

PhD

MATERIALS SCIENCE AND ENGINEERING



American University of Sharjah (AUS) is a regional leader in sustainable engineering research and application.

Take advantage of the opportunity to advance your own research career with a PhD in Materials Science and Engineering (PhD-MSE) from the College of Arts and Sciences at AUS.



As the global focus on environmental sustainability becomes increasingly urgent, AUS is driving research and development to address society's infrastructure needs for today and tomorrow.

The PhD-MSE at AUS is designed to equip and motivate future researchers and academics of engineering and sustainable materials with the advanced knowledge and skills they require to address these urgent needs.

Offered in collaboration with AUS' College of Engineering and College of Architecture, Art and Design, the program focuses on four multidisciplinary research areas:

- **Advanced Materials** including the properties, design, testing, production and usage of novel construction materials, smart and functional materials, composite materials, and nanomaterials for electronics, healthcare and chemical applications
- **Materials for Energy and Environment** including water treatment chemicals and materials, renewable power technologies, energy conversion and harvesting materials, and green technologies
- **Structures** including analysis, design, maintenance, testing, and construction of sustainable infrastructure systems for buildings, transportation, oil and gas, and power generation industries and architectures
- **Analytical and Computational Modeling and Simulation** of material and structural response to use conditions to guide the development of new materials and structures



The program consists of two components:



Courses related to key aspects of theoretical and applied research, as well as those that suit the research interests of individual students. Candidates will sit a qualifying PhD exam after finishing 12 credits of coursework.

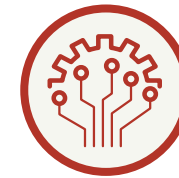


A doctoral dissertation, allowing students to develop cutting-edge research competencies and generate original scientific work that can be published in reputed international journals.

Reasons to choose a graduate program at the AUS College of Arts and Sciences



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 (1007 North Orange Street, 4th Floor, MB #166, Wilmington, DE 19801 USA).



AUS boasts the very best resources and facilities, including a brand-new engineering and sciences building, a new Materials Science Research Facility, a recently renovated chemistry building and the region's most comprehensive design labs.



Full-time students of the PhD-MSE program may be granted a full assistantship covering the total cost of tuition. Part-time students may also qualify for partial assistantships.



AUS PhD students actively engage in research with faculty members and have opportunities to publish their work.



Hailing from some of the world's leading science and engineering universities, AUS faculty are accomplished researchers working at the cutting edge of their areas of research.



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



AUS has a proud tradition of multiculturalism, ranking among the world's top five universities with the highest percentage of international students (Times Higher Education 2022).

Find out more: w.aus.edu/cas/phdmse

Degree Requirements

PhD in Materials Science and Engineering (PhD-MSE)

The PhD-MSE program is for future researchers and academics, providing advanced, specialized knowledge in engineering and material science as they develop the skills they need to develop cutting-edge research in their chosen field.

The program builds on a solid theoretical and technical foundation of engineering, offering advanced knowledge in areas such as advanced characterization and analytical techniques, advanced thermodynamics, advanced mechanics of materials, advanced issues in digital fabrication and fatigue of materials and structures, with the program ultimately concluding in a final research dissertation.

To earn the PhD-MSE degree, the candidate needs to successfully complete a minimum of 54 credits of course and dissertation work:

- Courses: a minimum of 24 credits (8 courses)
- PhD Dissertation: a minimum of 30 credits of research work

Courses

Doctoral students must complete a minimum of 8 courses (24 credits) from the following courses:

- MSE 705 Diffraction and Crystallography
- MSE 707 Magnetic Materials and Devices
- MSE 708 Electronic Properties of Materials
- MSE 710 Advanced Thermodynamics in Materials Science and Engineering
- MSE 711 Kinetics of Materials
- MSE 718 Materials for Energy Production and Storage
- MSE 720 Advanced Characterization and Analytical Techniques
- MSE 721 Surface Science and Technology
- MSE 730 Advanced Mechanics of Materials
- MSE 731 Plasticity
- MSE 732 Fatigue of Materials and Structures
- MSE 733 Mechanics of Laminated Composite Structures
- MSE 734 Physical Metallurgy
- MSE 740 Computational Methods in Materials Science and Engineering
- MSE 741 Advanced Finite Element Method in Materials Science and Engineering
- MSE 750 Nanomaterials Science and Applications
- MSE 760 Advanced Corrosion
- MSE 761 Advanced Polymers and Composite Materials
- MSE 794 Special Topics in Materials Science and Engineering

Dissertation and Qualifying Examination

- MSE 790 Qualifying Examination
- MSE 795 Doctoral Seminar
- MSE 799 PhD Dissertation

Admission Requirements

Applicants to the program must:

- have earned a master's degree in a relevant discipline with a minimum CGPA of 3.0 or a bachelor of science degree with a minimum CGPA of 3.5 in any of the following fields: materials science, materials engineering, physics, chemistry, mechanical engineering, electrical engineering, chemical engineering, or civil engineering
- have attained a minimum Internet-Based TOEFL score of 80 or a minimum IELTS score of 6.5 (Academic Version)
- submit three letters of recommendation, a statement of purpose and a current vitae/resume

Deadlines

June 1, 2023 Deadline to apply for graduate assistantships

July 20, 2023 Deadline for Fall 2023 applications

August 30–31, 2023 Course registration for new students

August 30, 2023 Welcome session for new students

September 4, 2023 First day of classes

Tuition Fees*

AED 4,990 (US\$1,358)/ per credit hour

*Tuition and fees are subject to change.

Check **w.aus.edu/phd-fees** for updated information.

Graduate Assistantships

A number of Graduate Assistantships (GAs) are awarded on a competitive basis to PhD students. GAs cover full or partial tuition fee waiver and/or a stipend. The GA is offered for a maximum of four years.

Duration of Study

The expected duration for completion of the PhD-MSE degree program is four years and the maximum duration of study is ten years.

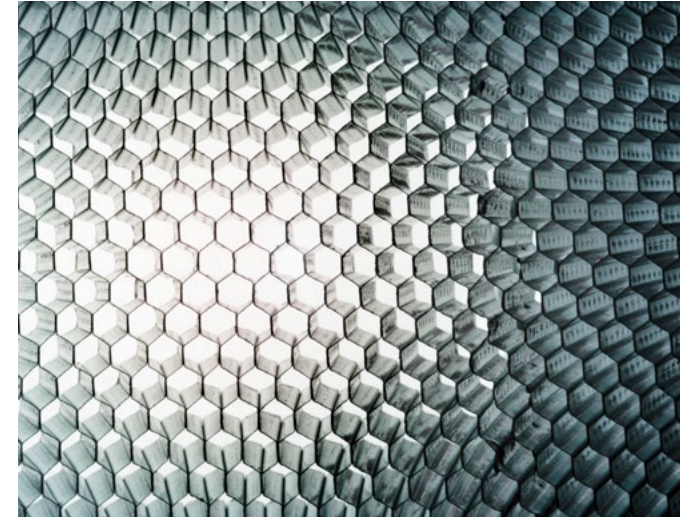


Approved by the UAE Ministry of Education's Higher Education Affairs Division.

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.

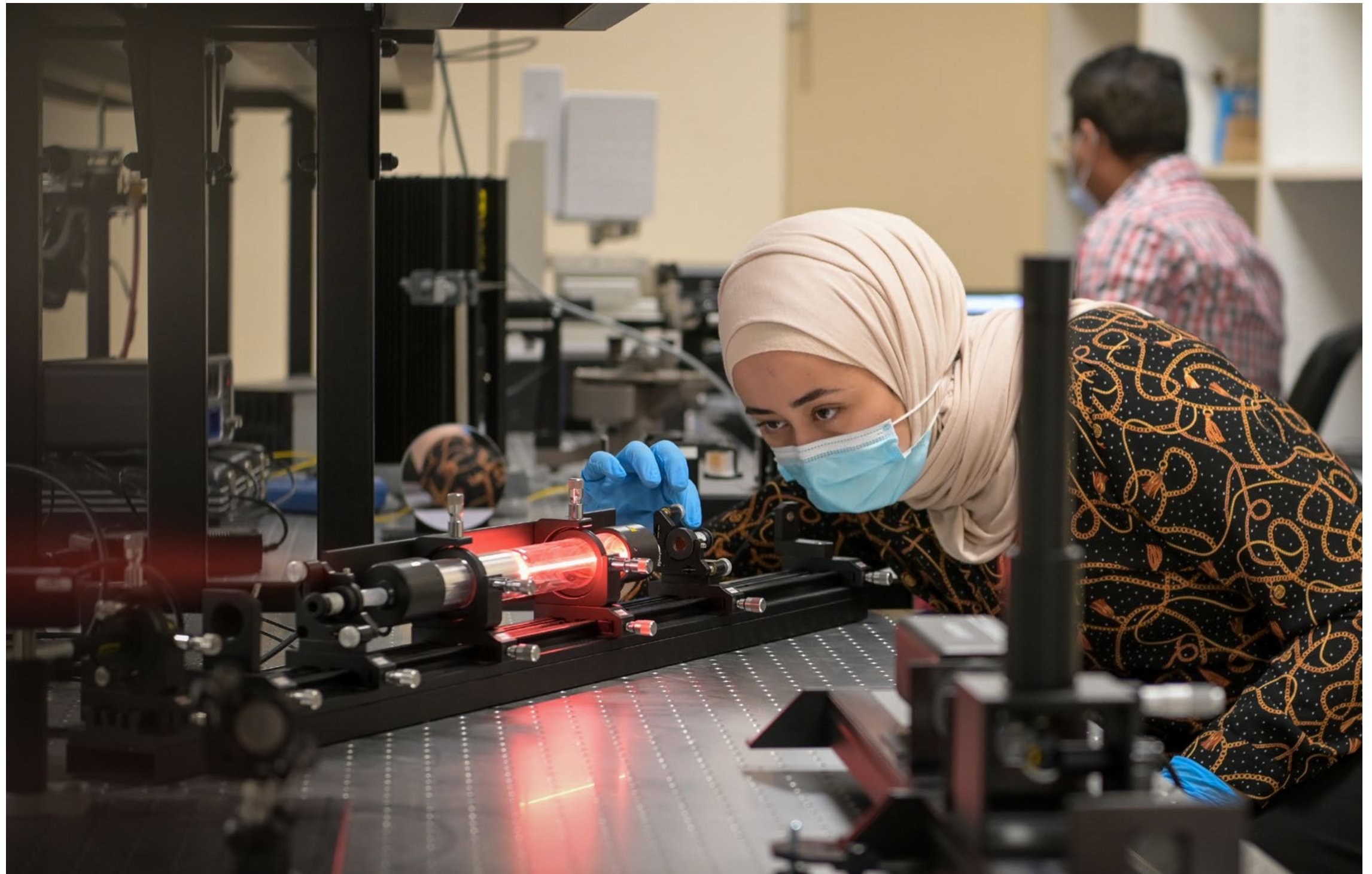
AUS has come to represent the very best in teaching and research, accredited internationally and recognized by employers the world over.



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.

PhD students are valued members of the broader AUS community who contribute to the university's dynamic campus life. The AUS campus includes world-class learning and research facilities, one of the finest libraries in the region, a health center and recreational programs, along with a full calendar of cultural events.



Visit: w.aus.edu
Email: ogs@aus.edu

Take the next step. Apply now.
w.aus.edu/apply.



Top 50 under 50 years (2021)
 Top 10 in Arab World for the
 past seven years (2022)



Top five universities with
 the highest percentage of
 international students (2021)
 Top 250 universities in Asia
 (2021)



First university in the GCC to
 be rated for sustainability
 in the Association for the
 Advancement of Sustainability
 in Higher Education's
 Sustainability Tracking,
 Assessment and Rating System