professor in Mathematics and Statistics

**Graham, Allan**, PhD, Virginia Polytechnic Institute and State University, 2000; Associate Professor in Accounting

**Gray, Kevin**, PhD, University of Laval, 2011; Assistant Professor in International Studies (on leave Academic Year 2016–2017)

**Griffin, James**, PhD, University of London, 2004; Associate Professor in Mathematics and Statistics, and Associate Dean, College of Arts and Sciences

**Guessoum, Nidhal**, PhD, University of California at San Diego, 1988; Professor in Physics (on sabbatical Spring 2017)

**Gumus, Mehmet**, PhD, University of Waterloo, 2006; Associate Professor in Marketing and Information Systems (on leave Academic Year 2016–2017)

**Gunatillake, Gajath**, PhD, Purdue University, 2005; Associate Professor in Mathematics and Statistics

**Gunn, Cindy**, PhD, University of Bath, 2001; Professor in English and Director, Faculty Development Center

## H

**Hamade, Alaa**, MBA, American University of Sharjah, 2010; Instructor in Marketing and Information Systems, and Internship Manager

**Hamdan, Mohammad**, PhD, University of Cincinnati, 2003; Associate Professor in Mechanical Engineering

**Hamdan, Nasser**, PhD, Middle East Technical University, 1993; Professor in Physics

**Hammi, Oualid**, PhD, University of Calgary, 2009; Associate Professor in Electrical Engineering

**Hariga, Moncer**, PhD, Cornell University, 1989; Professor in Industrial Engineering; Head, Department of Industrial Engineering; Director, ESM Graduate Program

**Hashem, Mahboub**, PhD, Florida State University, 1984; Professor in Mass Communication

**Hashim, Asif**, MBA, University of Nebraska, 2003; Instructor in Marketing and Information Systems and Director, Academic Planning and Analysis

**Hashimoto, Barry**, PhD, Emory University, 2012; Assistant Professor in International Studies

**Hassan, Mohamed**, PhD, University of Arizona, 2005; Associate Professor in Electrical Engineering

**Hatim, Basil**, PhD, University of Exeter, 1982; Professor in Arabic and Translation Studies

**Hawa, Karen**, CPA, Colorado State Board of Accountancy, 2005; Senior Instructor in Accounting

**Hawileh, Rami**, PhD, University of Wisconsin-Milwaukee, 2005; Professor in Civil Engineering

**Heintz, W. Eirik**, MArch, Harvard University, 1994; Professor in Architecture

**Hewett-Smith, Kathleen**, PhD, University of California, 1991; Professor in English and Head, Department of English

**Horger, Christopher**, MA, University of Arizona, 1992; Senior Instructor in Writing Studies

**Hossain, Mahmud**, PhD, Baruch College, 2004; Associate Professor in Accounting

**Houghton, Robert**, PhD, Colorado State University, 1988; Visiting Professor in Civil Engineering and Head, Department of Civil Engineering

**Hughes, Michael**, MArch, Princeton University, 1993; Professor in Architecture and Head, Department of Architecture

**Husni, Ronak**, PhD, University of St. Andrews, 1986; Professor in Arabic and Translation Studies

**Husseini, Ghaleb**, PhD, Brigham Young University, 2001; Professor in Chemical Engineering

**Hussein, Noha**, PhD, Virginia Polytechnic Institute and State University, 2005; Associate Professor in Industrial Engineering

## I

**Ibahrine, Mohammed**, PhD, Hamburg University, 2006; Associate Professor in Mass Communication

**Ibrahim, Mahmoud**, PhD, University of Mississippi, 2006; Associate Professor in Electrical Engineering

**Ibrahim, Riem**, MFA, The University of Chicago, 2013; Visiting Assistant Professor in Design

**Ibrahim, Taleb**, PhD, Auburn University, 1997; Professor in Chemical Engineering

**Isaenko, Sergey**, PhD, University of Pennsylvania, 2003; Visiting Associate Professor in Finance

**Ismail Abdellatif, Ayman**, PhD, The Ohio State University, 1998; Visiting Associate Professor in Architecture

**Izwaini, Sattar**, PhD, University of Manchester, 2004; Associate Professor in Arabic and Translation Studies

## J

**Jaidi, Asad Hasan**, PhD, University of Kansas, 1993; Professor in Physics

**Jaradat, Mohammad**, PhD, Texas A&M University, 2005; Associate Professor in Mechanical Engineering

**Jarrah, Abdul Salam**, PhD, New Mexico State University, 2002; Professor in Mathematics and Statistics (on sabbatical Fall 2016)

**Jayyusi-Lehn, Ghada**, PhD, University of Toronto, 2007; Assistant Professor in Arabic and Translation Studies

**Jimenez Parro, Maria**, MArch, Polytechnic University Madrid, 2011; Visiting Assistant Professor in Architecture

**Joseph, Suzanne**, PhD, University of Georgia, 2002; Associate Professor in International Studies

## K

**Kallel, Dorra**, MBA, University of Quebec, 2006; Visiting Instructor in Marketing and Information Systems

**Kallel, Sadok**, PhD, Stanford University, 1995; Associate Professor in Mathematics and Statistics

**Kalo, Amar**, MS, University of Michigan, 2014; Assistant Professor in Architecture and Director of CAAD Labs

**Kamal, Sara**, PhD, University of Texas at Austin, 2009; Assistant Professor in Mass Communication

**Kanan, Sofian**, PhD, University of Maine, 2000; Professor in Biology, Chemistry and Environmental Sciences

**Kannan, Satish**, PhD, University of New Brunswick, 2006; Assistant Professor in Mechanical Engineering

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