

Master of Science in

MECHANICAL ENGINEERING



**BUILD A BETTER
TOMORROW**

The Master of Science in Mechanical Engineering (MSME) program is designed for engineers looking to advance their careers across the areas of thermal and green energy systems, fluid systems, solid mechanics, design and others. The program enhances the technical skills of mechanical engineers, equipping them with the skills necessary to drive the profession both now and in the future.

This is an ideal program for those seeking to fulfil their potential and realize their leadership ambitions. In addition, the program well prepares those looking to enter a doctoral program.



As a PhD applicant, your research experience is arguably the most important parameter. One unique aspect of my experience as a master's student in the Department of Mechanical Engineering at AUS was how the program helped me develop and expend my research experience, uniquely tailored to my needs and interests.

This is because the program was heavily research based with almost one third of the credits exclusively awarded for your research activities and thesis.

Mohammad Saghafifar | MSME Class of 2016
Doctoral student at the University of Cambridge, UK



Objectives of the MSME program

With a MSEE from AUS, you will be able to:

perform research that emphasizes creativity, independent learning and rigorous scientific methods

apply advanced mathematics and engineering knowledge to identify, formulate and solve engineering problems

select and use the techniques, skills and tools necessary for research or professional practice

communicate effectively

attend to professional and ethical responsibilities

Faculty of distinction

In undertaking the MSME, you will work under the supervision of faculty who have received their doctoral degrees from renowned universities, including some of the best engineering institutions in North America and Europe. These faculty are recognized experts in their fields, with extensive teaching and research experience. Graduate students have the opportunity to work with faculty to publish their work in leading international engineering and scientific journals.

Built-in flexibility

Our graduate programs are flexible, ensuring that students are able to pursue their careers alongside their graduate degree. Students can choose between a full-time schedule and a part-time schedule, with classes offered at times suitable for those in the workforce.

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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Engage in hands-on research

The MSME gives students the opportunity to work on ground-breaking research projects with both local and global impact. Students can contribute to research across the following areas:

cyber-physical energy systems for smart buildings

robotics navigation and sensor fusion

nanoparticle synthesis inside microchannels

intelligent systems and robotics

acoustic properties of metamaterials

sustainability assessment of manufacturing processes

robotics, mechatronics and biomechanics

nonmagnetic clad thickness assessment over nonmagnetic metals

effect of an explosive blast loading on the dynamic response of a steel structure

underground heat exchanger

nonlinear vibration of structures

high-speed machining model for lightweight aluminum syntactic foams

additive manufacturing of iron-based shape memory alloy micro-lattice structure

friction stir back extrusion of seamless tubes: a new sustainable manufacturing process

MEMS chemical sensor for real-time monitoring of environmental pollutants in aqueous media

Admission to the MSME

In addition to meeting the university's general graduate admission requirements, applicants must hold a Bachelor of Science in Computer Engineering from an independently accredited university recognized by the UAE Ministry of Education's Higher Education Affairs Division and by AUS. Degreed individuals in engineering fields or a quantitative science field that is closely related to the sought program 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.

MSME courses: A breadth of choice

Students in the MSME program must choose from two options: the thesis option and the project option.

Thesis Option

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

- three credit hours of required college core courses
- a minimum of 18 credit hours in elective courses
- a zero-credit hour seminar
- nine credit hours in Master's Thesis

Project Option

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

- three credit hours of required college core courses
- a minimum of 24 credit hours in elective courses
- a zero-credit hours seminar
- three credit hours in Professional Project

Required Courses (12/6 credit hours)

College Core Courses (3 credit hours)

Students must successfully complete one of the following courses:

- NGN 500 Advanced Engineering Mathematics
- NGN 505 Random Variables and Stochastic Processes

In addition, all students must successfully complete a seminar course (MCE 695).

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

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

Elective Courses (minimum of 18/24 credit hours)

Students in the thesis option must successfully complete a minimum of 18 credit hours in elective courses. Students in the project option must successfully complete a minimum of 24 credit hours. Students can select elective courses from the following list:

- MCE 540 Advanced Dynamics
- MCE 550 Mechanical Systems Design
- MCE 551 Advanced Materials Science and Engineering
- MCE 552 Modeling and Simulation of Mechanical Systems
- MCE 553 Advanced Thermodynamics
- MCE 554 Advanced Fluid Dynamics
- MCE 594 special topic courses in mechanical engineering
- MCE 651 Advanced Engineering Materials
- MCE 653 HVAC Systems Design
- MCE 655 Advanced Measurements and Design of Experiments
- MCE 694 special topic courses in mechanical engineering

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/msme
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connect with us



Apply now

