


Master of Science in

BIOMEDICAL ENGINEERING



**BE AT THE HELM
OF ONE OF
ENGINEERING'S
FASTEST GROWING
FIELDS**

As the first of its kind in the GCC region, the Master of Science in Biomedical Engineering (MSBME) is a dynamic, multidisciplinary program that will prepare you for an advanced career or doctoral studies in the rapidly developing field of biomedical engineering.

The region's tremendous rate of population growth has been accompanied by demand for healthcare services, such as hospitals, clinics, medical colleges and medical technology suppliers. Biomedical engineering has therefore become one of the most in-demand, engineering disciplines, not only in the GCC, but across the world.



The AUS graduate assistantship provided me with an opportunity to achieve hands-on cognizance that paved the way towards me reaching my goals. With experienced and auxiliary edifiers throughout the courses, the MSBME program offers unique courses every semester, enhancing different areas of student expertise.

Syeda Leena Mumtaz | AUS Master of Science in Biomedical Engineering student



Making a difference through science

The AUS MSBME helps professionals within the expanding field of biomedical engineering to meaningfully contribute to scientific developments, positively impacting individuals and communities everywhere. Graduates of the program go on to work in the following areas:

medical research

design and development of biomedical devices, materials and algorithms

design of biomedical equipment management systems

safety and acceptance testing

hospital planning

creation of technical specifications for new biomedical equipment

training for nurses and physicians

regulation

Graduate assistantships and employment

AUS offers graduate students assistantships and work-study opportunities. These are awarded on a competitive basis, coming in the form of a Graduate Research Assistantship or Graduate Teaching Assistantship. This offers not only financial assistance but also hands-on experience in teaching and research helpful to students interested in pursuing a career in academia.

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Active biomedical research projects at AUS

As part of the MSBME program, you can partake in quality research across a number of areas, including:

**cognitive
vigilance
assessment and
enhancement**

**brain source
localization in
epilepsy**

**severity
assessment
of spinal
cord injury**

**efficient failure
management in an
IoT environment**

**operating room
scheduling**

**ultrasound
and liposomes in
the treatment of
prostate cancer**

**design and
characterization
of flexible
implantable
electrodes**

**intelligent
patient
monitoring and
diagnosis**

**use of
microwave
tomography in
bone healing
monitoring**

**MEMS device for
real-time monitoring of
mercury concentration in
marine aquacultures**

**volumetric image
generation for
lung cancer image-guided
radiation therapy**

**characterizing
neuronal morphology in
different visual cortical
areas in ferrets**

**sustainability-oriented
innovation
in healthcare:
a supply chain approach**

**liposomes-based
signal amplification
immunoassay for
detection of cardiac
troponin**

**design and synthesis
of first-in-class
nature-inspired
compounds: targeting
mitochondrial metabolism
as novel anti-cancer
treatment**

Graduate students have the opportunity to work with faculty to publish their work in leading international engineering and scientific journals.

Admission to the MSMBE

In addition to meeting the university's general graduate admission requirements, applicants must hold a bachelor of science in biomedical engineering, chemical engineering, computer engineering, electrical engineering, civil engineering, industrial engineering or mechanical engineering from an independently accredited university recognized by the UAE Ministry of Education's Higher Education Affairs Division and by AUS. Degreed individuals in other engineering fields or a quantitative science field that is closely related to the biomedical engineering field may be considered on a case-by-case basis.

Applicants who do not meet the full admission requirements may be eligible for conditional admission to the program and are encouraged to check the program website for more details.

MSMBE courses: A breadth of choice

Students in the MSBME program must choose from three options: the thesis option, the project option or the course option.

Thesis Option

Students in the thesis option must successfully complete the following requirements:

- six credit hours of required college core courses
- three credit hours of a required program core course
- a minimum of 12 credit hours in elective courses
- a zero-credit hour seminar including biomedical ethics
- nine credit hours in Master's Thesis

Project Option

Students in the project option must successfully complete the following requirements:

- six credit hours of required college core courses
- three credit hours of a required program core course
- a minimum of 18 credit hours in elective courses
- a zero-credit hour seminar including biomedical ethics
- three credit hours in Professional Project

Course Option

Students in the course option must successfully complete the following requirements:

- six credit hours of required college core courses
- three credit hours of a required program core course
- a minimum total of 21 credit hours in elective courses
- a zero-credit hour seminar including biomedical ethics

Required Courses (18/12/9 credit hours)

College Core Courses (6 credit hours)

Students must successfully complete the following courses:

- NGN 500 Advanced Engineering Mathematics or MTH 508 Mathematical Biology
- NGN 505 Random Variables and Stochastic Processes or NGN 509 Computational Methods for Engineering Program

Core Course (3 credit hours)

Students must successfully complete the following course:

- BME 511 Human Anatomy and Physiology
- In addition, all students must successfully complete a seminar course (BME 695).

Master's Thesis/Professional Project (9/3 credit hours)

This requirement applies to students in the thesis and project options:

- BME 698 Professional Project (3 credit hours—project option)
- BME 699 Master's Thesis (9 credit hours—thesis option)

Elective Courses (minimum of 12/18/21 credit hours)

Students in the thesis option must successfully complete a minimum of 12 credit hours. Students in the project option must successfully complete a minimum of 18 credit hours. Students in the course option must successfully complete a minimum of 21 credit hours. Students can select elective courses from the following list:

- BME 541 Biomedical Measurements and Devices
- BME 543 Biomedical Imaging Technologies
- BME 544 Neuroengineering
- BME 551 Biofluid Mechanics
- BME 552 Drug Delivery
- BME 561 Healthcare Operations Management
- BME 562 Healthcare Planning and Risk Management
- BME 571 Biomechanics Engineering
- BME 572 Biomaterials Engineering
- BME 581 Biomedical Informatics
- BME 582 Computational Molecular Biology
- BME 594 Special Topics in Biomedical Engineering
- CHE 611 Biomedical Engineering and Biotechnology
- ELE 544 Advanced Signal Processing
- ELE 648 Pattern Classification

BECAUSE TOMORROW MATTERS

Sustainability is CEN's priority and focus

The AUS College of Engineering (CEN) is seeking to build a more sustainable future for its students and the global communities of which they are a part. Throughout its research, teaching and other scholarly activities, the college seeks to uphold the widely accepted vision of the global engineering community for the 21st century: to ensure the continuation of life on the planet, making the world more sustainable, secure, healthy and joyful.

CEN practices the values of this vision every day, by housing itself within one of the region's most sustainably advanced buildings. The AUS Engineering and Sciences Building has achieved the highly sought-after "2 Pearl" rating by Estidama, a sustainable development initiative of the Abu Dhabi Urban Planning Council. The rating evidences the building's highly efficient use of resources and minimization of waste. It also complements AUS' position as the first university in the MENA region to have a Sustainability Tracking, Assessment and Rating System (STARS) classification for sustainability in higher education, awarded by the Association for the Advancement of Sustainability in Higher Education (AASHE).



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BECAUSE IT MATTERS

The college is also a leader in “peace engineering,” a global effort to promote international peace and achieve the United Nation’s Sustainable Development Goals through science and technology. Peace engineering works directly towards a world where prosperity, sustainability, social equity, entrepreneurship, transparency, community voice and engagement, ethics and a culture of quality thrive.

CEN’s Dean, Dr. Sirin Tekinay, is also the Chair of the Global Engineering Deans’ Council (GEDC), and an ex-officio member of the Executive Committee of International Federation of Engineering Education Societies (IFEES), two organizations at the heart of global peace engineering efforts. The college is therefore front and center of this important initiative, and central to the engineering outcomes that will make a difference to all.

The work of CEN’s faculty and students helps progress international sustainability efforts. By advancing design and innovation in engineering that impacts many facets of sustainability, CEN is contributing to the global collaboration needed to find solutions to some of the world’s most pressing challenges: climate change, population growth and disease, among others. Our faculty and students are at the helm of sustainability-related efforts in the fields of supply chain, materials science, renewable energy, urban planning, water and environment, energy, construction, Artificial Intelligence, data science and more—all areas that will play a role in securing a sustainable tomorrow for populations across the world.

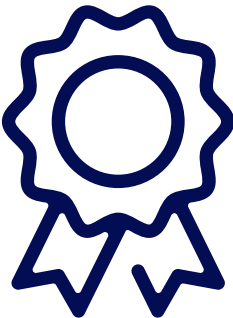
Together, we are committed to working with the global engineering community to safeguard our tomorrow, in the Middle East and beyond.



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Reasons to choose a graduate program at the AUS College of Engineering



All graduate programs offered by the AUS College of Engineering 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 College of Engineering boasts the very best in resources and facilities, including nearly 60 world-class laboratories.



The college offers flexible study arrangements for busy professionals, including part-time options.



AUS offers financial assistance to qualified students, including competitive full and partial graduate assistantships.



Hailing from some of the world’s leading engineering universities, College of Engineering faculty are accomplished researchers working at the cutting edge of their areas of research.



AUS has a proud tradition of multiculturalism, with a higher percentage of international students than any other university in the world (Times Higher Education, 2019).



The AUS campus features one of the finest libraries in the region, a health center and recreational programs, along with a full calendar of cultural events.



AUS is a leading university in the region, with QS ranking AUS among the top 10 universities in the Arab world for the past 5 years.



AUS is one of the world’s top young universities, with QS World University Rankings naming AUS a top 50 under 50 years university.



AUS is respected as one of the world’s leading institutions, with QS World University Rankings naming AUS among the world’s top 350 universities.

Why AUS?

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.

Firmly grounded in principles of meritocracy and with a strong reputation for academic excellence, AUS has come to represent the very best in teaching and research, accredited internationally and recognized by employers the world over for creating graduates equipped with the knowledge, skills and drive to lead in the 21st century.

AUS values learners not driven only by academic success, but by those that embrace our dynamic campus life and embody our ideals of openness, tolerance and respect. This combination of academic excellence and community spirit ensures AUS is filled with world-class faculty and students, poised to become the innovators, thinkers, contributors and leaders of tomorrow.





Find out more

www.aus.edu/cen/msbme
ogs@aus.edu

connect with us



Apply now

