



**AUS** | الجامعة الأميركية في الشارقة  
American University of Sharjah

# GRADUATE CATALOG

**2024-2025**



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American University of Sharjah

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**2024–2025**

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**His Highness Sheikh Dr. Sultan Bin Mohammed Al Qasimi**

Supreme Council Member, Ruler of Sharjah  
Founder of American University of Sharjah





**H.E. Sheikha Bodour Bint Sultan Al Qasimi**

Chairperson of the Board of Trustees  
President of American University of Sharjah





# Chancellor's Message

I'd like to personally welcome you to American University of Sharjah (AUS), already one of the country's top-ranked universities and poised to rise to even greater heights during your time as a member of our community. Founded by His Highness Sheikh Dr. Sultan bin Mohammed Al Qasimi, Member of the Supreme Council of the United Arab Emirates and Ruler of Sharjah, AUS has come to represent the very best in teaching and research. The combination of academic excellence and community spirit at AUS attracts world-class faculty and exceptional students, ready to make an impact in the country, the region and beyond.

Under the leadership of our President, Her Excellency Sheikha Bodour bint Sultan Al Qasimi, I am truly excited by the level of energy present in our trustees, our faculty and staff, and the amazing student body here. Since 1997, AUS has been a place where students are nurtured and encouraged to excel academically, thrive socially, celebrate their cultural diversity, and have a positive influence in their communities.

As an AUS student, you will learn from and work alongside distinguished faculty who are leaders in their fields—their research and scholarly/creative activity routinely receive global recognition. Through its academic offerings, vibrant campus life, international partnerships and active engagement with organizations and leaders throughout the UAE, AUS will provide you with countless opportunities to expand your horizons and achieve personal growth that will pave the way for your future success.

This catalog provides an opportunity to learn more about AUS, including an overview of the university's programs and policies. For more information about any topic covered in these pages, please contact the relevant office and our team will be happy to assist you.

I look forward to seeing you on campus, and I wish you all success in your exciting journey here.

Dr. Tod A. Laursen  
Chancellor and Professor



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**Dr. Fawwaz Jumean**, Professor Emeritus

**Professor Kevin Mitchell**, Trustee Professor

**Dr. Ali Saifi**, Professor Emeritus

\*(d: 2022)

# University Administrators

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- Dr. Felly Chiteng Kot, Director, Institutional Research and Analytics
- Mr. Kevin Fairbotham, Director, Internal Audit
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- Ms. Reem Bardan, Executive Director, Advancement and Alumni Affairs
  - Ms. Rania Morsi, Director, Development and Donor Relations, Advancement and Alumni Affairs
- Mr. Omar Alnuaimi, Head, Sustainability

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## **Dr. Mohamed El-Tarhuni, Interim Vice Chancellor for Academic Affairs and Provost**

- Dr. Lotfi Romdhane, Special Assistant to the Interim Vice Chancellor for Academic Affairs and Provost for Graduate Studies
- Dr. James Griffin, Vice Provost, Undergraduate Affairs and Instruction
  - Ms. Rasha Tawfik, Director, Academic Support Center
  - Dr. Norita Ahmad, Director, Center for Innovation in Teaching and Learning
  - Mr. Rashed Alfalasi, Director, Financial Grants and Scholarships
- Dr. Varkki Pallathucheril, Dean, College of Architecture, Art and Design
  - Dr. Ahmed Mokhtar, Associate Dean, College of Architecture, Art and Design
- Dr. Mahmoud Anabtawi, Dean, College of Arts and Sciences
  - Dr. Hana Sulieman, Associate Dean, Graduate Affairs, College of Arts and Sciences
  - Dr. Ahmad Al-Issa, Associate Dean, Undergraduate Affairs, College of Arts and Sciences
- Dr. Fadi Aloul, Dean, College of Engineering
  - Dr. Lotfi Romdhane, Associate Dean, Graduate Studies, College of Engineering
  - Dr. Mehdi Ghommem, Associate Dean, Research, Innovation and Outreach, College of Engineering
  - Dr. Assim Sagahyroon, Associate Dean, Undergraduate Studies, College of Engineering
- Dr. Narjess Boubakri, Dean, School of Business Administration
  - Dr. Taisier Zoubi, Associate Dean, Graduate Programs, School of Business Administration
  - Dr. George Christodoulides, Associate Dean, Research and Innovation, School of Business Administration
  - Dr. Mohsen Saad, Associate Dean, Undergraduate Programs, School of Business Administration
- Ms. Lynda Ataya, Registrar
  - Ms. Lina El-Khoury Bendaly, Associate Registrar
- Ms. Kara Louise Jones, University Librarian
  - Dr. Alanna Ross, Associate Librarian, Public Services
  - Mr. Thomas Allen Hodge, Associate Librarian, Technology and Technical Services

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## **Dr. Steven Griffiths, Vice Chancellor for Research**

- Ms. Ingrid Maria Liekens, Director, Research Services
- Dr. Vaibhav Sharma, Technology Transfer Officer

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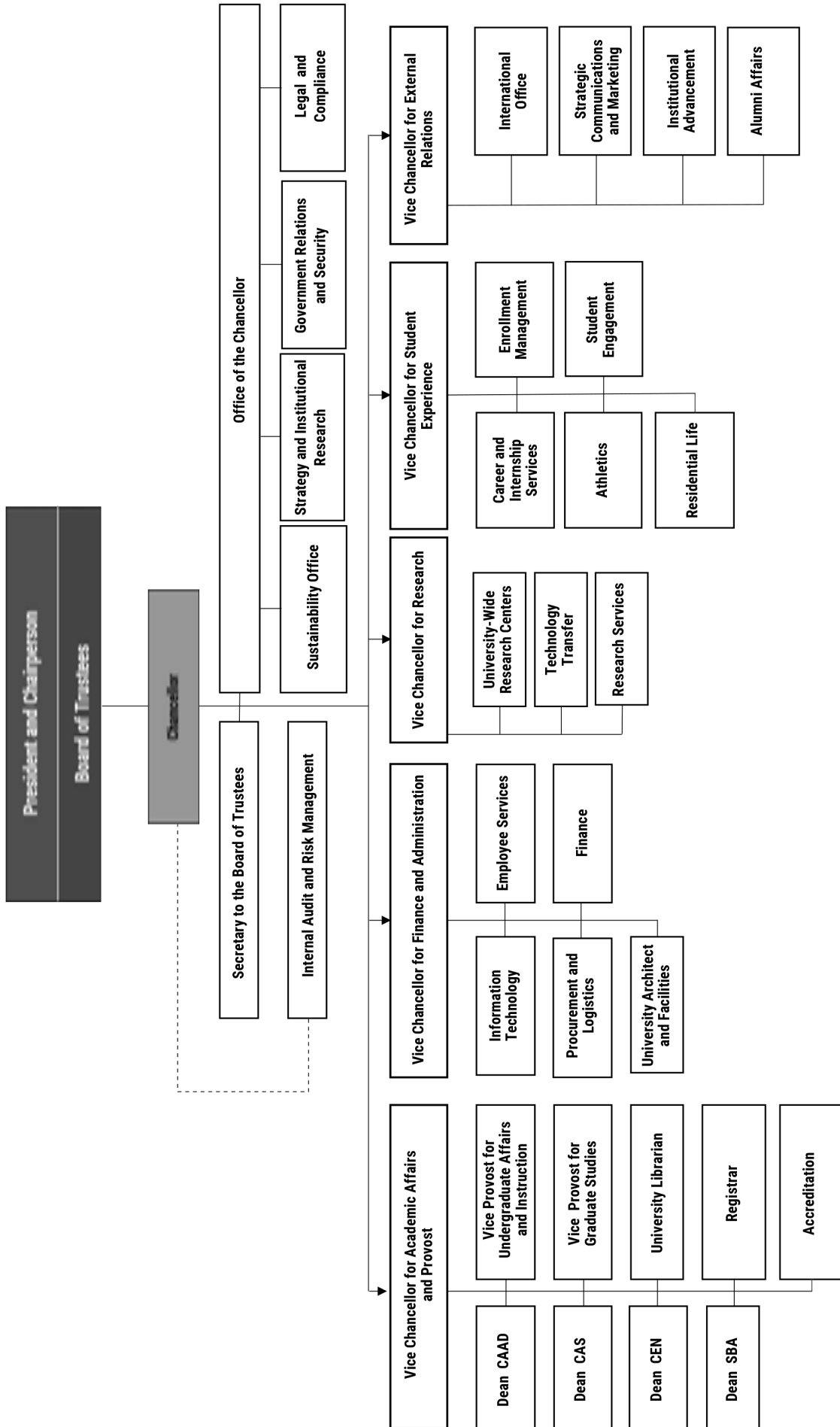
## **Ms. Shaima Bin Taliah, Acting Vice Chancellor for Student Experience**

- Mr. Ali Shuhaimy, Executive Director, Enrollment Management
  - Ms. Jessica March, Director, Achievement Academy
  - Mr. Rami Mahfouz, Director, Enrollment Services
- Ms. Haifa Ismail, Director, Student Engagement and Leadership
- Mr. Issam Zaarob, Director, Student Residential Life

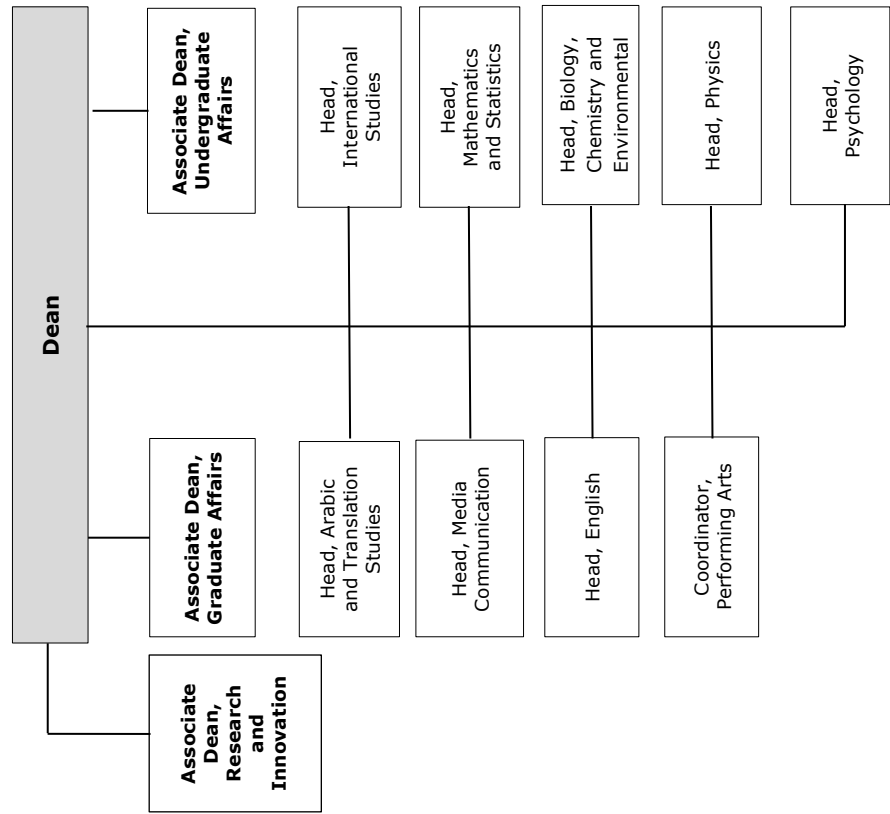
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## **Mr. Ali Alsuwaidi, Acting Vice Chancellor for Finance and Administration**

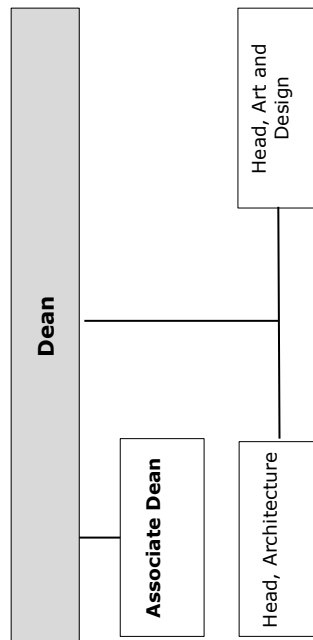
- Mr. Hayder Awni, Director, Development, Construction, Maintenance and Facilities
- Mr. Mobeen Ihsan, Director, Finance
  - Mr. Rumaiz Hasan, Controller, Finance
- Mr. Khalid Alremeithi, Director, Procurement and Logistics
- Ms. Amal Alghammai, Executive Director, Employee Services
  - Mr. Tariq Al Ali, Director, Emiratization
  - Mr. Ahmad Alshamsi, Director, Human Resources
  - Dr. Lubna Al Saraj, MD, Director, University Health Services
- Ms. Amina AbdulRahim, Executive Director, ICT and IT Security
  - Mr. Nabeel Amireh, Director, Education Technical Support
  - Mr. Naji El Nujumi, Director, Infrastructure and Information Security



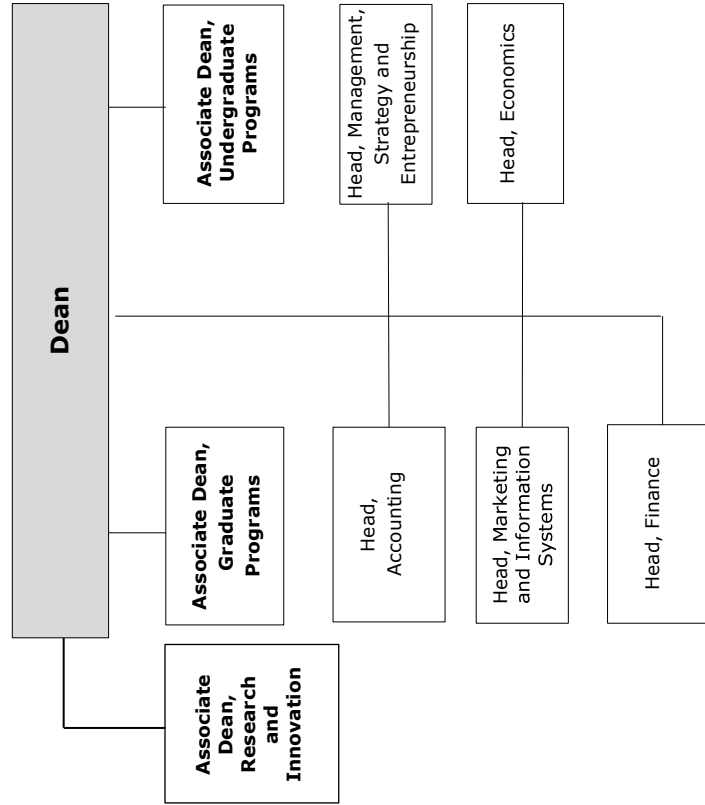
### College of Arts and Sciences



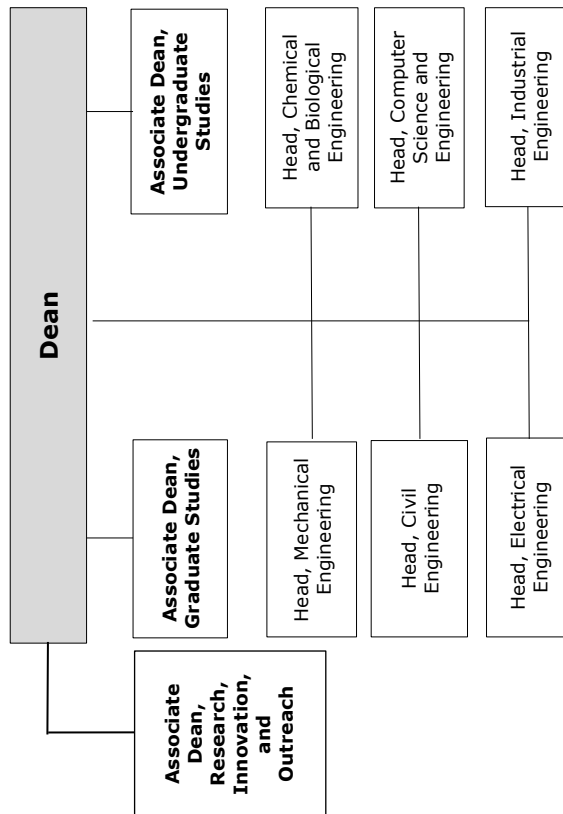
### College of Architecture, Art and Design



**School of Business Administration**



**College of Engineering**



# Graduate Academic Calendar 2024–2025

Updates to this calendar will be posted at [www.aus.edu/academic-calendar](http://www.aus.edu/academic-calendar).

Fall Semester 2024			
<b>May</b>	30	Thursday	Admission applications and assistantship applications deadline for new students applying for master's degree programs or PhD programs and assistantships for Fall Semester 2024
<b>July</b>	25	Thursday	Admission applications deadline for master's and PhD degree programs for Fall Semester 2024 for new students not applying for assistantships
<b>August</b>	17	Saturday	Residential halls open for graduate students
	19	Monday	Registration for new students begins
	21	Wednesday	Welcome session for new students
	26	Monday	First day of classes
			Late registration and add/drop period begin
<b>September</b>	2	Monday	Late registration and add/drop period end, 5:00 p.m. Deadline to pay Fall Semester 2024 tuition fees without late payment penalty, 5:00 p.m.
	15	Sunday	No classes (university closed): Al Mawlid Al Nabawi holiday
	19	Thursday	Applications for Fall Semester 2024 graduation due
<b>October</b>	31	Thursday	Last day to move from thesis to project and vice versa
<b>November</b>	6	Wednesday	Advising and early registration for Spring Semester 2025 begin
	11	Monday	Deadline to withdraw from a course without a grade penalty, 5:00 p.m.
	21	Thursday	Admission applications and assistantship applications deadline for new students applying for master's or PhD degree programs and assistantships for Spring Semester 2025
<b>December</b>	2–3	Monday–Tuesday	No classes (university closed): UAE National Day holiday
	10	Tuesday	Last day of classes
	11–18	Wednesday–Wednesday	Study and examination period
	19	Thursday	Make-up examination day
	21	Saturday	Fall Semester 2024 Commencement**
	26	Thursday	Admissions applications deadline for master's and PhD degree programs for Spring Semester 2025 for new students not applying for assistantship
Spring Semester 2025			
<b>January</b>	11	Saturday	Residential halls open for graduate students
	13	Monday	Registration for new students begins
	15	Wednesday	Welcome session for new students
	20	Monday	First day of classes
			Late registration and add/drop period begin
	27	Monday	Late registration and add and drop period end, 5:00 p.m. Deadline to pay Spring Semester 2025 tuition fees without late payment penalty, 5:00 p.m.
<b>February</b>	13	Thursday	Applications for Spring Semester 2025 graduation due
<b>March</b>	13	Thursday	Application for Summer Term 2025 graduation due
	27–1 April	Thursday–Tuesday	No classes (university closed): Eid Al Fitr holiday*
<b>April</b>	15	Monday	Advising and early registration for Summer Term 2025 and Fall Semester 2025 begin
<b>May</b>	1	Thursday	Deadline to withdraw from a course without a grade penalty, 5:00 p.m.
	5	Monday	Deadline to submit Summer Permission to Take Courses Outside AUS forms
	13	Tuesday	Last day of classes
	14–21	Wednesday–Wednesday	Study and examination period
	22	Thursday	Make-up examination day
	29	Thursday	Admission applications and assistantship applications deadline for new students applying for master's or PhD degree programs and assistantships for Fall Semester 2025
<b>June</b>	1	Sunday	Spring Semester 2025 Commencement**
Summer Term 2025			
<b>May</b>	26–27	Monday–Tuesday	Registration for Summer Term 2025
	26	Monday	Residential halls open
	28	Wednesday	First day of classes
			Late registration and add/drop period begin
	29	Thursday	Late registration and add/drop period end, 3:00 p.m. Deadline to pay Summer Term 2025 tuition fees without late payment penalty, 3:00 p.m.
<b>June</b>	5–9	Thursday–Monday	No classes (university closed): Eid Al Adha holiday*
	26	Thursday	No classes (university closed): Al Hijri New Year*
<b>July</b>	1	Tuesday	Last day to move from thesis to project and vice versa
	7	Monday	Deadline to withdraw from a course without a grade penalty, 3:00 p.m.
	14	Monday	Last day of classes
	15–19	Tuesday–Saturday	Study and Examination period
	20	Sunday	Make-up examination day
	24	Thursday	Admission applications deadline for master's and PhD degree programs for Fall Semester 2025 for new students not applying for assistantship

\* Islamic holidays are determined after sighting the moon and actual dates may not coincide with the dates in this calendar.

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

Note 1: Loss of teaching days may result in make-up days.

Note 2: The approved calendar will be followed if there are no unforeseen circumstances that require a review or change.

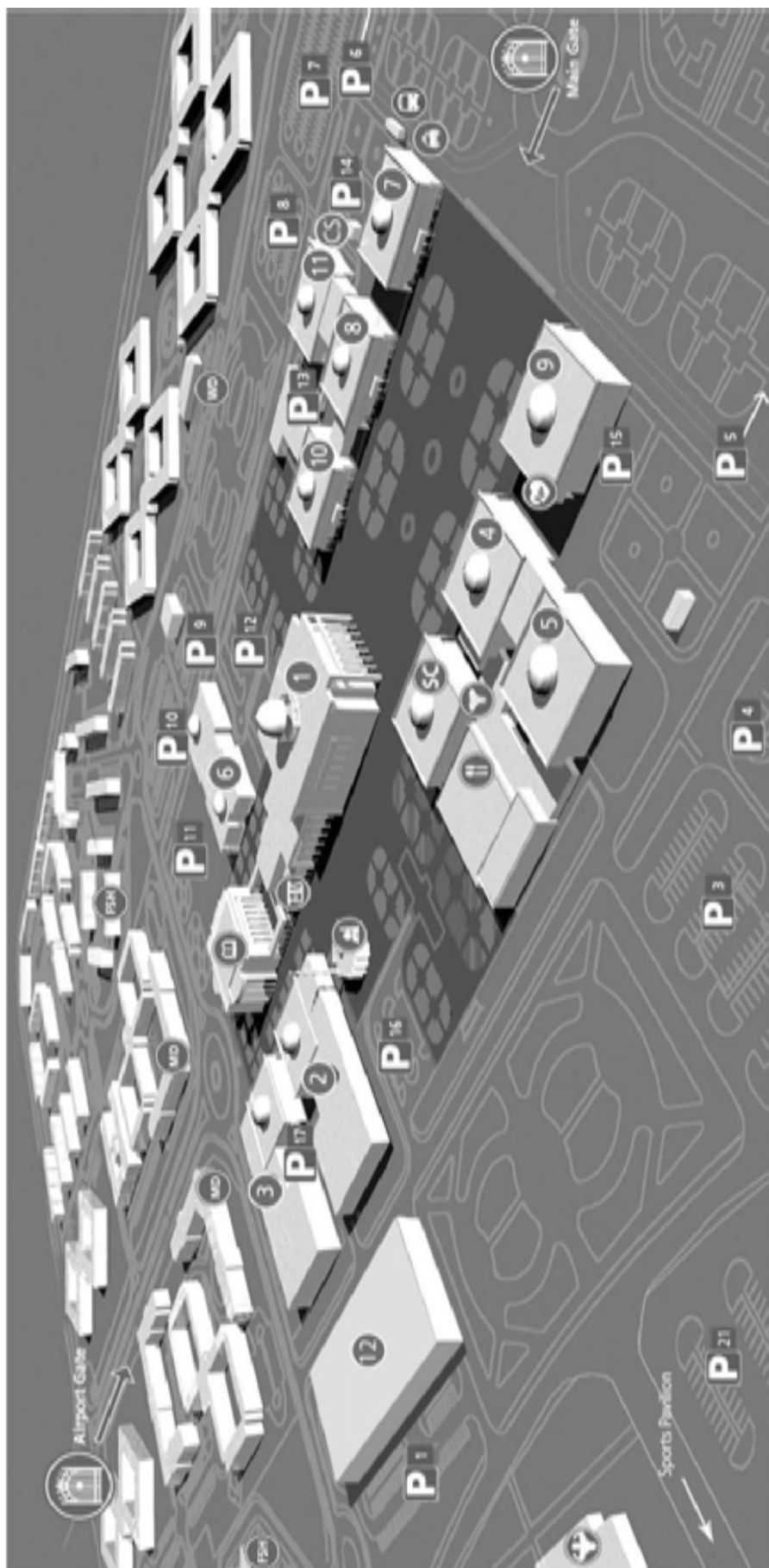
Note 3: The calendar published on the AUS website is the final calendar.

# Directory

UAE Code 971, Sharjah Code 6 | For General Information: 06 558 5555/06 515 5555 | [www.aus.edu/contact](http://www.aus.edu/contact) | [info@aus.edu](mailto:info@aus.edu)

Department	Telephone	Email
Academic Support Center	515 2096	asc@aus.edu
Achievement Academy/Bridge Program	515 2653	academy@aus.edu
Admissions/Enrollment Management	515 1000	<a href="https://infodesk.aus.edu">https://infodesk.aus.edu</a>
Advancement and Alumni Affairs	515 2022	oaaa@aus.edu
Career Services	515 2063/92	careerservices@aus.edu
Chancellor	515 2205	chancellor@aus.edu
College of Architecture, Art and Design	515 2825	deancaad@aus.edu
College of Arts and Sciences	515 2412	deancas@aus.edu
College of Engineering	515 2948	deancen@aus.edu
Corporate Relations	515 2016	oaaa@aus.edu
Executive Education		
College of Architecture, Art and Design	515 2825	execed@aus.edu
College of Arts and Sciences	515 2702	execed@aus.edu
College of Engineering	515 2937	execed@aus.edu/cen-outreach@aus.edu
School of Business Administration	515 2368	execed@aus.edu/sba_execed@aus.edu
Finance	515 2185	finance@aus.edu
First Year Experience	515 2096/2355	fye@aus.edu
Graduate Studies	515 4721	ogs@aus.edu
Grants and Scholarships	515 2057/65/34	scholarship@aus.edu
Human Resources	515 2228	humanresources@aus.edu
Information, Communication, Technology and Information Security	515 2121	itservicedesk@aus.edu
Institutional Research and Analytics	515 2225	oira@aus.edu
International Exchange Office	515 4018/27/29	ixo@aus.edu
Library	515 2252	auslibrary@aus.edu
Office of the Vice Chancellor of Finance and Administration	515 2192	VCFAoffice@aus.edu
Procurement and Logistics	515 2295	procurement@aus.edu
Protocol and Security	515 2296	aus_security@aus.edu
Registrar	515 2031	registration@aus.edu
Research Services	515 2203	research@aus.edu
School of Business Administration	515 2310	deanofsba@aus.edu
Sponsorship Liaison Services	515 1000	sponsors@aus.edu
Strategic Communications and Marketing	515 2212	communications@aus.edu
Student Accounts	515 2039/2233	studentaccounts@aus.edu
Student Affairs	515 2166	studentaffairs@aus.edu
Student Engagement and Leadership	515	seld@aus.edu
Student Medical Insurance	515 2300/2231	studentmedicalinsurance@aus.edu
Student Residential Life	515 2244	res-halls@aus.edu
Testing Center	515 1000	testingcenter@aus.edu
Undergraduate Affairs and Instruction	515 2281	vpua@aus.edu
University Counseling Services	515 2685/2678	ucsappointments@aus.edu
University Health Services	515 2760	healthservices@aus.edu
Vice Chancellor for Academic Affairs and Provost	515 2020	provost@aus.edu
Visa and Equalization Services	515 2117/2240	ves@aus.edu
<b>Emergency Numbers</b>		
Maintenance Emergency	515 2100	
Medical Hotline (24 hours)	050 635 7651 / 515 4911	
Safety and Crisis Management (24 hours)	515 2068	
Security (24 hours)	050 626 7818	





	Health Center
	Bank
	Faculty/Staff Housing
	Women's Dorm
	Men's Dorm
	Student Center
	Chemical Store
	Bus Stop
	Taxi Stand

11	Arts and Sciences: New Academic Building
12	Engineering Sciences Building
P16	Visitor Parking
P5 - P6	Free Parking
P1 to P4 P7 to P15 P17	Reserved Parking
	Library
	Food Court
	Mosque
	Sport Complex
	Pharmacy

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

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 any semester/term in which they were a registered student in their current program of study. 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.

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# The University

## Historical Preamble

American University of Sharjah (AUS) was founded in 1997 by His Highness Sheikh Dr. Sultan bin Mohammed 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) aspires to be globally recognized for outstanding and innovative teaching, learning, research and creative work that have a positive and distinctive impact on the region and beyond.

## Mission Statement

American University of Sharjah (AUS) is a comprehensive, independent, non-profit, coeducational institution of higher education that promotes excellence in teaching, learning, research and creative work.

Based on an American model of higher education, integrating liberal arts and professional programs, and grounded in the context of UAE culture, AUS prepares engaged and effective members of society who display mastery in their areas of specialization, communicate clearly, think critically and solve problems creatively.

AUS fosters a community that celebrates diversity, and whose members are committed to the ideals of open intellectual inquiry, ethical behavior and civic responsibility.

## Institutional Goals

The university is currently guided by the goals outlined in the AUS Strategic Plan 2020–2025 (available at [www.aus.edu/about/aus-strategic-plan-2020-2025](http://www.aus.edu/about/aus-strategic-plan-2020-2025)).

## Overview

American University of Sharjah (AUS) 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.

AUS 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 32 majors and 46 minors at the undergraduate level, 18 master’s degree programs and five doctoral degree programs.

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.

In tandem with its commitment to student success, AUS is keen to provide students with a voice in their academic journey. AUS surveys students’ satisfaction with their overall university experience at the conclusion of their studies. At the end of the 2023–2024 Academic Year, AUS achieved a 93.8 percent student satisfaction rate, based on institutional surveys deployed to graduating students.

## Accreditation and Licensure

American University of Sharjah (AUS), located in the Emirate of Sharjah, is officially licensed from June 19, 1999 to February 25, 2025 by the Ministry of Education of the United Arab Emirates to award degrees/qualifications in higher education.

Degree programs offered by AUS are accredited by the Commission for Academic Accreditation of the Ministry of Education's Higher Education Affairs Division in the United Arab Emirates.

AUS has been 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) since June 2004.

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).

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

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



# Campus Life

## The Campus Complex

American University of Sharjah (AUS) 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 13 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, Sports Pavilion, AUS Tennis Center and a Student Center. Approximately 25 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, which consistently ranks among the world's safest countries, 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 also a city of learning and the arts. 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. In recognition of its contributions to intercultural dialogue through books and reading, Sharjah was named the 2019 UNESCO World Book Capital. This context facilitates the university's intention to be an academic center at the intersection of ancient cultural traditions and contemporary intellectual currents. Sharjah is home to a diverse range cultural destinations and 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 internationally renowned annual Sharjah International Book Fair and the Sharjah International Biennial art exhibition. These resources permit AUS to broaden students' formal education.

### Campus Services

Miscellaneous service outlets are available on campus to cater for the needs of faculty members, staff members, students and campus residents. These include services such as banking, dining, transportation, laundry, minimarts, a full-service post office and copy center, a bookstore, a travel office, 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 and serves as the university's contact with federal and local government entities, embassies and consulates. The office also provides services such as issuing and renewing AUS ID cards and parking stickers. The office manages lost and found and assists with procedures related to car registration, and on-campus traffic violations and accidents. The Office of Protocol and Security issues official letters required by the federal and local government entities. Services can be requested online through [forms.aus.edu/app/230311561302842](https://forms.aus.edu/app/230311561302842). 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 +971 6 515 2296/515 2074 or at [aus\\_security@aus.edu](mailto:aus_security@aus.edu).

The Office of Protocol and Security also offers comprehensive immigration- and visa-related services to faculty, staff and students through Visa and Equalization Services (VES). VES collaborates with various government departments to assist with the processing of visas, residence permits as well as handling official government documents and transactions. For specific details, contact Visa and Equalization Services at [ves@aus.edu](mailto:ves@aus.edu), call +971 6 515 2117/2240 or visit the VES offices on the Mezzanine Floor of the Main Building, office (MM 19). For

additional details and resources, please visit [www.aus.edu/life-at-aus/on-campus-services/visa-services](http://www.aus.edu/life-at-aus/on-campus-services/visa-services) (for faculty and staff) and [www.aus.edu/admissions/international-students/student-visas](http://www.aus.edu/admissions/international-students/student-visas) (for students).

Campus public and occupational health and safety are monitored by AUS Safety and Crisis Management. Safety and Crisis Management provides information on public and occupational health and safety; it also monitors, controls and strives to eliminate health and safety hazards on campus. Safety and Crisis Management is located in the Campus Service Center (office 1022) and can be reached at +971 6 515 2068.

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

## Facilities and Resources

### Advancement and Alumni Affairs

The Office of Advancement and Alumni Affairs (OAAA) effectively manages interactions with various external constituencies on behalf of AUS. Its primary goals include ensuring alumni feel supported by their alma mater, securing resources for the institution's growth, and fostering strong relationships with diverse stakeholders, both on and off campus. This encompasses connections with industry leaders, parents of students and alumni, and other relevant parties.

The unit is committed to cultivating enduring connections with individuals and organizations. Emphasizing relationship-building throughout its mandate, the OAAA focuses on identifying, cultivating and sustaining long-term relationships that contribute to the growth and success of AUS.

A primary objective of OAAA is to strengthen the AUS Brand of Excellence by expanding its outreach base. This expansion aims to increase the visibility of AUS through various activities and functions, ultimately enhancing public awareness and deepening constituent engagement with the university.

OAAA takes on the crucial responsibility of fostering connections with alumni to cultivate loyalty and a sense of belonging to their alma mater. The unit actively engages alumni, ensuring that AUS continues to play a significant role in their lives regardless of their location or graduation year. This is achieved through regular communication, instilling pride in the institution and

implementing programs that maintain the relevance of AUS in the lives of its alumni. Additionally, OAAA provides students and alumni with comprehensive career services. Collaborating closely with industry in the UAE and the region, it promotes interaction between potential employers and AUS students and alumni. The unit organizes corporate briefings, the AUS Careers Forum, and the annual Career Fair. It also offers information on job opportunities, internships and summer employment. OAAA maintains 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. Additional spaces, which are shared by all curricula, include exhibition galleries, a lecture hall, seminar rooms, a media wall, digital classrooms, high-end computing labs and comprehensive printing facilities. CAAD students and faculty also enjoy access to a variety of labs, which are among the most advanced facilities found in universities internationally. CAAD Labs cover a wide spectrum of making, both analog and digital, including conventional material fabrication as well as advanced digital technology. The labs are grouped into three categories: Digital Fabrication, Material Fabrication and Media Labs. Digital Fabrication Labs include CNC routers, industrial robotic arms, thermoforming, laser cutting machines and a number of 3D printers. Material Fabrication Labs include a comprehensive woodshop and metal shop, and ceramics studio. The Media Labs contain production spaces, editing suites, photography and printmaking studios, as well as a media equipment center.

### AUS Sustainability

AUS understands sustainable resource management is vital to a healthy future and is working to ensure AUS is a sustainability leader in the region.

AUS Sustainability connects across disciplines and departments to provide opportunities for students and faculty to incorporate sustainability into the classroom and address sustainability issues collectively. It envisions the

campus as a living lab for new ideas and solutions that address environmental and social issues at AUS and beyond.

AUS Sustainability engages with students to participate in campus campaigns and activities and model a sustainability mindset in their future decision making.

The student EcoRep program plays a key part in AUS achieving a sustainable campus. Student EcoReps act as an important communication channel between the student body and the AUS sustainability team, helping to promote sustainability issues to their peers and raise awareness.

For more information on AUS Sustainability please visit [www.aus.edu/sustainability](http://www.aus.edu/sustainability) or contact [sustainability@aus.edu](mailto:sustainability@aus.edu).

### 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, learning management system (Blackboard), online collaboration tools, online surveys, mobile applications, high-performance computing, wire/wireless network connections, support for financial, HR and student information applications, audio/video conferencing, data storage and backups, telephony, printing services and much more.

All classrooms are networked and equipped with 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 and research. Many of these software products are also remotely accessible to students using their own personal devices.

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.

Additional information can be found in the IT section of the university website.

## Health Services

### University Health Services (UHS)

University Health Services (UHS) provides primary health care services to all AUS students, faculty, staff members and their dependents. UHS is open Monday–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 by providing preliminary physical examinations to all students and employees as a mandatory part of the registration/employment process, followed by continued quality care throughout their time at AUS, including sport team fitness checks.

UHS is a Ministry of Health and Prevention licensed facility and is staffed with a qualified licensed medical team, which includes general practitioners and registered nurses. On-site counseling services are also available (refer to University Counseling Services at the end of this section).

UHS is equipped with an observation room (daycare) to closely monitor patients for short stays before transferring to a hospital if required. UHS has access to an on-campus laboratory and pharmacy to assist in serving the AUS community. An ambulance is on standby 24 hours a day within University City.

#### Health Education Programs

As part of an educational institution, UHS plays an active role in educating the university community and promotes on-campus health and wellness activities throughout the academic year. UHS programs include awareness campaigns on health-related issues.

#### Health Coverage Plans for Students

Health coverage is available for graduate students. It is required for graduate students sponsored by AUS (visa sponsored by AUS) and optional for those who are not sponsored by AUS.

Graduate students with insurance coverage through AUS will be enrolled in the Al Buhaira National Insurance Student Health Plan, along with to the University Hospital Sharjah Supplemental Student Health Plan, which is compulsory plan.

As part of the registration procedures, graduate students must complete their enrollment in the health insurance plans by the semester/term registration deadline to avoid incurring government fines at the time of UAE residence visa

renewal. UHS will not be liable for any such fines.

For health insurance plan registration details and other information, visit [www.aus.edu/life-at-aus/health-and-wellness/student-health-insurance](http://www.aus.edu/life-at-aus/health-and-wellness/student-health-insurance).

### 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.

### Interactive Trading Floor

The Interactive Trading Floor (ITF) at American University of Sharjah is a technologically advanced 22-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, and company- and industry analysis supporting data such as Capital IQ, Thomson Reuters and 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

Located in the School of Business Administration, the Jafar Center for Executive Education (JCEE) provides 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.

### Laboratories

#### Engineering and Computing Laboratories

The College of Engineering has 65 laboratories. 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.

The biomedical engineering laboratory houses some of the latest state-of-the-art equipment including high-density EEG system, mobile functional near IR spectroscopy, eye tracker, multi-channel potentiostat/galvanostat, clean bench with soft lithography setup, inverted fluorescence microscope, convection oven and vacuum desiccator, ultrasonic cleaner, deionized water system, amalgamator, autoclave, automated cell counter, cell culture fume hood, centrifuge, drying oven, dynamic light scattering, flow cytometer, fluorescence microscope, fluorescence spectroscopy, homogenizer, hydrophone, incubator, microplate reader, pH meter, rotary evaporator, uv-vis spectrophotometer and western blotting. Master's and doctoral students are involved in conducting advanced research work including mental stress management, flexible implantable neural electrodes, brain source imaging, spinal cord injury, ultrasound in cancer treatment with chemotherapy, microfluidics and Lab-on-a-Chip, system modeling and wastewater treatment.

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

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 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, high-performance computing, Internet of Things (IoT) programming, machine and deep learning, virtual and augmented reality, mobile and Internet computing, and artificial intelligence (AI).

Electrical engineering laboratories focus on electronics, electric power, control, measurements, machines, communications and signal processing, antennas and microwave, and medical electronics. The department also has a class 10,000 clean room facility for testing microelectronic chips, an advanced EDA lab, a PCB fabrication laboratory, a drone manufacturing and design lab, and an electric vehicles lab.

The Engineering Systems Management laboratory provides students with advanced software to develop their skills in system modeling, system analysis and decision-making. The lab has specialized optimization and simulation software to solve practical systems engineering problems in various areas such as supply chain management, production and inventory systems, maintenance engineering, quality engineering, engineering economics, project management and more.

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

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

Mechatronics engineering has a well-equipped center providing an excellent work environment for multidisciplinary teaching and research. Lab activities enable students to integrate, with synergy, contemporary precision mechanics, state-of-the-art control systems, embedded computers and electronics.

The various departments share eight computer labs with 274 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, a network access and equipment for simulated video conferencing.

### Media Communication Studio and Creative Laboratories

Students in the Department of Media 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 workstations 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 that provide a rich general and research laboratory experience for AUS students.

The biology laboratories are equipped with the latest light and phase compound microscopes, including a workstation with image analysis capabilities, laminar flow hoods, electrophoresis equipment, cryostat and microtome units, bone densitometers, a freeze drier, growth chambers and incubators, gel documentation systems, UV trans-illuminator, refrigerated microcentrifuges, trans-blot semi-dry transfer apparatuses, gel dryers, CO<sub>2</sub> cell incubators, -80 °C freezers, tissue homogenizers, and thermocyclers for DNA amplification.

The environmental sciences and chemistry laboratories are equipped with the latest sampling and analytical instrumentation including AA, GC-MS, FTIR, TOC, uHPLC, ICP-MS, ICP-OES, IC, GCFID, an elemental analyzer (CHNS analyzer), a 100 MHz NMR analyzer, various spectrophotometers, a rapid kinetic apparatus and physisorption apparatus.

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.

### 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 AUS Library provides a wide range of resources and services to meet the specialized needs of graduate students. The library has a collection of over 137,000 items that includes reference materials, books, DVDs, and magazines and scholarly journals. In addition to its print collections, the library provides access to over 950,000 e-books, thousands of electronic journals and over 90 online databases. An online library management system can be used to search for library materials from any location on or off campus. Library facilities include group study rooms, quiet study areas and media viewing rooms.

Working with professors, AUS librarians offer hands-on workshops on performing library research, conducting a literature review, reference management and using both print and electronic tools more effectively.

Graduate students can request books or journal articles not available in the library through the interlibrary loan service.

Further information regarding the library 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 research, creative and scholarly work. AUS offers

both its undergraduate and graduate students' opportunities to work on faculty research projects, to present papers with faculty at international conferences, and to assist faculty in developing their own research grants.

All internal or external research activity conducted at AUS is subject to the Policy on Research Administration, Research and Scholarly Misconduct, and Protection of Human Subjects, in addition to a multitude of financial compliance policies and procedures. Students' creative intellectual property is governed by the AUS Intellectual Property Policy. All relevant research policies and procedures are available on [ilearn.aus.edu/Community/Research Services/AUS Policies](http://ilearn.aus.edu/Community/ResearchServices/AUSPolicies).

AUS upholds its ethical responsibility to administratively review all proposed research projects involving human and animal subjects. 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. All studies involving animal subjects undergo protocol evaluation by the Institutional Animal Care and Use Committee (IACUC) before any study is undertaken.

AUS has a fully functional technology transfer office, accessible to both AUS students and faculty. The role of this unit is to educate the AUS community on increasing entrepreneurial awareness and assisting in the process of commercialization. The team handles all related functions, from reviewing AUS technologies with commercial potential and protecting AUS intellectual property to working with the inventor teams on market research and approaching industrial partners.

For further information on the university's research and grant opportunities, please visit the AUS website or email [research@aus.edu](mailto:research@aus.edu).

### Research Centers

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

#### Center for Entrepreneurship, Innovation and Sustainable Development

The Center for Entrepreneurship, Innovation and Sustainable Development (CEISD) is a multidisciplinary research center hosted in the School of Business Administration (SBA) and working in close collaboration with strategic partners in Sharjah to serve the entire AUS academic community in bringing the research innovations of students and faculty and promising ideas to the

marketplace and the community, and to help all entrepreneurial students/alumni and faculty tap into the innovation ecosystem of Sharjah and the UAE. The CEISD has a dual role as an academic research center and a university-innovation facilitator with local incubators. Areas of research interest covered by the center include entrepreneurial skills, management and growth strategies; sustainable food systems; environmental sustainability; social entrepreneurship and community-driven social change; the social impact of entrepreneurship and sustainable growth; technology production, innovation and sustainable development; responsible consumption/production and the circular economy in the fashion and tourism industries; and demography, human capital and talent acquisition. For more information, email [ceisd@aus.edu](mailto:ceisd@aus.edu).

### Energy, Water and Sustainable Environment Research Center

The Energy, Water and Sustainable Environment Research Center (EWSERC) is dedicated to addressing the increasing demands of energy and water while ensuring environmental sustainability. This center will be at the forefront of research in climate change, renewable energy and water resources. It aims to produce impactful interdisciplinary research that contributes to global sustainability efforts in areas such as renewable energy and smart grid; energy harvesting, conversion and storage; water quality and treatment; water supply, security and sustainability; and sustainable cities and infrastructure. The center is housed in the College of Engineering, with strong contribution from faculty and programs across AUS. EWSERC will support the UAE's strategic plans and vision towards a sustainable future. For more information, email [ewserc@aus.edu](mailto:ewserc@aus.edu).

### Materials Research Center

The Materials Research Center (MRC) aims to nurture and promote interdisciplinary research and education activities in the field of advanced materials and sustainable structures. The center will focus on cutting-edge technological research, fostering advancements in fields like advanced materials, materials for energy and environment, materials and structures, and analytical and computational modeling of materials. It is designed to be a hub for interdisciplinary research, hosted in the College of Arts and Sciences, bringing together experts from various departments. For more information, email [aalnaser@aus.edu](mailto:aalnaser@aus.edu).

### Testing Center

The AUS Testing Center serves as a central point of testing for both the AUS campus and the community.

The center administers placement tests for newly admitted AUS students and facilitates general university testing. The center also offers internationally recognized tests and vocational tests. In addition, it offers proctoring services for external tests, such as distance-learning examinations.

The Testing Center has professional, trained proctors certified by ETS and Pearson VUE®. It is an authorized TOEFL iBT Test Center and a Pearson VUE® authorized Test Center (PVT Select). AUS' main testing partners are ETS, AMIDEAST, British Council, College Board and NCEES.

Tests offered by the center include the Institutional paper-based TOEFL (ITP), Internet-based TOEFL (iBT), paper-based IELTS, computer-delivered IELTS, digital SAT, Fundamentals of Engineering Exam (FE), Principles and Practice of Engineering Exam (PE), Graduate Management Admission Test (GMAT), International Information System Security Certification Consortium (ISC)<sup>2</sup>, ICAEW and CISCO exams.

For inquiries about the AUS Testing Center, please contact +971 6 515 1000, email [testingcenter@aus.edu](mailto:testingcenter@aus.edu) or visit [www.aus.edu/testing-center](http://www.aus.edu/testing-center).

### University Sports Facilities

Student Athletics and Recreation manages the sports facilities, including the Sports Complex and the Sports Pavilion. The Sports Complex consists of indoor facilities such as basketball, 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, a beach volleyball court and a baseball field. The AUS Tennis Center is equipped with basketball and tennis courts.

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*, available at [www.aus.edu/student-handbook](http://www.aus.edu/student-handbook), and at [www.aus.edu/osa/athletics](http://www.aus.edu/osa/athletics). Interested AUS community members can also visit

the Sports Complex reception or call +971 6 515 2778.

## Student Life on Campus

### Student 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 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*, available at [www.aus.edu/student-handbook](http://www.aus.edu/student-handbook).

As part of OSA, Student Conduct and Conflict Resolution 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 Student Conduct and Conflict Resolution in a manner consistent with the core values of fairness, honesty and integrity. Student Conduct and Conflict Resolution 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. Student Conduct and Conflict Resolution 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*, available at [www.aus.edu/student-handbook](http://www.aus.edu/student-handbook).

### 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.

OSA provides a host of out-of-class learning opportunities in extracurricular areas for students to engage and

develop the student life experience at AUS. Student Affairs transforms student life with a purpose, engaging students in activities that facilitate their holistic development. 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 Engagement and Leadership, Student Clubs and Organizations, Community Services and Outreach, On-Campus Student Employment, Student Leadership Program, Student Residential Life, and Student Conduct and Conflict Resolution. The Office of Student Affairs is led by the Vice Chancellor for Student Experience.

More information on Student Affairs is available at [www.aus.edu/student-affairs](http://www.aus.edu/student-affairs). Students can also visit the Office of the Vice Chancellor for Student Experience (M-217/218/255A on the Second Floor of the Main Building), call +971 6 515 2166/2216 or email [studentaffairs@aus.edu](mailto:studentaffairs@aus.edu).

### Community Service and Outreach

Community Service and Outreach (CSO) is a division of Student Engagement and Leadership under the Office of Student Affairs. CSO offers AUS students the opportunity to get involved in social service and supporting charities. CSO goals go hand in hand with those of the Office of Student Affairs to facilitate the cultural, social and intellectual development of students. CSO aims to nurture responsible and effective individuals through its activities. It is the link between students and the various needs of society. It coordinates a variety of volunteer programs and encourages students to contribute toward the development of new ones. Current volunteer programs are listed in the Student Life section of the university website ([www.aus.edu/life-at-aus/student-life/community-involvement/cso-programs-and-events](http://www.aus.edu/life-at-aus/student-life/community-involvement/cso-programs-and-events)) and in the *Student Handbook*, available at [www.aus.edu/student-handbook](http://www.aus.edu/student-handbook).

Students who are interested to learn more about volunteer opportunities can visit Community Service and Outreach in the Student Center (office A222), call +971 6 515 2794 or email [osacom-services@aus.edu](mailto:osacom-services@aus.edu).

### Cultural Events

The Performing Arts Program presents a wide array of student productions in theatre, dance and music in the Arts Building rotunda or in the Main Building auditorium. For more information, visit

[www.aus.edu/cas/performing-arts-program](http://www.aus.edu/cas/performing-arts-program) or email [pap@aus.edu](mailto:pap@aus.edu).

### Graduate Student Association

The Graduate Student Association (GSA) is an interest-oriented association under Students Clubs and Organizations. GSA represents the interests and concerns of AUS graduate students. It strives to support and promote the identity and values of the graduate student body. Through various activities and initiatives, such as meetings, networking events, sports, seminars, research discussion groups and more, the GSA enriches the lives of graduate students and enhances the quality of their educational experience, which helps in building a strong sense of community both on and off campus.

Graduate students are automatically members of the GSA for each semester they are enrolled. The GSA is managed by the GSA Council, an elected group of students.

For more information about the GSA, please contact [gsa@aus.edu](mailto:gsa@aus.edu).

### Graduate Student Employment Opportunities

AUS offers graduate students several employment/learning opportunities on campus: employment through teaching assistantships, research assistants (on faculty research projects, both internally and externally funded grants), and as work-study students. For more information, please see [www.aus.edu/admissions/financial-grants-and-scholarships](http://www.aus.edu/admissions/financial-grants-and-scholarships).

### Student Athletics and Recreation

The Office of Student Affairs offers students many opportunities to develop their abilities in a variety of sports. Full-time and part-time coaches and trainers in Student Athletics and Recreation help develop students' fundamental skills in athleticism, strength and conditioning, and overall sportspersonship, as well as support and encourage students to adopt a disciplined and healthier approach to sports. AUS offers a variety of individual and group fitness classes, general leisure activities and a broad-base of competitive and recreational programming. For more information, visit the Sports Complex reception or [www.aus.edu/osa/athletics](http://www.aus.edu/osa/athletics) or call +971 6 515 2778.

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 excellent opportunity for students to socialize.

Student Athletics and Recreation also offers students the opportunity to

participate in local, regional and international intercollegiate sports tournaments.

### 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 Engagement and Leadership's offices are located at the center to provide students with non-academic support services and facilities under one roof. The Student Center provides a wide array of amenities and facilities. These include an information desk, a meeting room, club workstations, TV lounges, a floating theatre and a multipurpose room.

Student Engagement and Leadership manages the Student Center facilities and all events and activities that take place at the center throughout the year. For more information about the Student Center call +971 6 515 2716.

### Student Clubs and Organizations

Student-sponsored organizations are an integral part of the learning process at AUS. 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 Engagement and Leadership 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 backgrounds of AUS students. Cultural, interest-oriented and academic association 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 list of student clubs, visit [www.aus.edu/osa/studentorganizations](http://www.aus.edu/osa/studentorganizations).

For more information about student clubs and organizations, please email [seld@aus.edu](mailto:seld@aus.edu).

### OSA Student Engagement System

Participation in student clubs and organizations is strongly encouraged. Students can explore unique

opportunities at AUS through OSA's Leopards Engage online student engagement platform. Leopards Engage enhances students' extracurricular experience at AUS by helping them discover organizations to join, explore on- and off-campus events, and track their involvement. For information, log in to engage.aus.edu.

### Student Council

His Highness Sheikh Dr. Sultan bin Mohammed Al Qasimi strongly encouraged AUS students to establish a Student Council in order to ensure student representation on campus.

The AUS Student Council is an elected body that articulates undergraduate students' views and interests in the university. The Student Council is dedicated to the continuous development and welfare of AUS undergraduate students. The Student Council is a vehicle for ensuring that undergraduate students can have a voice in formulating university priorities and policies. It provides support for the various student organizations and clubs, offering guidance, in an attempt to build a generation that is established on the notions of teamwork, dedication and responsibility.

The Student Council is the executive authority of the Student Union, consisting of 14 executive officers elected through campus-wide elections and two appointed committee members. The Student Council follows its constitution and by-laws in decisions made by members and the council. The constitution and by-laws are written and amended by the Student Council and approved/endorsed by the Vice Chancellor for Student Experience and the Chancellor. The Vice Chancellor for Student Experience advises the Student Council.

For information, please see the *Student Handbook*, available at [www.aus.edu/student-handbook](http://www.aus.edu/student-handbook), visit the Student Council office in the Student Center (office A107) or visit [www.aus.edu/student-council](http://www.aus.edu/student-council).

### Student Engagement and Leadership

Student Engagement and Leadership promotes students' intellectual growth, skills and all-round personality development by engaging them in registered student organizations, volunteer programs, on-campus student employment, and varied events and activities locally, regionally and internationally. Student Engagement and Leadership 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*, available at [www.aus.edu/student-handbook](http://www.aus.edu/student-handbook), or visit the Student Engagement and Leadership office in the Student Center (office A252).

### Student Leadership Program

Student Leadership Program (SLP) is a division of Student Engagement and Leadership that recognizes leadership as an important aspect of a complete college education. SLP offers a wide range of opportunities for students to develop their leadership, personal and communication skills, and prepares them for a lifelong commitment to leadership and good citizenship.

SLP engages students in local, regional and international conferences and Model United Nations simulations that aid in the development of character, public speaking skills, confidence, mindset and overall leadership capabilities. Students can choose to get involved in programs such as the Peer Leaders Program, Women's Leadership and Enrichment Program, and the Youth Leadership Training Program. They can also participate in the AUS Student Lecture Series and attend workshops under the Student Training and Workshop Series.

For more information, visit office A250 in the Student Center, go to [www.aus.edu/leadership-program](http://www.aus.edu/leadership-program), email [osaslp@aus.edu](mailto:osaslp@aus.edu) or call +971 6 515 4774.

### 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.

AUS has a dedicated residential hall for male and female graduate students and researchers separate from undergraduate students. This is to enable more interaction between the graduate students to provide a conducive living-learning environment. Students can select between three types of rooms: private, semi-private and sharing rooms.

Living in the residential halls is a positive educational experience and students are encouraged to live on campus. Living on campus complements the overall learning experience by fostering independence and tolerance of others. 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 convenient bus service between the residential halls and other areas on campus. For more information about the services and facilities in the residential halls, see [www.aus.edu/residential-halls](http://www.aus.edu/residential-halls).

The residential halls for male and female students are completely separate. All hall residents are expected to spend every night in the halls. Safety and security are top priorities. Security patrols, surveillance cameras, secure entry systems and professional staff are all available around-the-clock.

Regulations for the residential halls are available in the *Student Handbook*, available at [www.aus.edu/student-handbook](http://www.aus.edu/student-handbook), and at [www.aus.edu/residential-halls](http://www.aus.edu/residential-halls).

### Students with Disabilities/Students of Determination

AUS students who require support due to disabilities should contact the Academic Support Center at [asc@aus.edu](mailto:asc@aus.edu).

### 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 Accommodations for Students with Disabilities/Students of Determination

AUS adheres to the Americans with Disabilities Act (ADA) definition and guidelines for disabilities and follows the UAE Federal Law 29 of 2006 when it comes to students with disabilities/students of determination. The Academic Support Center offers students with disabilities academic accommodations, to the extent permissible by available resources, to allow all students equal educational, cultural and social opportunities at AUS. For more information, visit [www.aus.edu/life-at-aus/empowering-every-student-accessibility-support](http://www.aus.edu/life-at-aus/empowering-every-student-accessibility-support) or email [asc@aus.edu](mailto:asc@aus.edu).

### Study Abroad

The International Exchange Office (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 exchange or visiting 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 guests-in-residence (VGIR), visiting guests and delegations, and tuition exchange programs.

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

### University Counseling Services

University Counseling Services (UCS) provides psychological services that are designed to help students achieve their educational goals, learn the process of problem solving and decision making, develop the capacity for satisfying relationships, and learn to make full use of their potential for continued growth beyond their educational experience.

#### Counseling

Counselors at UCS help students explore any academic or personal problems or concerns that they may be experiencing. Some common issues that bring students to UCS include adjusting to university life, confusion about life or career goals, identity concerns, relationship conflicts, anxiety, depression, or dealing with grief and loss.

UCS counselors are prepared to deal with a multitude of issues or concerns and encourage students to identify personal goals and help them develop coping skills and generate solutions for current difficulties.

Counseling is strictly confidential. The information shared with a 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.

Students can schedule appointments at [ucsappointments.youcanbook.me](http://ucsappointments.youcanbook.me).

Further details are available at [www.aus.edu/life-at-aus/student-](http://www.aus.edu/life-at-aus/student-)

[life/student-support-services/counseling-services](http://life/student-support-services/counseling-services).

#### 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 library website at <https://aus.libguides.com/well-being>. 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.

#### Support Group Counseling

UCS offers support group counseling which can be a powerful and valuable venue for healing and growth. These support groups are single-session, open groups in which anyone can voluntarily participate in a safe environment that is nonjudgmental, respectful and confidential. To participate in confidential support group counseling, visit <https://ausucs-supportgroup.youcanbook.me/>.

### Writing Center

The AUS Writing Center, located on the ground floor of the AUS Library building (room LIB 024), 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 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/writing-center](http://www.aus.edu/cas/writing-center).

# Admission to Graduate Studies

American University of Sharjah is a center for high-quality graduate education and research as well as a resource for sustainable development and advancement for the Gulf region and internationally. Students in AUS graduate programs find career advancement opportunities and personal enrichment. These programs foster a stimulating intellectual environment of collaborative research and intellectual exchange. The university's cross-disciplinary graduate courses and specialized programs attract excellent students who pursue creative and original work under the guidance of highly qualified, dedicated faculty members recruited from the most prestigious universities in the United States, Canada and around the world.

## Degree Offerings

AUS currently offers 23 programs of graduate studies: 18 master's degree programs and five PhD degree program. These are:

### College of Architecture, Art and Design

- Master of Urban Planning

### College of Arts and Sciences

- Master of Arts in International Studies
- Master of Arts in Teaching English to Speakers of Other Languages
- Master of Science in Mathematics
- Doctor of Philosophy in Materials Science and Engineering
- Doctor of Philosophy in Mathematics

### College of Engineering

- Master of Science in Biomedical Engineering
- Master of Science in Chemical Engineering
- Master of Science in Civil Engineering
- Master of Science in Computer Engineering
- Master of Science in Construction Management
- Master of Science in Electrical Engineering
- Master of Science in Engineering Systems Management
- Master of Science in Machine Learning
- Master of Science in Mechanical Engineering
- Master of Science in Mechatronics Engineering
- Doctor of Philosophy in Biosciences and Bioengineering
- Doctor of Philosophy in Engineering - Engineering Systems Management

### School of Business Administration

- Master of Business Administration
- Master of Science in Accounting
- Master of Science in Economics and Policy
- Master of Science in Finance
- Doctor of Philosophy in Business Administration

## Application Process

Admission to all AUS graduate programs is processed through the Office of Enrollment Management/ Graduate Admissions. Applicants should address all inquiries, requests for application forms and correspondence to:

American University of Sharjah  
Office of Enrollment Management  
Graduate Admissions  
PO Box 26666  
Sharjah, United Arab Emirates  
+971 6 515 1000  
graduateadmissions@aus.edu

To apply to graduate studies at AUS, applicants must:

- complete the online application ([www.aus.edu/apply](http://www.aus.edu/apply))
- submit the official transcript, graduation diploma and TOEFL or IELTS (Academic Version) or EmSAT (Achieve English) score report
- submit a current curriculum vitae/resume
- submit reference letters using the AUS online template (available through [apply.aus.edu](http://apply.aus.edu)), as detailed in the Reference Letters section below
- meet all program-specific requirements
- pay the application fee

Applicants are requested not to mail any original certificates or transcripts. The original attested documents must be presented during file completion sessions or upon request by the Office of Enrollment Management/ Graduate Admissions.

Incomplete applications are not processed.

Applicants must satisfy both the general university requirements for graduate admission and the specific admission criteria of the degree program to which they are applying. The Office of Enrollment Management/Graduate

Admissions determines if the applicant meets the general university requirements for graduate admission. Recommendations for admission to a specific degree program are made by the pertinent degree program's graduate admission committee.

## Reference Letters

Along with their online application, applicants to master's degree programs and applicants to PhD degree programs must submit reference letters as follows:

### Master's Degree Programs

- applicants to College of Engineering master's degree programs: two reference letters
- applicants to master's degree programs in all other colleges/school: one reference letter

### PhD Degree Programs

Applicants to PhD degree programs must provide:

- three reference letters. At least two of the letters must be from an academic advisor/faculty member who is familiar with the applicant's background.
- a Statement of Purpose (about 1,500 words) describing experiences, research interests and reasons for applying for admission to the doctoral program.

## Attestation and Equivalency of Admission Credentials

Diplomas and transcripts issued by UAE private universities accredited by the UAE Ministry of Education or by universities outside the UAE must be attested. For details, refer to [www.aus.edu/required-attestations](http://www.aus.edu/required-attestations).

Applicants to a master's degree program who earned their undergraduate degree from universities outside the UAE and applicants to a PhD degree program who earned their undergraduate degree and/or their graduate degree from universities outside the UAE must present a Certificate of Equivalency or a Qualification Recognition report for their graduation certificates from the UAE Ministry of Education. For details, refer to [www.aus.edu/qualification-recognition-report](http://www.aus.edu/qualification-recognition-report).

Applicants who earned their degrees from universities inside the UAE may be required to present a Certificate of Equivalency or a Qualification Recognition report for their graduation certificates from the UAE Ministry of Education. In such cases, Graduate Admissions will notify the applicants. For details on the equivalency or qualification

recognition process, refer to [www.aus.edu/qualification-recognition-report](http://www.aus.edu/qualification-recognition-report).

### Custody of Admission Records

All transcripts and other documents applicants submit at the time of application or during file completion are the property of AUS, and, as such, are part of the applicant digital file. The university is not required to provide (or allow the making of) copies of these documents. Transcripts submitted to AUS for admission or transfer of credit hours cannot be returned to the applicant or forwarded to other institutions.

### Waiver of English Language Proficiency Requirement

Applicants to AUS graduate degree programs may be exempted from the English language proficiency admission requirement provided the conditions below are met. Decisions regarding exemptions are made by the Office of Enrollment Management/Graduate Admissions. Applicants are required to present supporting documents.

#### *Applicants to a Master's Degree Program*

Applicants who are native English speakers and who have completed their undergraduate education in an English-medium institution may be considered for exemption from the English language proficiency admission requirement.

Holders of a bachelor's degree awarded by AUS are exempted from the English language proficiency admission requirement. AUS bachelor's degree holders who were admitted with English language proficiency tests that are no longer recognized by the UAE Ministry of Education's Higher Education Affairs Division are not eligible for this exemption.

#### *Applicants to a PhD Degree Program*

Holders of a bachelor's or master's degree awarded by AUS are exempted from the English language proficiency admission requirement. AUS bachelor's degree holders who were admitted with English language proficiency tests that are no longer recognized by the UAE Ministry of Education's Higher Education Affairs Division are not eligible for this exemption.

Applicants who have earned a master's degree from an institution where English is the language of instruction and whose English language credentials at the time of their admission to the earned master's degree met the current AUS English language proficiency requirement for full graduate admission may be exempted from the English language proficiency admission requirement. Exemption will be determined at AUS admission time upon evaluation of the score report that was

submitted for admission to the institution of graduation.

The score report submitted for admission to the institution of graduation will be required for evaluation at the time of applying.

### Application Deadlines

Applicants should submit complete online applications by the following dates:

#### Master's Degree Programs

##### *Spring Semester 2025*

Students applying for assistantship: November 21, 2024

Students not applying for assistantship: December 26, 2024

##### *Fall Semester 2025*

Students applying for assistantship: May 29, 2025

Students not applying for assistantship: July 24, 2025

#### PhD Degree Programs

##### *Spring Semester 2025*

Contact the Office of Enrollment Management/Graduate Admissions at [graduateadmissions@aus.edu](mailto:graduateadmissions@aus.edu) for information on PhD programs that offer admission in spring semesters.

Applications must be submitted by the following deadlines:

Students applying for assistantship: November 21, 2024

Students not applying for assistantship: December 26, 2024

##### *Fall Semester 2025*

Students applying for assistantship: May 29, 2025

Students not applying for assistantship: July 24, 2025

### General University Requirements for Graduate Admission

#### Full Admission

For full admission to a graduate program at AUS, an applicant must meet the general university admission requirements detailed in the sections below. Some degree programs may require additional specific admissions requirements. For details, please refer to the relevant degree program section of this catalog.

#### Master's Degree Programs

Applicants to a master's degree program must:

- hold a four-year bachelor's degree from an independently accredited university recognized by the UAE Ministry of Education's Higher Education Affairs Division and by AUS. Applicants with a bachelor's degree obtained outside the UAE must submit a Certificate of Equivalency or a Qualification Recognition report of their degree from the UAE Ministry of Education. For details, refer to [www.aus.edu/qualification-recognition-report](http://www.aus.edu/qualification-recognition-report).
- have attained a minimum undergraduate cumulative grade point average (CGPA) of 3.00 (on a scale of 4.00) or its equivalent
- have attained a minimum iBT score of 80 or a minimum IELTS score of 6.5 (Academic Version) or a minimum EmSAT (Achieve English) score of 1550

#### PhD Degree Programs

##### *Applicants with a Master's Degree*

Applicants holding a master's degree who are applying to a PhD degree program must:

- hold a master's degree from an independently accredited university recognized by the UAE Ministry of Education's Higher Education Affairs Division and by AUS. Applicants with a master's degree obtained outside the UAE must submit a Certificate of Equivalency or a Qualification Recognition report of their degree from the UAE Ministry of Education.
- have achieved a minimum master's degree cumulative grade point average (CGPA) of 3.00 (on a scale of 4.00) or its equivalent. Some programs may require a higher CGPA.
- have attained a minimum iBT score of 80 or a minimum IELTS score of 6.5 (Academic Version) or a minimum EmSAT (Achieve English) score of 1550

##### *Applicants with a Bachelor's Degree (Direct Admission)*

Applicants holding a bachelor's degree applying for direct admission to a PhD degree program must:

- hold a bachelor's degree from an independently accredited university recognized by the UAE Ministry of Education's Higher Education Affairs Division and by AUS. Applicants with a bachelor's degree obtained outside the UAE must submit a Certificate of Equivalency or a Qualification Recognition report of their degree from the UAE Ministry of Education.
- have achieved a minimum bachelor's degree cumulative grade point average (CGPA) of 3.50 (on a scale of 4.00) or its equivalent.

- have attained a minimum iBT score of 80 or a minimum IELTS score of 6.5 (Academic Version) or a minimum EmSAT (Achieve English) score of 1550.

AUS accepts applications for direct admission to the engineering systems management and the materials science and engineering PhD degree programs. In addition to the general admission requirements listed herein, further program-specific admission requirements must be satisfied. For details, refer to the degree programs sections later in this catalog.

Only applicants meeting the full admission requirements will be considered for PhD degree program admission.

### Conditional Admission

Applicants to a master's degree program, holding a four-year bachelor's degree from an independently accredited university recognized by the UAE Ministry of Education's Higher Education Affairs Division and by AUS, but who otherwise do not meet the general university requirements for full admission to a master's degree, may be granted conditional admission, provided one of the following requirements is met:

- The applicant has achieved a minimum undergraduate cumulative GPA of 3.00 (on a scale of 4.00) or its equivalent, and an iBT score of less than 80 but greater or equal to 71, or an IELTS score (Academic Version) less than 6.5 but greater or equal to 6.0, or an EmSAT (Achieve English) score less than 1550 but greater or equal to 1400.
- The applicant has achieved an undergraduate cumulative GPA less than 3.00 but greater or equal to 2.50, and has attained a minimum iBT score of 71 or a minimum IELTS score of 6.0 (Academic Version) or a minimum EmSAT (Achieve English) score of 1400. Applicants with an undergraduate cumulative GPA below 2.50 but greater or equal to 2.00 may be considered for conditional admission on a case-by-case basis, as evaluated by the degree program they are applying to.

**Note:** The MBA and MATESOL degree programs require a minimum Internet-Based TOEFL score of 80 or a minimum IELTS (Academic Version) score of 6.5 or a minimum EmSAT (Achieve English) score of 1550. Conditional admission to these two degree programs may only be granted accordingly.

Conditional admission applicants may be required to meet additional requirements as specified by their requested master's degree program. Applicants should

consult the relevant master's degree program section of this catalog.

### Achieving Full Admission Status

To be accorded full admission into their master's degree program, conditional admission students must satisfy the following requirements and any other conditions imposed by the degree program:

- Students who did not meet the minimum English language proficiency scores for full admission must achieve, before the beginning of the second semester of study, the required minimum scores.
- Students who did not meet the minimum undergraduate cumulative GPA required for full admission must achieve a cumulative GPA of at least 3.00 in the first two graduate-level courses (for a minimum of six credit hours). Remedial/bridging courses do not satisfy this requirement. (For details on remedial/bridging courses, refer to Bridging Courses in Registration and Course Information within the Academic Policies and Regulations section later in this catalog.) Courses must be completed over a maximum period of two consecutive semesters, with the summer term considered as a semester. Students who fail to meet this requirement by the conclusion of the second semester of study may petition the Office of Enrollment Management/Graduate Admissions for an extension of one semester/term. Petitions must be submitted for the semester/term immediately following the completion of the first six credit hours of graduate-level courses. Extensions are granted only in exceptional circumstances. Students granted an extension of one semester/term are not eligible for further extensions.

If the above provisions and additional specific conditions imposed by the master's degree program are not met, the student will not be allowed to continue master's degree studies at AUS.

Conditionally admitted students are not eligible to register for more than two graduate-level courses (a maximum of six credit hours) per semester. Further details on student's course load are provided in Student Course Load under the Academic Policies and Regulations section later in this catalog.

### Transfer Applicants

Applicants transferring from independently accredited universities recognized by the UAE Ministry of Education's Higher Education Affairs Division and by AUS and offering learning experiences equivalent to those offered at AUS may be considered for transfer

admission, provided the following conditions are met:

- Applicants have successfully completed one or more semesters at their institution.
- Applicants are in good standing (i.e., not on any probation or dismissal from the institution from which they are transferring).
- Applicants achieved at the institution they are transferring from a minimum cumulative grade point average (CGPA) of 3.00 or its equivalent.
- Applicants meet the AUS general university requirements for graduate admission/full admission (for the full list of admission requirements, refer to Full Admission earlier in this section).

Transfer applicants may not be granted conditional admission.

Transfer applicants must complete an online application at [apply.aus.edu](http://apply.aus.edu) by the dates specified in the Application Deadlines section.

In addition to providing the official transcripts of their university studies, transfer applicants must submit the syllabi for and descriptions of courses they seek to transfer. For details on transfer of credit hours, see Transfer of Credit Hours later in this section.

### Applicants for a Second Master's Degree

Holders of a master's degree awarded by AUS or another independently accredited university recognized by the UAE Ministry of Education's Higher Education Affairs Division and by AUS may apply for admission to an AUS master's degree program.

Applicants for a second master's degree must complete an online application at [apply.aus.edu](http://apply.aus.edu) by the dates specified in the Application Deadlines section. The official transcript of the previously earned master's degree must be submitted.

To be considered for admission, applicants must satisfy the general university requirements for graduate admission/full admission (refer to Full Admission and Conditional Admission earlier in this section), as well as any specific requirements set by the master's degree program they are applying to. For details on program-specific admission requirements, please refer to the relevant degree program section of this catalog. Holders of a master's degree awarded by AUS are considered to have met the AUS general university requirements for graduate admission/full admission.

Graduate courses applied towards a previously earned master's degree may be considered for transfer of credit hours.



Whether the first master's degree was awarded by AUS or by another university, the grades earned for courses completed to fulfill the requirements of the first master's degree program will not count in the calculation of the cumulative GPA for the second master's degree program. Approved courses that meet the graduation requirements of the second master's degree program will be recorded as transferred courses. For more information on transfer of credit hours, see Transfer of Credit Hours later in this section.

Policies and regulations governing registration, grades and graduation requirements apply.

### Non-degree Admission

Non-degree status is assigned to students who enroll in courses at AUS without pursuing a degree. Non-degree status does not apply to exchange, transient and visiting students.

Non-degree graduate applicants must meet the same minimum admission criteria established for full or conditional admission and complete an online application at [apply.aus.edu](http://apply.aus.edu) by the dates specified in the Application Deadlines section. Applicants must apply to the graduate degree program offering the courses they wish to take.

AUS graduate students who have been dismissed or who interrupt their studies may not apply for admission as graduate non-degree seeking students.

AUS graduate students enrolled in a degree program may not change their status to graduate non-degree seeking students.

Non-degree graduate students may enroll in any graduate 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 degree-seeking students.

Non-degree graduate students may register for a total of nine credit hours in graduate courses. Non-degree graduate students who do not meet the requirements for full admission may register for no more than two graduate courses (a maximum of six credit hours) in their first semester of study. If all requirements for achieving full admission status of graduate conditionally admitted students are met (refer to the Conditional Admission section earlier in this section), registration in a subsequent semester/term will be allowed. Registration in courses is subject to approval by the relevant graduate program coordinator. Standard graduate tuition and fees apply.

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

### Returning Students Admission

Graduate students in good academic standing who leave AUS for more than two consecutive semesters, inclusive of semesters of complete course withdrawal, who wish to resume graduate studies must complete an online application at [apply.aus.edu](http://apply.aus.edu) by the dates specified in the Application Deadlines section.

Readmission of returning students is subject to AUS academic rules and regulations on readmitting students. All admission requirements in place at the time of applying for readmission must be met.

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

Students on academic probation and dismissed students may not apply for readmission.

### Applicants with Disabilities/Applicants of Determination

Depending on available facilities and the type of disability, the university may provide special services to applicants with disabilities/applicants of determination (Visit [www.aus.edu/life-at-aus/empowering-every-student-accessibility-support](http://www.aus.edu/life-at-aus/empowering-every-student-accessibility-support)).

Applicants are requested to contact the Academic Support Center at [asc@aus.edu](mailto:asc@aus.edu) to determine if a specific service can be provided by AUS. This information will be treated confidentially.

### The Offer of Admission

The offer of admission, regardless of type, is valid only for the semester for which the candidate has applied. Applicants can defer their admission for one semester. Deferral requests should be submitted online on [apply.aus.edu](http://apply.aus.edu). Applicants who wish to defer the application for one academic year or longer must submit a new application; a new application fee will apply.

Applicants wishing to change the degree program they were admitted to after receiving the admission offer must submit a new application. A new application fee will apply. Applicants applying for graduate assistantship under the new degree program must submit new reference letters addressed to the new degree program.

### Falsified Admission Documents

AUS 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 or matriculation to a program.

### Other Admission Categories

#### Exchange Students Admission

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

To be admitted as an exchange graduate student, a student must be enrolled in a graduate degree 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 a minimum EmSAT (Achieve English) score of 1550, 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 an English language proficiency 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 International Exchange Office (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 fourth Saturday of April for summer enrollment, the fourth Saturday of March for fall enrollment and the fourth Saturday of October for spring enrollment.

Exchange graduate students register through IXO. They may enroll in any university graduate-level course for which they have the necessary academic background and qualifications, subject to the approval of the relevant graduate program coordinator or college/school associate dean for graduate studies. In courses with enrollment limits, priority is 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).

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

### Transient Students Admission

Transient student status is assigned to students who have obtained their undergraduate or graduate degrees from AUS and have returned to take extra course(s) at AUS.

Applicants seeking graduate transient student status at AUS and meeting the above criteria could be considered for graduate transient student admission. Applicants 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).

Graduate transient students may enroll in any university graduate-level 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. Standard graduate tuition and fees apply.

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

### Visiting Students 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 credit hours to their programs.

To be admitted as a visiting graduate student, a student must be enrolled in a graduate degree 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 a minimum EmSAT (Achieve English) score of 1550, 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 an

English language proficiency admission requirement higher than at AUS, are exempt from this requirement.

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

If the application is approved, registration is completed through IXO. Visiting graduate students may enroll in university graduate-level courses for which they have the necessary academic background and qualifications, subject to approval by the relevant graduate program coordinator or college/school associate dean for graduate studies. In courses with enrollment limits, priority is given to AUS students. Tuition and fees of visiting students coming through third-party providers are governed by annual financial agreements. Details are available with AUS IXO. Visiting students applying directly to AUS are charged the standard graduate tuition and fees.

Normally, 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).

Graduate students admitted as visiting students may request to change status to graduate 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 graduate degree status or from exchange/visiting to graduate degree status by submitting a complete Transfer Applicants online application by the deadlines specified in Application Deadlines earlier in this section. All admissions requirements for transfer admission in place at the time of the change of status request must be met. In addition, students wishing to transfer to degree status must have achieved a minimum cumulative GPA of 3.00 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 GPA.

Courses completed outside AUS prior to admission to the degree program are evaluated for transfer of credit hours at

degree program admission time. The university rules and regulations governing transfer courses and credit hours will apply.

The degree program graduation requirements are determined by the catalog effective when the student is admitted to the degree program. For more information, please refer to the Catalog section under Graduation Requirements in Academic Policies and Regulations later in this catalog.

### Transfer of Credit Hours

Transfer credit hours may be awarded to applicants from the following categories:

- transfer applicants from recognized graduate schools at independently accredited universities recognized by the UAE Ministry of Education's Higher Education Affairs Division who meet the general university requirements for graduate admission/full admission
- second degree applicants with a master's degree awarded by AUS or by recognized graduate schools at independently accredited universities recognized by the UAE Ministry of Education's Higher Education Affairs Division who meet the general university requirements for graduate admission/full admission
- applicants to a master's degree program with a bachelor's degree awarded by AUS who have completed master's-level courses while at the undergraduate level in the context of the AUS Accelerated Master's Program (AMP), and who meet the general university requirements for graduate admission/full admission

Transfer of credit hours may also be awarded to AUS students pursuing an AUS master's or PhD dual degree program. For details, consult the relevant master's or PhD degree program section of this catalog.

Applicants for transfer of credit hours must submit their official transcripts, syllabi and other material required by the program to the Office of Enrollment Management/Graduate Admissions by the application deadlines specified earlier in this section.

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.

Transfer credit hours are evaluated at the time of admission. Transcripts of transfer students will be evaluated only once.

To be evaluated for transfer, the course work must have been taken for graduate credit and applied toward a graduate

degree at the host institution. Courses successfully completed in the context of the AMP qualify for evaluation towards transfer of credit hours. Only graduate-level courses completed with a grade of B or higher will be evaluated for transfer of credit hours.

Courses delivered online or in a hybrid mode at the host institution may be evaluated for transfer of credit hours provided the AUS equivalent courses are offered in the same mode of delivery.

Courses identified as equivalent in content and level to AUS courses will be transferred as the equivalent AUS course. Other appropriate graduate-level courses may be transferred as unspecified electives. Courses completed in a hybrid format at the host institution cannot be transferred as unspecified electives. Transfer of credit hours will not be accepted for research and thesis hours, travel experience or work/life experience.

Courses completed more than five years from the start date of the first semester of study of the current graduate degree program at AUS are not transferable.

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

Grades earned in transferred courses do not count in the student's cumulative GPA. Credit hours of transferred courses count in the cumulative earned hours and may apply towards meeting registration and graduation requirements.

Applicants to a master's degree program may be granted up to six credit hours in master's-level courses. Applicants to a PhD degree may be granted up to nine credit hours in doctoral-level courses. Students granted transfer credit hours must satisfy the university's graduation residence requirements as outlined in the Academic Policies and Regulations section of this catalog.

While credit hours will be temporarily transferred, the student will not be awarded his/her graduate degree until AUS receives the UAE Ministry of Education's Higher Education Affairs Division verification of the host institution's transcript.

Students will be notified of their transferred credit hours by the Office of the Registrar.

Decisions regarding the award of transfer credit hours are made by the appropriate academic divisions at AUS with input from faculty with expertise in the subject

area. The Office of the Registrar maintains and updates the transfer students' records.

## Course Waiver

A graduate student may qualify to waive any or all of the discipline-bridging courses of a degree program. In general, a course may be waived if the student has completed comparable undergraduate or graduate level course work at an independently accredited university recognized by the UAE Ministry of Education's Higher Education Affairs Division. Students may be required to submit course documentation. Waivers are only granted after an official, sealed transcript is received by the AUS Office of Enrollment Management/Graduate Admissions.

Students with professional experience and/or holders of professionally recognized certificates (e.g., CPA or CFA) that indicate mastery of the content of a discipline-bridging course may be granted a waiver.

The waiver must be established at the time of admission.

Decisions regarding the waiver of a course are made by the appropriate degree program at AUS. The Office of the Registrar maintains and updates the students' records.



# Tuition and Fees

## Graduate Tuition and Fees

Tuition of graduate students is determined based on the number of credit hours registered by the end of the Add and Drop period of a given semester/term, inclusive of the credit hours of audited courses. Graduate student tuition, additional fees and housing charges are given in the tables below.

Non-degree and transient students must pay the same tuition and fees as regular students.

Tuition and fees of visiting students coming through third-party providers are governed by annual financial agreements. Visiting students applying directly to AUS are charged 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.

### Graduate Tuition (in AED)

College of Architecture, Art and Design	5,190 per credit hour
College of Arts and Sciences	
Master's degree programs	4,140 per credit hour
PhD degree program	5,190 per credit hour
College of Engineering	
Master's degree programs	5,190 per credit hour
PhD degree program	5,190 per credit hour
School of Business Administration	
Master's degree programs	5,190 per credit hour
PhD degree program	5,190 per credit hour

### 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	1,470
Lab/Technology Fee B	Applies for each registered course that has Lab/Tech Fee Rate B noted in its course description	1,610

Other Fees (in AED)		
Application Fee		450*
Student Activities		100 per semester*
Thesis/Project Extension Fee		200
<p><b>Medical Coverage</b>                      Medical coverage is mandatory for AUS-sponsored graduate students; it is optional for graduate students who are not sponsored by AUS.</p> <p>Medical coverage fees for students who are not registered in any specific semester are dependent on the visa status of the student and the plan selection in the previous semester.</p> <p>For information on the medical coverage plans, visit <a href="http://www.aus.edu/life-at-aus/health-and-wellness/university-health-services/student-health-insurance-plans">www.aus.edu/life-at-aus/health-and-wellness/university-health-services/student-health-insurance-plans</a>.</p>		
<p><b>Al Buhaira National Insurance Student Health Plan:</b> For AUS-sponsored graduate students and for graduate students who are not on AUS sponsorship and who apply for insurance coverage through AUS.</p>	600 per semester*	300 per summer term*
<p><b>University Hospital Sharjah Supplemental Student Health Plan:</b> Compulsory plan for all graduate students under the Al Buhaira National Insurance Student Health Plan.</p>	112.50 per semester* and **	45 per summer term*

\* 5% VAT charge applies

\*\* Premium can be waived for University Hospital Sharjah Supplemental Student Health Plan only for students who are not on AUS sponsorship and their private insurance covers University Hospital Sharjah. Students will be required to provide proof of coverage to apply for the waiver.

Student Housing Fees (in AED)			
Utilities Service Fee	Fee automatically added to any residential hall room reserved (except in summer)	290*	
Residential Halls 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	15,000	6,890
<b>Semi-Private</b>	Single occupancy with a shared bath and kitchenette (females only)	11,000	4,880
<b>Sharing</b>	Double occupancy with a shared bath and kitchenette	7,000	3,710

\* 5% VAT charge applies

\*\*Applicants who cancel their room reservations after the deadline set by Student Residential Life will be charged AED 500, which will be deducted from the Residential Halls Maintenance Deposit.

Fines/Charges (in AED)	
Late Payment (if tuition and fees are not settled by the first due date)	500*
Declined Credit Card (per transaction for deferred payments – if credit card is declined upon charging)	500*

\* 5% VAT charge applies

## 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 methods of payment listed below. For the updated payment terms of a specific semester/term, please consult the published payment guide of the relevant semester/term (available at [www.aus.edu/payment-guide](http://www.aus.edu/payment-guide)).

- online payment by credit card through the AUS payment portal
- direct transfers to Sharjah Islamic Bank Account No. 0011-200170-001, IBAN number: AE02 0410 0000 11200170 001 (student's name and ID number must be noted on transfer)
- direct cash deposit at Al Ansari Exchange (student's name and ID number must be noted on the transfer)

A charge of AED 500 + 5% VAT is added 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 Student Accounts at [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 has a clean payment history
- The credit card authorization is completed by the student through the AUS payment portal and is approved by a Finance Department official.

## Late Fees and Fines

All university students must adhere to university deadlines, rules and regulations. Late fees and fines, with 5% VAT if applicable, may apply for late book returns, parking violations, breakage, late tuition payment, etc.

## Graduate Student Employment Opportunities

AUS offers graduate students two types of on-campus employment: graduate assistantships as research assistants on faculty research projects and graduate work-study positions.

Assistantships are available to qualified graduate students and are competitively awarded and merit based.

Graduate students granted an assistantship opportunity are required to be available on campus during work hours.

A variety of student work-study opportunities are available through specific departments, graduate programs and AUS internal research grants to faculty members.

For information on eligibility and application guidelines, please visit [www.aus.edu/admissions/financial-grants-and-scholarships](http://www.aus.edu/admissions/financial-grants-and-scholarships).

## Sponsorship Liaison Services

Sponsorship Liaison Services is the main link between external organizations and their sponsored AUS students. Sponsorship Liaison Services provides various support services to both the sponsoring organizations and sponsored students, including providing assistance with the enrollment procedures, communicating progress reports, offering guidance, coordinating financial-related matters with the AUS Finance Department, and arranging for meetings between sponsors and students.

For inquiries regarding sponsorship opportunities, please contact Sponsorship Liaison Services at +971 6 515 1000, submit a query on [sponsors@aus.edu](mailto:sponsors@aus.edu) or visit [www.aus.edu/sponsorship-liaison-services](http://www.aus.edu/sponsorship-liaison-services).





# Academic Integrity

## Student Academic Integrity Code

Academic integrity lies at the heart of intellectual life. As an institution committed to the advancement of knowledge in a manner consistent with the highest ethical standards, AUS affirms the importance of respecting the integrity of academic work. The AUS Student Academic Integrity Code (referred to herein as Code) describes standards for academic conduct, students' rights and responsibilities as members of an academic community, and procedures for handling allegations of academic dishonesty.

In order to establish within the AUS student body a sense of ethical responsibility, honor and mutual respect, prior to registration, 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 Code and for ensuring that they understand the requirements for their particular courses (e.g., regarding issues such as collaborative work, use of study aids or take-home examinations, etc.).

Attempts to violate or to assist others in violating the Code, including unsuccessful attempts, are prohibited and will be treated as actual violations.

### Definition of Academic Violations

Members of the AUS academic community are expected to conduct themselves with integrity in their work and actions. Violations of the Code include, but are not limited to, the following categories.

#### Plagiarism

To plagiarize is to use the work, ideas, concepts, images or words of someone

else or a generative AI tool, without fully acknowledging the source in all academic work, including assignments, quizzes, examinations, papers and projects. Plagiarism may involve using someone else's wording, or wording generated by an AI tool—a distinctive name, a phrase, a sentence or an entire passage or essay—without using quotation marks and appropriately citing the source. Plagiarism may also involve misrepresenting the sources that were used or expressing the ideas of someone else in your own words without the appropriate citation.

#### Inappropriate Collaboration

Collaboration on academic work may be encouraged, but it is important to ensure that contributions are acknowledged. Inappropriate collaboration includes working with someone else, or making use of a generative AI tool, 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 or the tool's help. The use of unauthorized assistance must be avoided in the production of all academic work.

Specific requirements related to collaborative work, peer review, the use of an external entity in the production of work, the use of tutors and editing may vary among courses and students must ensure that faculty members explicitly provide approval in advance of the collaboration.

#### Impersonation

Students must attend their own classes, be present and sit for all tests and examinations, and personally attend other events associated with a course. The individual impersonated and the impersonator may be subject to sanctions.

#### 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. Students are prohibited from submitting any material prepared by or purchased from another person or company.

Communication is not allowed between or among students, nor are students allowed to consult books, papers, study aids or notes without explicit permission by the faculty member responsible for the course. Dishonesty includes, but is not limited to, communication with another student or

an external party using electronic devices during an examination or in-class assignment, 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 among individual professors.

#### 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. If past research is incorporated into current projects, previous work must be appropriately referenced.

#### 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, creative work, 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 Code prohibits theft and the unauthorized use of documents and requires adherence to the laws of Sharjah and the federal laws of the UAE.

The AUS library offers a Copyright and Permissions Service and can assist students with issues and questions related to copyrighted materials and their use. Students may contact [copyright@aus.edu](mailto:copyright@aus.edu) for assistance.

#### 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 Code. Complicity in academic dishonesty is pre-meditated and intentional. This can include, but is not limited to, the following:

- 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 or external party on a computer, mobile phone or other device while an exam is in progress
- providing a student with an advance copy of a test
- posting of notes or other materials from a class (whether the student is enrolled in the class or not) on the Internet, whether or not for a fee, without express permission from the faculty member
- leaving inappropriate materials behind at the site of an exam or test

## Adjudication of Academic Offenses

### Jurisdiction

Academic cases resulting from alleged violations of the Code are within the jurisdiction of the dean (or appointed designee) of the college/school in which the alleged Code violation occurred.

Faculty members who have knowledge of an alleged violation should report the incident to the dean (or appointed designee) of the college/school in which the alleged Code violation occurred.

A faculty member may exercise discretion in those cases involving a student's judgmental error rather than willful violation of the Code.

Students who wish to bring charges against other students must do so through the faculty member in whose course or academic activity the alleged Code violation occurred. The student who brings the charges must identify himself/herself to the faculty member.

Violations of the Code that involve admission and/or placement testing fall within the jurisdiction of the Vice Provost for Graduate Studies and may result in the revocation of admission or dismissal from the university.

### The Adjudication Process

An allegation of dishonesty must be reported to the dean (or appointed designee) within five working days of the date of discovery of the alleged offense. Normally an allegation of academic dishonesty must be reported during the semester in which it occurred, however there may be

situations in which a violation is discovered after the semester has ended. Reports of an alleged violation must be supported by appropriate documentation.

Once the alleged violation has been reported, faculty members must not 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, and a "Pending Conduct Investigation" statement will be recorded on the student's academic transcript.

The student must remain enrolled in the course in which an infraction has been reported until the adjudication process is complete.

Legal counsel or involvement of any parties other than the student and relevant university personnel is not permitted at any point during the adjudication process.

After receiving complete information, the dean (or appointed designee) will follow the adjudication process outlined below:

- a. The dean (or appointed designee) will promptly notify the student of the allegation and inform the student of the date and time of a formal meeting to discuss the charge.
- b. The dean (or appointed designee) will meet with the student to explain the adjudication process and present the charge and the evidence. If the student fails to attend the meeting, the dean (or appointed designee) will proceed with the process.
- c. The student will be given the opportunity to respond to the allegation in writing within two working days.
- d. After the deadline for the student to respond to the allegation has passed, the dean (or appointed designee) will consider all evidence and, depending on whether a preponderance of evidence supports the allegation of academic misconduct, take one of the following actions:
  - i) dismiss the case
  - ii) request that the student resubmit the work in question or retake an examination
  - iii) assign a penalty.
- e. If a student resubmits the work in question or retakes an examination, the results will be considered in determining whether a preponderance of evidence exists to

support the allegation of academic misconduct and the assignment of a penalty.

### Penalties

Violations of the Code will be treated seriously, with increasingly severe penalties considered for repeat offenders. A second violation may result in suspension or dismissal.

In assigning a penalty, the dean will take into account both the seriousness of the offense and any particular circumstances involved.

Penalties for an academic offense may include one or more of the following:

- a. a warning letter to be kept in the academic integrity database maintained by the Office of the Vice Provost for Graduate Studies
- b. a lowered grade or loss of credit for the work found to be in violation of the Code (to be specified at the time that the penalty is assigned)
- c. a lowered overall grade for the course in which the offense occurred (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 (to be specified at the time that the penalty is assigned)
- e. suspension for the semester/term in which the offense occurred or for up to two semesters following the semester in which the offense occurred
- f. dismissal from the university

Penalties (b)–(f) will result in non-academic sanctions that may include prohibition from extracurricular activities and the loss of graduate assistantship. See *the AUS Student Handbook* for details.

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.

Students are solely responsible for any financial implications resulting from an academic integrity violation.

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.

### 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**

(temporary separation from the university)

Suspension is effective for not less than the semester/term in which the penalty is levied or for not more than one calendar year. The length of a suspension must be specified in writing when the student is notified of the outcome of the adjudication process.

A student who is suspended is entitled to resume studies in the same college/school at the conclusion of the period of suspension if all academic requirements are met. The student must submit a Reactivation Request Form to the Office of the Registrar, via the student's AUS email account. 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**

(permanent separation from the university)

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 Graduate Appeals Review Committee will review the case and make a recommendation to the Vice Chancellor for Academic Affairs.

### **Notification of Penalty**

The dean (or appointed designee) hearing the case will notify the student in writing of the outcome of the adjudication process and, if applicable, the assigned penalty.

In addition to the faculty member bringing the charge, the following university officials have a legitimate need to know and will be informed of the outcome of the adjudication process at the time that the student is notified:

- the program coordinator/head of department in which the offense occurred
- the dean of the college/school and the program coordinator/head of department responsible for the degree program in which the student is enrolled (if applicable)
- the Vice Chancellor of Student Experience
- the Office of the Registrar

- the Vice Provost for Graduate Studies
- For record keeping of documents pertaining to the infringement of the 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 submitted in writing to the Vice Provost for Graduate Studies within five working days of the date of notification of the outcome of the adjudication process by the dean (or appointed designee).

Appeals are limited to grounds of excessive sanction, improper procedure and unavailability of relevant evidence at the time of the meeting with the dean (or appointed designee) to discuss the charge with the student.

The Vice Provost for Graduate Studies may affirm, modify, or remand the case to the dean (or appointed designee) with instructions for further action. The decision of the Vice Provost is final.

For penalty (f), the Graduate Appeals Review Committee will review the case and make a recommendation to the Vice Chancellor for Academic Affairs. The Vice Chancellor for Academic Affairs may affirm, modify, or remand the case to the dean with instructions for further action. The decision of the Vice Chancellor for Academic Affairs is final.

### **Notation of an Academic Integrity Code Violation Penalty**

A student's standing that impacts his or her eligibility to continuously enroll at AUS affects academic progress and, for this reason, is deemed transcript-appropriate. The general type of infraction, academic or disciplinary, is noted on the student's transcript as well as the office responsible for issuing the student's separation from the institution.

Penalties (d)–(f) will become a permanent part of the student's file maintained by the Office of the Registrar, with appropriate notation on the student's academic transcript indicating that there has been a violation of the Code.

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.

The student may petition to replace an XF grade resulting from a category (e) 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.

For tracking purposes, all academic integrity violations will be recorded in the university's Student Infraction Management System.

# 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 hours 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 private or public authority sponsoring the student. AUS is required to comply with requests for student information originating from the UAE Government and the Sharjah Government.

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 such documents will be reviewed after submission of a signed request from the student concerned.
- 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.

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

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 (b)–(d) were assigned: All records pertaining to the infringement of the Student Academic Integrity 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 (e)–(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.
- For tracking purposes, all violations are recorded on the university's academic integrity database.

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. Students can email [TranscriptsAndLetters@aus.edu](mailto:TranscriptsAndLetters@aus.edu) for inquiries and details.

# Registration and Course Information

## Course Registration

### Orientation Program

Prior to registration, each college/school holds an orientation session to familiarize students with its specific regulations and assist them with the registration process. These sessions are also to inform the students about research areas available within the program as well as existing resources, to offer them the opportunity to meet their program coordinator/head of department, and to introduce them to the graduate level academic policies and regulations.

### 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 must register in a course prior to attending classes. It is the responsibility of the individual student to monitor his/her registration status, which may be done by accessing his/her records through the AUS student information system.

Students who register after the designated date are charged a late registration fee.

New students and transfer students register with their respective college/school. 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/Graduate Admissions by the file completion deadlines announced by the office and published in the admission package. Transfer files completed by the deadlines will be evaluated for transfer of credit hours. For details, refer to Transfer of Credit Hours under Admission to Graduate Studies earlier in this catalog.

Exchange and visiting students register through the International Exchange Office (IXO). Non-degree, study abroad and transient students register with the Office of the Registrar. Registration in courses as an exchange, non-degree or a visiting student requires the approval of the relevant graduate program coordinator/head of department. For further details, see the corresponding

sections under Admission to Graduate Studies earlier in this catalog.

Continuing and returning students register through the AUS student information system.

Registration by way of proxy is not permitted.

For master's thesis, professional project and dissertation registration, see Master's Thesis, Professional Project and Dissertation within the Graduation section herein.

### Academic Advisors

Academic advising is an essential element of the educational process. American University of Sharjah requires advisor-student meetings at least once per semester/term. Students on academic probation or facing academic difficulties are guided by academic advisors and might be required to have more frequent meetings with their advisors. However, students are responsible for selecting their courses, meeting course prerequisites and adhering to the most recent university policies and procedures. The program coordinator/head of department assists the student in interpreting university policies and procedures. Students are required to consult with their program coordinator/head of department on issues regarding degree requirements.

Some programs require that students have a graduate advisory committee, which has specific responsibilities identified by each graduate program in accordance with university policy.

Doctoral programs require the PhD candidate to form a Dissertation Advisory Committee (DAC), the chair of which is the principal dissertation advisor of the student guiding the candidate develop the PhD proposal and dissertation.

### Student Course Load

A graduate student's course load comprises the total number of credit hours of master's or PhD courses registered in a semester/term.

Some master's degree students may be required to complete specific undergraduate-level courses; credit hours generated by these courses are not considered in the calculation of the student's semester/term course load. Likewise, some PhD degree students may be required to complete specific master's or undergraduate-level courses; the credit hours generated by these courses are not considered in the

calculation of the student's semester/term course load.

### Full-Time Students

The required minimum load for a full-time student is nine credit hours per semester, and the maximum load is 12 credit hours per semester.

### Part-Time Students

Part-time students are those students who register for less than nine credit hours in a given semester.

### Semester Course Load

#### *Good Academic Standing Students*

The maximum course load of a graduate student in good academic standing is nine credit hours per semester. With the approval of the program coordinator/head of department and the associate dean, a student in good academic standing may register for up to 12 credit hours per semester.

#### *Academic Probation Students*

The maximum course load of a graduate student on academic probation is six credit hours per semester.

### Summer Term Course Load

A maximum total of six credit hours is allowed during a six-week summer term. With the approval of the associate dean, the program coordinator/head of department may further restrict the maximum credit hours of a student on academic probation in a summer term.

A graduate student may not register for more than three credit hours of thesis/project/dissertation during a six-week summer term.

### Conditional Admission Students

The maximum course load of a conditionally admitted graduate student is six credit hours per semester/term.

### Add and Drop

At the beginning of every semester/term, students who wish to make changes to their course registration are provided the opportunity to add and/or drop courses through the AUS student information system. 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, available at [www.aus.edu/registration](http://www.aus.edu/registration).

Courses dropped during the add and drop period are not recorded in a 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.

Students wishing to drop courses after the end of the add and drop period of a semester/term may do so by requesting withdrawal from such courses. For details, consult Course Withdrawal and Withdrawal from the University later in this section of the catalog. Students may not add courses after the end of the add and drop period of the corresponding semester/term.

### Auditing Courses

A student who wishes to attend a course but who does not wish to take examinations, receive a final grade and earn credit hours for the course may register to audit the course. The instructor may establish standards of class participation and attendance that must be met.

Registration to audit a course 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.

The audited course will appear on a student's transcript as audited.

Tuition and fees for audit students are the same as those for students registering for credit hours.

### Auditing a Graduate Course

With the permission of the instructor and the student's program coordinator/head of department, a graduate student may audit a graduate course.

Credit hours of an audited course are included in the calculation of the student's maximum course load for the semester/term.

### Auditing an Undergraduate-Level Course

With the permission of the instructor, the student's program coordinator/head of department and the approval of the associate dean for undergraduate studies of the college/school offering the course, a graduate student may register to audit an undergraduate course. The student is charged based on the graduate tuition structure.

Credit hours of an audited undergraduate course are not included in the calculation of the student's

maximum course load for the semester/term.

### Study Abroad Opportunities for AUS Students

AUS offers students the opportunity to study abroad at other institutions during a regular semester and gain full AUS course credit. The International Exchange Office (IXO) 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 institution is recognized by the UAE Ministry of Education's Higher Education Affairs Division.
- 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 institution must be English, except for foreign language courses conducted in other languages. Certified translations of syllabi or other relevant material may be required.
- With the approval of the graduate program coordinator/head of department and the student's associate dean, a student pursuing a study abroad experience at colleges and universities recognized by the United States Department of Education regional accreditation authorities and the UAE Ministry of Education's Higher Education Affairs Division, or at an official AUS exchange partner 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. Certified translations of syllabi or other relevant material may be required.

Of particular interest might be institutions with which AUS has study abroad agreements. Details are available with AUS IXO at [www.aus.edu/ixo](http://www.aus.edu/ixo).

### Requirements

Students who wish to study abroad during a regular semester must have, at application time, a minimum cumulative GPA of 3.30 and have earned at least six credit hours of graduate courses in residence at AUS.

Contact hours for courses at the host institution must be equivalent to or greater than the contact hours required for equivalent courses at AUS.

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

For study abroad courses equivalent to AUS courses, course prerequisites, as specified in the AUS catalog in effect at the time of registration at the host institution, must be met prior to starting the course at the host institution.

For courses with a laboratory component at AUS, both lecture and laboratory must be taken concurrently at the host institution.

Courses related to areas taught within the School of Business Administration will be evaluated for transfer of credit hours only if completed within institutions that are accredited by AACSB or EQUIS, or at universities approved by the School of Business Administration.

Graduation residence requirements must be met. For details, see Graduation Residence Requirements under Graduation/Graduation Requirements later in this section.

### Application Process

Interested students must apply online to 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 International Exchange Office, the relevant graduate program coordinator/head of department and the associate dean for graduate studies will be guided by the office through the rest of the application process. Students should be aware that further admission requirements might exist at the host institution.

Students must submit the completed Course Permission Form—Outgoing Students to IXO by the deadlines specified on the application form. The IXO approved application form 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 hours 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 institution.

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

## Transfer of Credit hours

Credit hours 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 institution demonstrating that the student met the minimum course passing grade requirement, as indicated on the study abroad form.
- The student had a 3.30 cumulative GPA at the time study abroad courses are taken at the host institution.
- The student earned the equivalent of a B grade or higher on the study abroad course.
- The student had passed the AUS course prerequisites prior to starting the course at the host institution (for study abroad courses equivalent to AUS courses).

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

While credit hours will be temporarily transferred, the student will not be awarded his/her graduate degree until AUS receives the UAE Ministry of Education's Higher Education Affairs Division verification of the host institution's transcript.

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

## Summer/Winter Courses outside AUS

### Requirements

An enrolled student is eligible to apply to take courses at another college/university during the summer or in the period between the fall semester and the spring semester (herein referred to as winter) with the aim of transferring credit hours to AUS. To this end, students must choose institutions meeting the following conditions:

- The host institution is located outside the UAE.

- The host institution provides learning experiences similar to those offered by AUS.
- The host institution is recognized by the UAE Ministry of Education's Higher Education Affairs Division.
- The language of instruction of the course(s) taken at the host institution must be English, except for foreign language courses conducted in other languages. Certified translations of syllabi or other relevant material may be required.
- With the consent of the relevant graduate program coordinator/head of department and associate dean for graduate studies, a student taking summer courses at colleges and universities recognized by the United States Department of Education Regional Accreditation Authorities and the UAE Ministry of Education's Higher Education Affairs Division, or at an official AUS exchange partner university, may take course(s) at the host 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. Certified translations of syllabi or other relevant material may be required.
- The summer term at the host institution must not begin prior to the end of the spring semester examination period at AUS. The winter term at the host institution must not begin prior to the end of the fall semester examinations 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 winter term at the host institution must end before the first day of classes of the spring semester at AUS.

### Requirements

Students wishing to take summer/winter courses outside AUS must be in good academic standing at AUS at the time their application is reviewed.

Contact hours for courses at the host institution must be equivalent to or greater than the contact hours required for equivalent courses at AUS.

The summer/winter courses at the host institution must not be taken as attempts to repeat AUS courses.

For courses equivalent to AUS courses, course prerequisites, as specified in the AUS catalog in effect at the time of registration at the host institution, must be met prior to starting the course at the host institution.

For courses with a laboratory component at AUS, both lecture and laboratory must be taken concurrently at the host institution.

Courses related to areas taught within the School of Business Administration will be evaluated for transfer of credit hours only if completed within institutions that are AACSB accredited or EQUIS accredited, or at universities approved by the School of Business Administration.

Graduation residence requirements must be met. For details, see Graduation Residence Requirements under Graduation/Graduation Requirements later in this section.

Some programs may reserve the right not to allow any courses to be taken at another college/university.

### Amount of Credit hours

Students may transfer no more than six credit hours for a six-week summer session conducted at a host institution.

For summer sessions of a different duration and for winter terms, AUS allows no more than the equivalent credit hours of the six-week summer term at AUS.

A college/school may place further restrictions on the allowable maximum number of credit hours. Students must consult with the relevant graduate program coordinator/head of department when planning for summer/winter courses outside AUS.

### Application Process

Prior to registering for courses at the host institution, students must complete the Permission to Take Summer/Winter (Mini-Mester) 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. Forms must be submitted by the end of the 14th week of classes of the preceding spring semester for a summer term and by the end of the 14th week of the preceding fall semester for a winter term. Credit hours will not be awarded if the completed form is not submitted to the Office of the Registrar by the specified deadlines.

### 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 may register for more than one summer term between spring and fall semesters with approval of the relevant graduate program coordinator/head of department and

the student’s associate dean. Students may not be concurrently registered in overlapping summer terms.

**Transfer of Credit hours**

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

- Upon completion of the summer course(s), and before the end of the following fall semester (end of the following spring semester for winter courses), the student submits to the Office of the Registrar an official transcript from the host institution 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/winter courses were taken at the host institution.
- The student had passed the AUS course prerequisites prior to starting the course at the host institution (for summer abroad courses equivalent to AUS courses).

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

While credit hours will be temporarily transferred, the student will not be awarded his/her graduate degree until AUS receives the UAE Ministry of Education’s Higher Education Affairs Division verification of the host institution’s transcript.

For further information related to transfer of credit hours, please contact the Office of the Registrar at transfercredits@aus.edu.

**Tuition and Fees**

For specific information on tuition, fees, deferment of tuition, and fees and payment methods, please refer to the Tuition and Fees section earlier in this catalog.

**Attendance, Withdrawal and Interruption of Studies**

**Attendance and Lateness**

Attendance and participation in all class, 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 academic achievement.

Students are fully responsible for dropping or withdrawing from courses that they are not attending.

Absence due to a medical emergency or to national duty may result in missing a course assessment (for example, a quiz, midterm, studio review or an assignment deadline). For guidance, refer to the corresponding policies in the Grades and Academic Standing/Course Assessments section later in this section of the catalog.

**Course Withdrawal**

After the add and drop period of a semester/term has ended, students seeking to withdraw from one or more courses while maintaining registration in at least one course in the registration semester/term, may do so by submitting the secured online Course Withdrawal Form – Master’s and Doctoral Level Students (available at www.aus.edu/registration/forms). For withdrawal from all courses registered for in a semester/term, consult Withdrawal from the University hereafter.

Graduate students who have completed one semester of master’s thesis/professional project work and PhD candidates who have completed one semester of dissertation work must maintain continuous thesis/project/dissertation enrollment until successful defense of the master’s thesis/professional project/dissertation and the submission of the approved master’s thesis/professional project/dissertation final report. For further details, refer to Master’s Thesis/Professional Project Continuous Enrollment and to Dissertation Continuous Enrollment in Graduation/Master’s Thesis, Professional Project and Dissertation later in this section of the catalog.

Withdrawal from courses must occur no later than the end of the 13th week of classes (end of the fourth week of classes for a 6-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.

Students are fully responsible for dropping or withdrawing from courses that they are not attending.

A student may not withdraw from a course in which an academic integrity offense was committed until the case

has been reviewed and the adjudication process is complete.

**Withdrawal from the University**

Students seeking to withdraw from the university, whether for one semester/term or more, must submit the online secured Semester Withdrawal/Complete Withdrawal Form (available at 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 13th 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 courses registered for in the semester/term of withdrawal. If, due to medical reasons, a student must withdraw after the 13th week of classes (end of the fourth week of classes for a six-week summer term), the student may submit a Student Petition Form (available at www.aus.edu/registration/forms) to the Office of the Vice Provost for Graduate Studies with the appropriate original medical documents. The Office of the Vice Provost will verify the claims and approve the withdrawal with a grade of W recorded for the courses the student was registered for.

Depending on the time of the semester/term when the request for a complete withdrawal is submitted, 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

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 complete the withdrawal process prior to withdrawing from the university will not be eligible for any otherwise applicable tuition refund or adjustment.

**Withdrawal of PhD Candidacy**

PhD candidates who do not successfully defend their dissertation proposal or



their final dissertation are requested to withdraw their PhD candidacy. For details, refer to Withdrawal of PhD Candidacy under Academic Dismissal in Grades and Academic Standing later in this section of the catalog.

### Interrupted Studies and Reactivation of Student Record

Graduate students are expected to maintain continuous enrollment (fall and spring semesters) until they complete their program. For the purpose of this policy, AUS students studying abroad for a regular semester at an institution with which AUS has a study abroad agreement are considered to be in residence. A summer term abroad at an institution with which AUS has a study abroad agreement is not considered as a term in residence.

Enrollment in zero-credit hour courses only does not establish residency for the purpose of this policy.

Master's-level students on conditional admission and students registered in bridging (remedial) courses are not eligible to interrupt their studies unless approved by their program coordinator/head of department and their associate dean.

### Students Away for up to Two Semesters

- A graduate student may take up to two semesters off from graduate studies but must inform the Office of the Registrar in writing of their intention to do so. Students with master's thesis/professional research project/professional project/dissertation work in progress must first secure the approval of their college associate dean for graduate studies. Master's students who fail to secure their associate dean's approval will be assigned an NP grade, resulting in academic dismissal from the master's degree program. Likewise, PhD candidates who fail to secure their associate dean's prior approval will be assigned an NP grade, resulting in an automatic withdrawal of candidacy from the PhD degree program. For the purpose of this policy, a semester of complete course withdrawal is considered as a semester of leave.
- Graduate students who were on probation prior to interrupting studies, and graduate students whose master's thesis/professional research project/professional project/dissertation work was in progress prior to interrupting studies, must petition for resuming studies by submitting the Reactivation Request Form – Graduate Level Students (available at [www.aus.edu/registration/forms](http://www.aus.edu/registration/forms)) to

the Office of the Registrar, via their AUS email account, one month prior to registration. Reactivation of the student's record must be approved by the student's program coordinator/head of department.

### Students Away Longer than Two Semesters

Graduate students who leave AUS for more than two consecutive semesters, inclusive of semesters of complete course withdrawal, who wish to resume graduate studies must submit a new application for admission to the Office of Enrollment Management/Graduate Admissions.

Academically dismissed students who have been away longer than two consecutive semesters may not apply for readmission.

### Transfer of Credit hours

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

## Course Information

### Bridging Courses

Students who lack some background knowledge required by a graduate degree program but who otherwise, meet all the degree program admission requirements, may be required to complete undergraduate or graduate bridging (or remedial) courses as prescribed by the specific degree program they are admitted to.

Bridging (or remedial) courses must be successfully completed within a maximum period of two consecutive semesters, which may include a summer term, from the time of first registration in the program. Failure to meet this requirement may result in dismissal from the program.

Students required to complete bridging (or remedial) courses are not eligible to register for program courses prior to successful completion of the required bridging (or remedial) courses. However, with the approval of the program coordinator/head of department, their associate dean and the Vice Provost for Graduate Studies, a student may register for one program course while completing the required bridging (or remedial) courses. Students who are on conditional admission pending meeting the English language proficiency requirement for full admission are not eligible for this exception. Withdrawal from the bridging (or remedial) course will entail withdrawal from the program course.

### Required and Elective Courses Definitions

In meeting degree programs graduation requirements, students are expected to complete a set of required and elective courses.

Required courses are courses that are prescribed by the degree program. Students must complete all the required courses identified by their degree program. A choice is sometimes allowed between required courses, provided the minimum number of credit hours in required courses is met.

Elective courses are courses selected at the student's discretion, after consultation with their academic advisor. Electives may be selected from a list of courses identified by the degree program. Some degree programs might allow students, with the approval of their advisor and the program coordinator/head of department, the option to complete a maximum number of elective courses from outside the identified list of elective courses.

### 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. Courses offered by master's degree programs are assigned 500 and 600-level numbers; courses offered by PhD degree programs are assigned a 700-level number.

### 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
790	Qualifying Examination
791	Comprehensive Examination
x94	Special topic courses
x95	Seminar courses
x98	Professional project
x99	Master's Thesis/Dissertation

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., COE 59401, COE 59402. In this example, 594 indicates a special topic offering; 01 and 02 are the 2-digit suffixes differentiating the two offerings.

### Course Credit Hours Definition

All courses are valued in credit hours. Normally, each credit hour represents 50 minutes of class instruction per week each semester, two 50-minute recitation sessions per week each semester, or three 50-minute laboratory sessions per week each semester. Due to the unique nature of labs in different content areas, one credit hour may be assigned for as few as two 50-minute laboratory sessions per week or as many as four. Master's thesis, professional research project, professional project and dissertation courses are weighted differently.

The numbers in parentheses following the title of a course indicate the course contact hours' distribution per week and the course credit hours' 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 credit hours the student will earn upon successfully completing the course.

Credit hours earned in bridging (or remedial) courses do not count towards meeting the graduation requirements of a graduate degree program.

### Course Descriptions and Syllabi

Except for special topic courses, descriptions of courses offered by AUS are listed in the Course Descriptions section of this catalog. Courses are grouped by college/school and sorted by course subject and course code. Accelerated master's program courses and courses offered in blended learning mode are identified. Descriptions of courses are also accessible online via the AUS student information system. Descriptions of special topic courses are

made available during registration in the college/school offering the course.

Course syllabi are available from the department or the graduate program's office. They include course title and course code; prerequisites (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

Certain courses require a minimum background of knowledge, as indicated by prerequisite courses cited in individual course descriptions. Titles and numbers refer to AUS courses. Equivalent courses satisfactorily completed at other institutions may also meet prerequisite requirements by transfer credit hours.

### Course Offerings and Schedules

Courses are offered at the discretion of the individual programs. Students should check with the respective graduate programs for information on when courses will be offered.

To accommodate graduate students' work schedules, most programs offer their courses in the evening or over the weekend. Some programs have adopted a blended learning mode of delivery, offering some of their courses in a format combining face-to-face and online course structure. For details, refer to Mode of Course Delivery hereafter.

Each course usually meets once a week in 150-minute sessions during regular semesters. Equivalent meeting time is scheduled for summer terms. For details on course schedules, please

refer to the semester/term online course offerings or check with the graduate program offering the course.

### Mode of Course Delivery

The majority of the graduate programs use a face-to-face mode for class delivery where students meet on campus with the instructors during scheduled class times. However, some programs use a blended mode of course delivery to enhance and support the face-to-face delivery and promote a more flexible mode of learning. Both synchronous and asynchronous modes of delivery are utilized where students meet in real-time with the class or access class materials at their own pace. The programs ensure that students have the same learning experience and achieve the program learning outcomes regardless of the mode of delivery. The online component of each program using blended learning is limited to less than 50 percent of the total degree requirements, ensuring that the UAE Ministry of Education considers the awarded diploma as a face-to-face degree.

The following programs are approved by the Commission for Academic Accreditation of the UAE Ministry of Education to use a blended learning mode of delivery. For more details, please see the corresponding degree program section later in this catalog:

- Master of Business Administration
- Master of Urban Planning
- Master of Science in Engineering Systems Management

## Fields of Study

### Degree Offerings

American University of Sharjah has three colleges and one school that offer bachelor's, master's and PhD degree programs. Undergraduate degree offerings are listed in the *AUS Undergraduate Catalog*. Master's and PhD degree programs are listed below.

#### College of Architecture, Art and Design

- Master of Urban Planning

#### College of Arts and Sciences

- Master of Arts in International Studies
- Master of Arts in Teaching English to Speakers of Other Languages

- Master of Science in Mathematics
- Doctor of Philosophy in Materials Science and Engineering
- Doctor of Philosophy in Mathematics

#### College of Engineering

- Master of Science in Biomedical Engineering
- Master of Science in Chemical Engineering
- Master of Science in Civil Engineering
- Master of Science in Computer Engineering
- Master of Science in Construction Management

- Master of Science in Electrical Engineering
- Master of Science in Engineering Systems Management
- Master of Science in Machine Learning
- Master of Science in Mechanical Engineering
- Master of Science in Mechatronics Engineering
- Doctor of Philosophy in Biosciences and Bioengineering
- Doctor of Philosophy in Engineering – Engineering Systems Management

### School of Business Administration

- Master of Business Administration
- Master of Science in Accounting
- Master of Science in Economics and Policy
- Master of Science in Finance
- Doctor of Philosophy in Business Administration

### Major Offerings

A major constitutes the student's main field of study. It requires students to complete a core of courses that are distinctive to that subject area, inclusive of a research component.

Major offerings are determined by the degree offerings. Students declare their major by applying to a particular degree program offered by a college/school.

Students could choose to specialize in a maximum of two majors (see Declaration of a Second Major herein).

### Dual Degree Offering

AUS seeks to enhance and expand international education opportunities for graduate students through agreements with highly reputable universities to offer dual degree programs. Students will take course work and conduct research under the instruction and supervision of faculty from AUS and the international institution. Upon completion of the degree requirements of each program, students will receive two degrees: one from AUS and one from the partner university.

Students interested in pursuing a dual degree must obtain the AUS program approval before applying to the dual degree program at the host institution. Students wishing to apply for a dual master's degree must have completed one semester of full-time study at AUS; students applying to a dual doctoral degree must have completed one year of study at AUS. Students accepted in the dual degree program will be assisted by their program coordinator in developing a study plan to guide them on completing the degree requirements of both programs.

The following dual degree agreements are approved by the Commission for Academic Accreditation of the UAE Ministry of Education. For more details, please see the corresponding section of the AUS degree program later in this catalog.

- Dual master's degree between AUS and University of Michigan-Flint (UM-Flint) for degree programs offered by UM-Flint's College of Innovation and Technology (UMF-CIT) (College of Arts and Sciences and College of Engineering catalog sections)
- PhD in Business Administration with a concentration in finance from AUS and a PhD in International Finance from the University of South Carolina, Darla Moore School of Business (South Carolina, USA)

### Change of Degree Program

Graduate students seeking to change their degree program must apply for admission to the new degree program through the Office of Enrollment Management/Graduate Admission. Applications must be submitted by the assigned application deadlines (refer to Application Deadlines in the Admission to Graduate Studies section earlier in this catalog). To be eligible for a change of degree program, the student must meet the requirements for admission to the new degree program. Please refer to the relevant degree program's catalog section for information on admission requirements.

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

In addition, students seeking a change of degree program must consult the graduation requirements of the new degree program, as stipulated in the new student's catalog, to identify specific program graduation requirements and consult with the program coordinator/head of department to determine how completed courses correspond to the graduation requirements of the new degree program.

### Concentrations

Some degree programs focus on an area of concentration, offering students more in-depth knowledge of a subject area constituting a particular aspect of their major. Please refer to the relevant program section for concentration requirements.

### Declaration of a Second Major

Master's degree students may select to enroll in two separate majors offered by two different master's degree programs. To declare a second major, the student must submit to the Office of Enrollment Management, within the announced admission deadlines, an application for admission to the program housing the second major. The Office of Enrollment Management will forward the approved application to the Office of the Registrar. Applications 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.

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. Students pursuing a double major will be awarded the degree of their primary major with a notation of their second major added to their diploma and on the Attestation Certificate (see Degree Information on Diplomas and Attestation Certificates in the Graduation part later in this section of the catalog). The student's academic transcript will indicate all majors completed at the time of graduation.

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

A student may drop the second major 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.

# Grades and Academic Standing

## Course Assessments

Course assessments—such as quizzes, midterms and assignments—are scheduled by the course instructor and normally announced in the course syllabus.

Major course assessment activities of courses offered in a blended learning mode will be conducted on campus, following the traditional controlled measures according to university policy. Other assessment methods—such as quizzes, presentations, essays, etc.—can be assessed online with appropriate academic integrity measures.

Missing a course assessment due to a medical emergency or national duty is governed by the following policies.

### Missed Assessments Due to Medical Emergencies

In the event that a medical emergency or severe illness causes the student to miss a course assessment, students are responsible for contacting their associate dean as soon as possible to report the medical issue and provide documentation certified by University Health Services. The associate dean of the school/college to which the student belongs will arrange for course instructors to be notified. Course instructors will provide an opportunity for makeup of the missed assessment or provide an alternative arrangement to account for the missed work.

### Missed Assessments Due to National Duty

Students called to UAE National Duty are responsible for contacting their associate dean to report the military service and provide official documentation. The associate dean will arrange for course instructors to be notified. Course instructors will provide an opportunity for makeup of the missed assessment or provide a satisfactory alternative arrangement to account for the missed work.

## Examinations

Information about final examination schedules is published by the Office of the Registrar at [www.aus.edu/registration](http://www.aus.edu/registration). Final examinations of graduate courses are administered within the semester/term examination period published dates and are scheduled by the faculty members teaching these courses.

### Failure to Appear for a Final Examination

A student who fails to appear for the examination will not be permitted to take a make-up examination unless the associate dean for graduate studies of the school/college responsible for the course determines that extraordinary circumstances exist and a make-up examination is warranted. The associate dean will then determine whether a make-up examination can be completed or an I grade should be awarded and the make-up examination should be scheduled at the beginning of the next semester or summer term. For further details, refer to Incomplete Grades later in this section.

### Illness Prior to and During Final Examinations

Students are responsible for taking final examinations during the published examination period. If an incapacitating illness prohibits taking a final examination, the student must notify his/her graduate program coordinator/head of department and provide complete documentation to University Health Services in advance of the scheduled examination.

Students who begin a final examination are expected to complete it unless a sudden and incapacitating illness requires urgent medical attention. A student whose condition is so serious that medical care is necessary must report immediately to University Health Services.

If the University Health Services determines that the medical condition prior to or during the scheduled examination period is serious enough to render a student incapable of taking or completing the examination then, based on the recommendation of University Health Services, the relevant associate dean for graduate studies will determine whether a make-up examination can be completed or an I grade should be awarded and the make-up examination should be scheduled at the beginning of the next semester or summer term. For further details, refer to Incomplete Grades later in this section.

The opportunity to complete a make-up examination will not be provided if compelling medical evidence indicates that taking or completing the examination was an option.

### Tardiness

If an instructor allows a student who arrives late for a final examination to

take the examination as scheduled, no additional time beyond the period assigned for the examination will be provided.

## Grading System

Courses are graded using letter grades. The grade point average (GPA) is based on a four-point scale. The AUS grading system is provided below:

<b>Excellent</b>	
A	equals 4.00 grade points
<b>Exceeds Expectation</b>	
A-	equals 3.70 grade points
<b>Meets Expectation</b>	
B+	equals 3.30 grade points
B	equals 3.00 grade points
<b>Below Expectation</b>	
B-	equals 2.70 grade points
C+	equals 2.30 grade points
C	equals 2.00 grade points
<b>Fail</b>	
F	equals 0.00 grade points
<b>Academic Integrity Violation Fail</b>	
XF	equals 0.00 grade points

Grades not calculated in the grade point average are:

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

The minimum passing grade for a graduate course is C. Students who receive an F grade in a graduate course will not be allowed to continue in the university.

## Incomplete Grades

The work for a course must be completed by the end of the final examination period of the corresponding registration semester/term. In the case of unexcused incomplete work, an F grade is given for the missing work and the final 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 (I) grade in a given course, provided the student has been in attendance up until the end of the withdrawal period of the semester/term (also see Examinations earlier in this section). The instructor of the course will then process an Incomplete Grade Form (available from the office of the associate dean) and submit it to the Office of the Registrar for final approval and implementation. The Incomplete Grade Form must be submitted no later than the last day of the examination period of the corresponding semester/term.

An I grade pending beyond the end of the fourth week of classes of the next regular semester will revert into the alternative grade indicated by the instructor of the course on the Incomplete Grade Form. In the event where no alternative grade was indicated on the form, the I grade 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.

A student who is on academic probation and who was approved for an I grade in a specific semester/term is not eligible for early registration for an upcoming semester/term.

Prospective candidates for graduation with incomplete grades will be awarded their degrees in the semester/term where their courses are successfully completed.

### In Progress Grades

A master's thesis/professional project/dissertation normally requires longer than one semester/term to be completed. An In Progress (IP) grade is recorded until completion of the master's thesis/professional project/dissertation. Once the master's thesis/professional project/dissertation is completed, the student's associate dean will inform the Office of Research and Graduate Studies and the Office of the Registrar of the final grade.

Prospective candidates for graduation with In Progress grades will be awarded their degrees in the semester/term where the courses are successfully completed.

Master's students who fail to maintain master's thesis/professional project continuation in a semester without their program coordinator/head of department prior approval of master's thesis/professional project registration discontinuation, will be assigned an NP grade, resulting in academic dismissal from the master's degree program. Likewise, PhD candidates who fail to maintain dissertation continuation in a

semester without their program coordinator/head of department prior approval of dissertation registration discontinuation, will be assigned an NP grade, resulting in an automatic withdrawal of candidacy from the PhD degree program.

An IP grade will be changed to an N grade in the following situations:

- the student is approved to discontinue thesis work in order to pursue a final project (or vice versa)
- the student fails to complete the degree program graduation requirements within the time limit on residency and is denied an extension of the residency time limit
- the student is asked to withdraw PhD candidacy
- the student withdraws from the university.

### No Grade Entries

A No Grade (N) grade is assigned to a course when an academic integrity violation has been reported and the adjudication process cannot be concluded before the course grade is due for the semester/term. In such cases, the N grade is temporary and the final grade for the course will be entered once the adjudication process is concluded. If a violation of the Student Academic Integrity Code or the Student Code of Conduct results in suspension or dismissal effective for the semester/term in which the offense occurred, then an N grade will be entered for all courses except for those that were subject to an XF grade penalty. If suspension or dismissal occurs at the end of a regular semester or summer term and a letter grade has been assigned in a course, the letter grade will revert to an N grade. The Semester GPA and the Cumulative GPA will be recalculated accordingly and a Suspended or Dismissed academic standing will be assigned for the semester/term. For details on transcript notations, refer to Notation of an Academic Integrity Code Violation Penalty under Academic Integrity earlier in this section of the catalog.

An N grade is also assigned as a replacement of an IP grade. For details, refer to the preceding In Progress Grades section.

### Repeating Courses

Graduate courses may not be repeated. With the recommendation of the program coordinator/head of department and the approval of the appropriate dean (or appointed designee), a graduate student may be allowed to repeat up to two graduate courses in a degree program. The

original grade and the new grade will appear in the transcript, but only the new grade will be calculated into the GPA. No course may be taken more than twice.

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

**Note:** Graduate students who receive an F grade in a graduate course will not be allowed to continue in the university.

### Class Standing

#### Master's Degree Students

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

Credit Hours Earned	Class Standing
0–15	Master's Year 1
16 and above	Master's Year 2

#### PhD Degree Students

The class standing of a PhD degree student in a specific semester/term is determined by passing the qualifying exam. PhD degree students who pass the qualifying exam are classified as PhD-Advanced to Candidacy; students who have not yet passed the qualifying exam are classified as PhD-Not Advanced to Candidacy

### 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 credit hours the course is worth.

#### 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 credit hours of the courses taken in that same semester/term.

$$\text{SGPA} = \frac{\text{sum (quality points of courses taken in semester/term X)}}{\text{sum (credit hours of courses taken in semester/term X)}}$$

### 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 credit hours of all courses taken in all semesters/terms. Only the last entry of a repeated course is considered in the CGPA calculation.

CGPA = sum (quality points of courses taken in all semesters/terms) / sum (credit hours of courses taken in all semesters/terms)

### Academic Standing

A student's academic standing is determined by his/her CGPA as calculated at the end of the semester the academic standing is determined for.

#### Good Academic Standing

In order to be considered in good academic standing, graduate students must maintain a CGPA of at least 3.00 out of 4.00.

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

#### Academic Probation

If a graduate student's cumulative GPA falls below 3.00 at the end of any given semester, the student is placed on academic probation. A graduate student placed on academic probation, who fails to remove his/her academic probation by the end of the immediately following summer term, will maintain his/her academic probationary status.

During probationary status, the following conditions apply:

- A graduate student on academic probation may not register for more than six credit hours in a semester. The program coordinator/head of department may restrict the summer course load of a graduate student on

academic probation to three credit hours.

- A graduate student on academic probation is not eligible for thesis, final project or dissertation registration.

An academic probation is removed at the end of any semester/term in which the student attains a CGPA of 3.00.

#### Academic Dismissal

A graduate student on academic probation who does not achieve good academic standing by the end of the regular semester following the semester in which the cumulative GPA fell below 3.00, with the academic probationary status maintained at the end of the interim summer term, is academically dismissed from their degree program.

Graduate students who receive an F grade in a graduate course are academically dismissed from their degree program.

PhD degree seeking students who fail the qualifying examination are academically dismissed from the university. Likewise, PhD degree seeking students who fail the comprehensive examination are academically dismissed from the university.

Students who have been academically dismissed may petition for reinstatement to the student's program coordinator/head of department, one month ahead of registration of the semester immediately following academic dismissal. Students who were academically dismissed as a result of having failed the comprehensive examination are not eligible to petition for reinstatement. The Student Petition Form is available at [www.aus.edu/registration/forms](http://www.aus.edu/registration/forms). Petitions will be reviewed by the graduate program coordinator/head of department who will make a written

recommendation to the appropriate dean (or appointed designee). The dean (or appointed designee) will then provide a recommendation to the Vice Provost for Graduate Studies. Decisions regarding continuation in the program will be made by the Vice Provost for Graduate Studies in consultation with the appropriate dean (or appointed designee). Reinstatement following academic dismissal is granted only in exceptional circumstances.

Academically dismissed students who wish to change their study path may apply for admission to a different graduate degree program. Admission requirements of the new degree program must be met. For details, consult the Admission to Graduate Studies section earlier in this catalog. Courses completed while in the previous degree program cannot be used to satisfy the graduation requirements of the new graduate degree program.

Academically dismissed students who have been away longer than two consecutive semesters may not apply for readmission. Readmission following academic dismissal is granted only in exceptional circumstances.

#### Withdrawal of PhD Candidacy

Doctoral students who do not successfully defend their dissertation proposal or their final dissertation are asked to withdraw their PhD candidacy. Doctoral students who are asked to withdraw their PhD candidacy are not eligible to continue at AUS, do not qualify for reinstatement and may not apply for readmission. For details, refer to *Graduate Studies Policies and Procedures* document available on iLearn and accessible using the following path: iLearn-Community-Graduate Studies- Graduate Studies Policies and Procedures.

## 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 Vice Provost for Graduate Studies. 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 program

coordinator/head of department by the following deadlines:

- for fall semester registration: by Monday, two weeks before the start of the fall semester
- for spring semester registration: by the Thursday of the second week following the end of the final examination week of the preceding fall semester
- for summer term registration: as soon as possible after the end of the preceding spring semester's final

examination week and before the first day of the summer term.

The office of the associate dean for graduate studies will forward the approved petitions to the Office of the Vice Provost for Graduate Studies by the established deadlines. Petitions approved by the vice provost are forwarded to the Office of the Registrar for implementation and record keeping.

### Appeal of Academic-Related Issues

If a student wishes to discuss an issue pertaining to a course, instructor or other academic-related issues, the student may direct his/her concern to the involved faculty member. If the issue or grievance is not resolved, the student should contact the program coordinator/head of department and/or dean (or appointed designee) of the college/school.

If, in the judgment of the dean (or appointed designee) 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 in the university as to require even more formal safeguards for the aggrieved student and faculty member involved, the dean (or appointed designee) will prescribe an appropriate procedure consonant with the university's mission

or refer the matter to the Graduate Appeals Review Committee through the Office of the Vice Provost for Graduate Studies. Academic appeals requests must be submitted one week before the first day of the following semester.

### Appeal of a Grade

Students are entitled to fair and equitable evaluation and 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 may contact the program coordinator/head of department in writing to file a formal grade appeal no later than seven working days after the make-up examination day. The program coordinator/head of department will review the case and provide a written response to the student. 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. The decision of the dean is final.

### 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 concerned degree audit specialist at the Office of the Registrar. Such petitions are processed by the Office of the Registrar only after the student has been awarded their degree or after the student's Complete Withdrawal Form has been processed.

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

## Graduation

### Master's Thesis, Professional Research Project, Professional Project and Dissertation

Master's theses, professional research project, professional project reports and PhD dissertations document research conducted by AUS graduate students under the guidance and supervision of AUS faculty members. They are the culmination of the students' programs of study and are expected to reflect appropriate scholarly depth and rigor.

The Office of the Vice Provost for Graduate Studies in collaboration with the Graduate Programs Committee establishes and oversees the regulations and requirements for master's theses, professional research projects, professional projects and PhD dissertations at AUS. Degree candidates are responsible for adhering to these requirements as published in the *Graduate Studies Policies and Procedures* document available on iLearn and accessible using the following path: iLearn-Community-Graduate Studies-Graduate Studies

Policies and Procedures. In addition, degree candidates are responsible for familiarizing themselves with and adhering to the standards and regulations of the latest edition of the *AUS Guide to Writing and Formatting Dissertation-Thesis-Final Project Reports* available on iLearn and accessible using the following path: iLearn-Community-Graduate Studies-Writing and Formatting Guidelines .

It is AUS policy to maintain master's theses, professional research projects and PhD dissertations in the AUS Archives and to make them available to other students and scholars. The AUS Library is responsible for the archiving of the master's theses, professional research projects and PhD dissertations. Detailed procedures and requirements for submitting master's theses, professional research projects and PhD dissertations to the AUS Library and Archives are outlined in the *Graduate Studies Policies and Procedures* document

AUS also has a stringent policy regarding research involving humans as subjects. Detailed information on such

research activities may be found on iLearn and accessible using the following path: iLearn-Community-Research Services-Institutional Review Board (IRB).

### Master's Thesis, Professional Research Project and Professional Project

#### Registering for Master's Thesis/Professional Research Project/Professional Project Credit hours

Master's degree students registering for master's thesis/professional research project/professional project credit hours must register through the Office of the Registrar. Only students in good academic standing are eligible for registration.

#### Master's Thesis/Professional Research Project/Professional Project First Registration

First-time registration in thesis/professional research project/professional project is only allowed during a regular semester (fall or spring). In the first semester of

master's thesis/professional research project/professional project work (no earlier than the second semester of enrollment in the master's degree program), a student normally registers for three credit hours. Before the end of the add and drop period, graduate programs coordinators/head of departments must provide the Office of the Registrar, through the office of their respective associate deans for graduate studies, with a list of all students who will be registered for master's thesis/professional research project/professional project (XXX 699/XXX 698), along with their master's thesis/professional research project/professional project titles and the names of their advisors.

Students in the thesis option and students in the professional research project option must prepare and orally present the proposal of their master's thesis/professional research project to the satisfaction of a master's thesis/professional research project committee by the end of the first semester of registration in their master's thesis/professional research project. Students who do not demonstrate adequate thesis/project research work progress by the end of the 10th week of the semester will be withdrawn from the master's thesis/professional research project course by their advisors.

The master's thesis/professional research project committee normally constitutes up to three members: the master's thesis/professional research project advisor and two additional members as examiners. The committee is formed by the program coordinator/head of department in consultation with the master's thesis/professional research project advisor and is approved by the student's associate dean. The master's thesis/professional research project advisor must be research-active and must have prior supervisory experience at the graduate level. Each committee member must hold a terminal degree in their discipline and must have a demonstrated record of scholarly activities related to the thesis/project research topic. For students accepted in a dual master's degree program, the master's thesis committee must include a co-advisor from the partner institution who must have a demonstrated record of scholarly activities related to the thesis topic and have prior supervisory experience at the graduate level.

For details on the master's thesis/professional research project proposal preparation and submission, and on the master's thesis/professional research project committee formation and related deadlines, please refer to

the *Graduate Studies Policies and Procedures* document available on iLearn and accessible using the following path: iLearn-Community-Graduate Studies-Graduate Studies Policies and Procedures.

*Master's Thesis/Professional Research Project Continuous Enrollment*

Graduate students who have completed one semester of master's thesis/professional research project work must maintain continuous thesis/project enrollment until successful defense of the master's thesis/professional research project and the submission of the approved master's thesis/professional research project final report.

Students who fail to maintain thesis/research project continuous enrollment, without prior approval of their program coordinator/head of department, will be assigned an NP grade, resulting in academic dismissal from the master's degree program.

Students who, by the end of the second week into a semester, have not cleared registration holds that prevent their thesis/research project continuous registration, will be assigned an NP grade, resulting in academic dismissal from the master's degree program.

Master's Thesis/Professional Research Project Continuous Enrollment in a Regular Semester

Continuous enrollment in a regular semester is ensured by the Office of the Registrar. Changes to the master's thesis/professional research project registration details (master's thesis/professional research project title, name of advisor, credit and billing hours) are emailed to the Office of the Registrar by the office of the student's associate dean for graduate studies before the end of the add and drop period of the corresponding registration semester. In addition, and before the end of the add and drop period of the registration semester, the office of the student's associate dean for graduate studies will email the Office of the Registrar a list of the names and ID numbers of those students approved to interrupt their master's thesis/professional research project continuous enrollment.

Master's Thesis/Professional Research Project Continuous Enrollment in a Summer Term

Continuous enrollment in master's thesis/professional research project in a summer term is optional. The office of the student's associate dean for graduate studies will email the Office of the Registrar, by the end of the add and drop period of the corresponding summer term, a list of the names and

ID numbers of students wishing to maintain continuous enrollment in the summer term, along with their respective master's thesis/professional research project title, advisors' names and appropriate credit and billing hours.

*Master's Thesis/Professional Research Project/Professional Project Time Extensions*

Students who do not complete the master's thesis/professional research project/professional project after registering for thesis/research project/project full credit hours must maintain continuous master's thesis/professional research project/professional project enrollment until defense of the master's thesis/professional research project/professional project.

Likewise, students who have successfully defended their master's thesis/professional research project/professional project and have already registered for the master's thesis/professional research project/professional project full credit hours must maintain continuous enrollment until submission of the approved master's thesis/professional research project/professional project final report.

A master's thesis/professional research project/professional project extension fee (see Other Fees in the Tuition and Fees section earlier in this catalog) is charged for the first extension and every subsequent summer term extension; however, further extensions in a regular semester will be charged the tuition rate of one graduate credit hour.

Students must be registered in the semester/term in which they defend their thesis/professional research project/professional project.

**Note:** A student must complete the master's degree program graduation requirements within five years from initial enrollment into the program, inclusive of any leave.

**Switching from Master's Thesis to Professional Project and Vice Versa**

Graduate students who wish to switch from master's thesis to professional project (or vice versa) must submit the Request to Change Program Option – Graduate Level Students (available at [www.aus.edu/registration/forms](http://www.aus.edu/registration/forms)) within the published deadlines. The request form must be approved by the student's program coordinator/head of department and the student's associate dean.

A student who switches from master's thesis to professional project (or vice versa) will be given an N for no grade



for the master's thesis/professional project credit hours (i.e., XXX 698 or XXX 699) completed for the first option selected.

Switching from master's thesis to professional project could require the student to take additional courses. The student must pay for any additional credit hours or courses required as a result of switching from master's thesis to professional project (or vice versa). In switching from master's thesis to professional project (or vice versa) while maintaining the topic of research and working with the same master's thesis/professional project advisor, tuition paid towards the master's thesis will be applied towards the professional project and vice versa.

### **Grading of Master's Thesis/Professional Research Project**

The master's thesis/professional research project requires longer than one semester/term to be completed. An In Progress (IP) grade is recorded by the Office of the Registrar until completion of the master's thesis/professional research project.

A master's thesis/professional research project grade will be assigned after defense of the master's thesis/professional research project and submission of the approved master's thesis/professional research project final report. The master's thesis/professional research project defense has two parts: an open public session followed by a closed session with the master's thesis committee. The associate dean for graduate studies will inform the Office of Graduate Studies and the Office of the Registrar of the master's thesis/professional research project final grade.

### **PhD Dissertation**

PhD degree seeking students are required to pass a qualifying examination and complete a major research work in the form of a PhD dissertation.

#### **Qualifying Examination**

To advance to candidacy for a PhD degree and become eligible to register for the PhD dissertation, a doctoral student must pass a qualifying examination. The qualifying examination may have a written and/or oral part to test the student's breadth of knowledge, understanding of fundamentals, and ability to perform independent research work in a specific area.

Registration for the qualifying examination is conditional upon meeting the following minimum requirements:

- the student must be in good academic standing
- the student must have successfully completed a minimum of 12 credit hours of doctoral-level course work.

Further eligibility requirements may be imposed by the individual PhD degree programs. For details, consult the degree program section later in this catalog. Students need to seek guidance from their program coordinator/head of department regarding the qualifying examination requirements and deadlines.

The qualifying examination may result in a Pass or a Fail grade. The program coordinator/head of department will notify the Office of Graduate Studies of the result of the qualifying examination within two weeks of the examination completion date. The Office of Graduate Studies will officially notify the student and the Office of Registrar of the outcome of the exam.

A doctoral student who fails the qualifying examination is academically dismissed from the university. A student who was academically dismissed as a result of failing the qualifying examination may petition for reinstatement and a repeat of the failed qualifying examination to the program coordinator/head of department, one month ahead of the registration of the semester immediately following academic dismissal. The student petition form is available at [www.aus.edu/registration/forms](http://www.aus.edu/registration/forms). The petition will be reviewed by the program coordinator/head of department who will make a written recommendation to the associate dean for graduate studies. The associate dean will then provide a recommendation to the Vice Provost for Graduate Studies. Decisions regarding reinstatement and repeat of the qualifying examination will be made by the Vice Provost for Graduate Studies. A student who failed the qualifying examination may be allowed to repeat the qualifying examination only once.

Further details on the qualifying examination are provided in the *Graduate Studies Policies and Procedures* document available on iLearn and accessible using the following path: iLearn-Community-Graduate Studies-Graduate Studies Policies and Procedures.

#### **Registration for Dissertation Credit hours**

The PhD dissertation includes the preparation of a research proposal, presentation and defense of the research proposal, write-up of the dissertation, and presentation and defense of the dissertation. PhD degree

candidates registering for dissertation credit hours must register through the Office of the Registrar.

#### *Dissertation First Registration*

Prior to registering for dissertation credit hours, PhD degree candidates must officially request the appointment of their Dissertation Advisory Committee (DAC) or, otherwise, the DAC chair.

The DAC is constituted of the DAC Chair and two other members, at a minimum. The DAC chair is the principal dissertation advisor of the PhD degree candidate, guiding the candidate in developing the dissertation research proposal and completing the dissertation. In addition to the DAC chair, at least two of the DAC members must hold a full-time faculty position at AUS. All DAC members must hold doctoral degrees and must have a demonstrated record of scholarly activities related to the dissertation topic. In addition, the DAC chair must have prior supervisory experience at the graduate level. For students accepted in a dual PhD degree program, the DAC must include a co-advisor from the partner institution who must have a demonstrated record of scholarly activities related to the dissertation topic and have prior supervisory experience at the graduate level.

In the first semester of dissertation work, a student normally registers for six dissertation credit hours working on the dissertation research proposal. Before the end of the add and drop period, the Office of the Vice Provost for Graduate Studies provides the Office of the Registrar with a list of all doctoral students who will be registered for dissertation credit hours (XXX 799), along with their dissertation titles, the names of their advisors and the number of dissertation credit hours.

For details on the DAC formation and the dissertation research proposal preparation and submission, please refer to the *Graduate Studies Policies and Procedures* document available on iLearn and accessible using the following path: iLearn-Community-Graduate Studies-Graduate Studies Policies and Procedures.

#### *Dissertation Continuous Enrollment*

PhD candidates who have completed one semester of dissertation work must maintain continuous dissertation enrollment until defense of the dissertation. Candidates who successfully defend their dissertation must remain enrolled until submission of the approved dissertation final report.

Students who fail to maintain dissertation continuation in a semester, without their program coordinator/head of department prior approval of dissertation registration discontinuation, will be assigned an NP grade, resulting in an automatic withdrawal of candidacy from the PhD degree program.

Students who, by the end of the second week into a semester, have not cleared registration holds that prevent their dissertation continuous registration, will be assigned an NP grade, resulting in an automatic withdrawal of candidacy from the PhD degree program.

#### Dissertation Proposal

Students are expected to successfully complete the dissertation proposal within three semesters of dissertation first registration. A PhD candidate is eligible to defend the dissertation research proposal only after all coursework is successfully completed. The research proposal defense includes a comprehensive examination of all coursework completed.

Failure to complete the dissertation proposal within the specified time frame or failure to demonstrate progress after the proposal defense may result in assigning an NP grade, resulting in withdrawal of candidacy from the PhD degree program.

The dissertation proposal report must be submitted and orally presented to the dissertation review panel. The dissertation review panel is composed of the DAC in addition to two more members who hold a doctorate degree and are active in the research field of the proposal. The proposal must be approved in writing by the review panel. Details on the dissertation proposal review process are provided in the *Graduate Studies Policies and Procedures* document available on iLearn and accessible using the following path: iLearn-Community-Graduate Studies-Graduate Studies Policies and Procedures.

#### Dissertation Continuous Enrollment in a Regular Semester

Dissertation continuous enrollment in a regular semester is ensured by the Office of the Registrar. Candidates are automatically enrolled in three incremental credit hours.

Changes to the dissertation registration details (dissertation title, name of advisor, registration credit hours and billing hours) are emailed to the Office of the Registrar by the Office of the Vice Provost for Graduate Studies before the end of the add and drop period of the corresponding registration semester.

In addition, and before the end of the add and drop period of the registration semester, the office of the student's associate dean for graduate studies will email the Office of the Registrar a list of the names and ID numbers of those students approved to interrupt their dissertation continuous enrollment.

#### Dissertation Continuous Enrollment in a Summer Term

Continuous enrollment in the dissertation in a summer term is optional. The office of the student's associate dean for graduate studies will email the Office of the Registrar, by the end of the add and drop period of the corresponding summer term, a list of the names and ID numbers of students wishing to maintain continuous dissertation enrollment in the summer term, along with their respective dissertation title, advisors' names and appropriate credit hours and billing hours.

#### *Dissertation Time Extensions*

PhD candidates who have registered for the dissertation minimum credit hours but have not yet defended their dissertation must maintain continuous enrollment by registering and paying for three incremental credit hours per semester/term until defense of the dissertation.

Candidates who have successfully defended their dissertation must remain enrolled until submission of the approved dissertation final report by registering and paying for one incremental credit hour per semester/term until submission of the approved dissertation final report.

Candidates must be registered in the semester/term in which they defend their dissertation.

**Note:** A student must complete the PhD degree program graduation requirements within 10 years from initial enrollment into the program.

#### **Dissertation Defense and Grading**

Up until the defense of the dissertation, an In Progress (IP) grade is recorded by the Office of the Registrar for every registration semester/term.

The dissertation must be defended to the satisfaction of the Final Oral Defense Committee (FODC). The FODC consists of the DAC members and at least two additional members who have a demonstrated record of scholarly activities related to the dissertation topic. One of the additional members must be from outside AUS. The FODC membership is formed by the program coordinator/head of department in consultation with the DAC chair; it is approved by the associate dean for

graduate studies and appointed by the Vice Provost for Graduate Studies.

The dissertation defense has two parts: an open public session followed by a closed session with the FODC. The outcome of the defense will be either Pass or Fail resulting in a grade of P or NP, respectively. Students who pass the dissertation defense but do not submit the final approved dissertation report within the semester in which the defense took place will continue to be assigned an IP grade and must register for one incremental credit hour of dissertation per semester/term, until a final grade is assigned. Candidates with an NP grade may petition to the Vice Provost for Graduate Studies, within one month of receiving the grade, for permission for a second final oral examination. If approved, the student must register for three credit hours of dissertation. The examination must be held with the same FODC, no sooner than four months from the first final oral examination. Failing the second final oral examination will result in an automatic withdrawal of candidacy from the PhD degree program.

For further details, consult the *Graduate Studies Policies and Procedures* document available on iLearn and accessible using the following path: iLearn-Community-Graduate Studies-Graduate Studies Policies and Procedures.

## **Graduation Requirements**

### Catalog

The graduation requirements for any individual student are determined by the catalog that was effective when the student admitted in the major, referred to as the catalog of record.

A student may choose to follow the catalog effective for any semester/term in which they were a registered student in their current program of study. 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 his/her degree program 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 graduate program coordinator/head of department or associate dean and submitted to the Office of the Vice Provost for Graduate Studies. Approved petitions are forwarded 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 of record.

If a required course within a degree program changes its number of credit hours, then the number of credit hours required by the degree program for graduation may, at the discretion of the college/school, change by the same amount provided the minimum total number of credit hours for graduation is 30 for a master's degree program and 54 for a PhD degree program, and the CGPA is at least 3.00.

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.

Policies, procedures and academic regulations are effective at the time of publication of the catalog and may be subject to change. Students are responsible for adherence to the most up-to-date policies, procedures and academic regulations.

### Courses

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

### Requirements of a Graduate Degree Program

Each student in a graduate degree program must successfully complete a minimum number of credit hours in courses that are specific to the degree program and distinctive to the major subject area of the degree program. The specific requirements are listed as major requirements (that could comprise college core requirements and program core requirements), concentration requirements and electives, and major electives. The minimum number of credit hours of a master's degree is 30 credit hours; the minimum number of credit hours of a PhD degree is 54 credit hours.

Details of the graduation requirements of a degree program are provided under the corresponding degree program section in this catalog.

### Requirements for a Double Major

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

Double-major students will be awarded the degree of the primary major degree program, with a notation on the diploma and on the Attestation Certificates indicating completion of a second major.

### Graduate Courses Completed While at the Undergraduate Level

With the approval of their associate dean and the relevant graduate program coordinator/head of department, AUS senior undergraduate students with a minimum CGPA of 3.00 can register for up to two master's level courses while enrolled at the undergraduate level. Once the student is admitted to an AUS master's degree program, these courses may be counted toward completion of the master's degree program requirements, provided they were completed no more than five years prior to the start date of the first semester of study of the current master's degree program. Where AUS graduate courses taken while at the undergraduate level count towards the student's master's degree program graduation requirements, courses could be used to satisfy registration requirements, as applicable. Grades earned in such courses will also count in the master's-level cumulative grade point average (CGPA).

Undergraduate students accepted to the Accelerated Master's Program (AMP) of an AUS master's-level degree program are eligible to register for a maximum of six credit hours in master's-level courses while completing their undergraduate degree program graduation requirements. These courses may be used towards meeting the undergraduate degree program graduation requirements and may be evaluated for transfer of credit hours towards meeting the graduation requirements of the master's-level degree program corresponding to the student's AMP, post admission to the program. For full details on the AMP, including eligibility, application process, course registration and tuition fees, refer to the Accelerated Master's Program section of the *AUS Undergraduate Catalog* or consult [www.aus.edu/amp](http://www.aus.edu/amp).

### Graduation Residence Requirements

Candidates for graduation are expected to complete their last semester in residence at the university, unless registered at an institution with which AUS has a study abroad agreement.

In order to obtain a master's degree from AUS, students must complete a minimum of two regular semesters in residence at AUS. Accelerated Master's Program (AMP) students who are admitted to the corresponding master's degree program and who choose the thesis option of this program must complete a minimum of three regular semesters in residence at AUS as students of that master's degree program.

To earn a PhD degree from AUS, doctoral students must complete a minimum of four semesters in residence at AUS.

Coursework completed at an institution with which AUS has a study abroad agreement or as part of an approved dual degree program will meet the graduation residence requirement provided the courses have been pre-approved by the relevant graduate program coordinator/head of department and the associate dean for graduate studies.

Note that coursework completed in the context of a summer term outside AUS does not meet graduation residence requirements.

Master's degree students may transfer up to six credit hours in master's-level courses. PhD degree students may transfer up to nine credit hours in doctoral-level courses. For details, please refer to the Transfer Credit hours Policy under the Admission to Graduate Studies section earlier in this catalog. Students accepted in a dual degree program may be allowed to transfer more credit hours from the partner institution. For details, please refer to the corresponding degree program section of the catalog.

### 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 five years of admission to AUS as a master's degree student and within 10 years of admission to AUS as a PhD degree student, 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, Master's degree prospective candidates for graduation in a summer term are eligible to participate in the preceding spring semester commencement ceremony.

PhD degree students registered at the 10th week of a semester for their dissertation may participate in the commencement at the end of that semester, provided they have successfully completed all their degree program requirements, including earning a P grade on their dissertation. Students whose dissertation passing grade is awarded past the 11th week of the semester may participate in the subsequent commencement ceremony.

### Application for Graduation

Candidates for graduate degrees file an online application for graduation in their last expected semester/term of study. The Application for Graduation form is emailed to the prospective candidates for graduation by the Office of the Registrar at their AUS email account. 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

Degrees are conferred at the end of the semester/term in which students have successfully completed degree requirements and all master's thesis/professional project/dissertation requirements, including corrections and final submission of the approved master's thesis/professional

project/dissertation reports to the AUS Archives.

Conferral of the degree is noted on the academic transcript of the graduate with the date of graduation.

In addition to the academic transcript, graduates receive two documents confirming their graduation: the diploma and an Attestation Certificate. The diploma is issued only once.

### Names on Diplomas and Attestation Certificates

The names of AUS students will be spelled in English exactly as they appear on their passports or identity cards when printed on diplomas and attestation certificates. 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 and Attestation Certificates

The diploma and the attestation certificates will list the full name of the degree program awarded, as well as the applicable concentration(s).

The diploma and the attestation certificates of students graduating with a double major will also list the second major.

### Attestation of Diplomas, Attestation Certificates and Transcripts

The Office of the Registrar provides the graduates with an attested Attestation Certificate via the automatic attestation portal of the Ministry of Education. The attested certificate is emailed to the graduates at their AUS alumni email account.

Diplomas and transcripts do not require attestation by the Ministry of Education. Some graduates might choose to attest their diploma and academic transcript, the Office of the Registrar provides the relevant information at [www.aus.edu/commencement](http://www.aus.edu/commencement).





# College of Architecture, Art and Design

## Dean

Varkki Pallathucheril

## Associate Dean

Ahmed Mokhtar

## Master of Urban Planning (MUP)

Himanshu Grover, Coordinator

The Master of Urban Planning (MUP) degree program is an interdisciplinary program offered by the College of Architecture, Art and Design (CAAD) that draws upon the expertise of faculty from the College of Architecture, Art and Design and the College of Engineering.

Urban planning is concerned with creating stimulating and functional places where present and future generations can live, work, entertain and engage in community, social, religious and cultural activities.

Urban planning has roots in architecture, engineering, public health, law and the social sciences. Planners today combine design, analytical and communication skills to help communities manage change. Urban planning involves government, private enterprise and local communities taking concerted action toward achieving a common goal.

The MUP degree program at AUS provides a specialized and professional education that enables graduates to plan urban environments and exert leadership in managing urban growth, developing urbanization policies and promoting social development. The program imparts to students ethical standards compatible with the values of local cultural settings, principles of social justice and concerns for environmental protection and sustainability. More details on the program are available at [www.aus.edu/caad/mup](http://www.aus.edu/caad/mup).

### Program Mission

The MUP degree program prepares students to become experts and leaders in the management and planning of urban development. In doing so, they will be guided by professional and ethical standards rooted in values of sustainability, local culture and social justice.

### Program Goals

The MUP degree program seeks to:

- offer a high-quality educational setting that integrates theoretical

principles of urban planning with practical methods and applications

- pursue approaches to teaching and learning that emphasize dealing with practical real-world issues and problems
- support and promote original interdisciplinary research in urban planning and related fields
- advance cooperation and forge partnerships with local communities, be they governmental, professional, academic and other local groups such as community-based organizations, not-for-profit entities and non-governmental organizations

### Program Outcomes

Graduates of the MUP degree program will be able to:

- use quantitative, qualitative and visual techniques to analyze and interpret data and communicate information in support of planning and policymaking for cities and regions
- lead and guide locally relevant processes, which include stakeholder participation, for making and implementing different kinds of plans
- undertake research and analysis in an interdisciplinary setting to foster sound insights into planning for sustainable places

### Admission Requirements

Applicants are required to fulfill the university's general admission requirements for graduate studies.

The program admits students from all fields of study, including, but not limited to, urban planning, architecture, engineering, business, the humanities and the social sciences.

### Accelerated Master's Program—AUS Undergraduate Students

AUS undergraduate degree-seeking students interested in pursuing an MUP degree may register for a maximum of six credit hours from MUP courses while completing their undergraduate degree program by seeking acceptance to the Accelerated Master's Program (AMP) of the MUP degree program. The master's-level courses may be counted towards meeting the graduation requirements for both the bachelor's and master's degrees.

To qualify for acceptance to the AMP, students must have satisfied the following requirements at AMP application time:

- have earned a minimum of 90 credit hours (excluding credit hours earned in Achievement Academy/Bridge Program courses and preparatory courses)
- have achieved a minimum cumulative GPA of 3.50

For further details on the AMP, refer to Accelerated Master's Program in the Academic Policies and Regulations section of the *AUS Undergraduate Catalog*. For the list of MUP courses available to AMP students, consult the Course Descriptions section of this catalog. Course prerequisites and background requirements must be met.

### Blended Learning Mode of Delivery

The MUP degree program delivers several of its required and elective courses in a blended learning mode combining 10 weeks of face-to-face teaching with five weeks of online learning. These courses can be identified in the degree requirements section hereafter. Details about the delivery of the weekly sessions are provided in the course syllabi available from the department. Course assessments for courses delivered in blended learning mode are conducted in the same way as for courses delivered using the face-to-face mode.

To facilitate the effective use of the available learning tools, including the Learning Management System (iLearn) and online learning software, students are offered training sessions at the beginning of each semester. Furthermore, frequently asked questions related to e-learning tools are accessible to students and can be consulted at <https://itfaq.aus.edu/>.

### Degree Requirements

The MUP degree is awarded after successful completion of a minimum of 33 credit hours consisting of core courses, elective courses and a capstone workshop research course, with a minimum cumulative grade point average of 3.00.

To graduate with an MUP degree, students must successfully complete the following minimum requirements:

- 18 credit hours in core courses
- six credit hours in a required capstone workshop research course
- a minimum of nine credit hours in elective courses

Students must complete the degree requirements within five years from the time of initial enrollment in the program.

Graduation residence requirements must be met. For details, refer to Graduation Requirements in the Academic Policies and Regulations section earlier in this catalog.

### **Core Courses Requirement (18 credit hours)**

Students must successfully complete the following UPL courses:

- UPL 600 Planning History, Theory and Principles (blended learning mode)
- UPL 602 Computer Applications in Planning
- UPL 604 Urban Planning Research and Analysis
- UPL 621 Environmental and Land Use Planning (blended learning mode)
- UPL 623 Urban Design Processes, Principles and Skills (blended learning mode)
- UPL 625 Plan Making, Communication and Process

### **Required Capstone Workshop Course (6 credit hours)**

Students must successfully complete the program's capstone workshop course:

- UPL 680 Urban Research and Planning Workshop (blended learning mode)

This capstone workshop course involves working as a team on applying substantive urban planning knowledge and skills. It involves fieldwork, hands-on analysis, policy proposals and plan making.

### **Elective Courses (minimum of 9 credit hours)**

Students must successfully complete three elective courses for a minimum of nine credit hours. Electives are selected from the following list of courses, in consultation with the program academic coordinator:

- UPL 633 Urban Infrastructure Planning (blended learning mode)
- UPL 634 Tourism and Hospitality Planning (blended learning mode)
- UPL 639 Urban Planning and Housing Policy
- UPL 651 Negotiation Strategies
- UPL 655 Ecological Urbanism
- UPL 694 special topic courses in urban planning

With the approval of their program academic coordinator, students may elect to take one course outside of the list, from any university graduate-level course not counted as a core or capstone course. The course must provide knowledge and skills that contribute to the program learning outcomes. The request must be

approved by the student's associate dean who will inform the Office of the Registrar before course registration.

Students could elect to complete courses outside of the list of elective courses that do not meet the above conditions. Such courses will not meet any of the degree program graduation requirements. Approval of the student's program academic coordinator is required.

### **Academic Advising**

Program advising procedures provide students with orientation and guidance on the program and the profession. Students meet with the program academic coordinator every semester to discuss curricular progress and changes in circumstances, if any, and to confirm course choices for the next semester.



# College of Arts and Sciences

## Dean

Mahmoud Anabtawi

## Associate Dean for Graduate Affairs

Hana Sulieman

## Associate Dean for Undergraduate Affairs

Ahmad Al-Issa

## Master of Arts in International Studies (MAIS)

Yuting Wang, Head, Department of International Studies

The Master of Arts in International Studies (MAIS) degree program is offered by the Department of International Studies.

International studies is a multidisciplinary field combining history, political science, sociology, anthropology and philosophy. The MAIS degree program provides a comprehensive curriculum that helps students gain an in-depth understanding of world affairs and focuses on enhancing students' critical thinking, problem-solving and communication skills, and preparing them to adeptly navigate and contribute to the constantly evolving global environment.

The MAIS degree program is uniquely designed to train future leaders and change-makers. Emphasizing innovative, impactful and ethical problem-solving, it offers the foundation for career opportunities in diverse fields such as government and foreign service, education, law, non-governmental organizations and multinational corporations. This program opens the gateway for its graduates to become influential figures in global affairs, equipped to confront contemporary global challenges.

### Mission Statement

The Master of Arts in International Studies program offers a multidisciplinary education that trains the next generation of global leaders and change makers in the creation of innovative, impactful, ethical and sustainable solutions to contemporary global challenges.

### Program Goals

The Master of Arts in International Studies degree program aims to:

- equip students with a multidisciplinary analytical framework to understand

historical, emerging and current global challenges

- enable students to understand ongoing developments in the Arab world (and beyond) in order to situate regional changes within global transformations
- promote critical problem-solving expertise, grounded in a contextual comprehension of specific issues, and the development of ethical and equitable solutions

### Program Outcomes

Upon successful completion of the Master of Arts in International Studies, students will be able to:

- analyze the roles, responsibilities and interests of states and non-state actors at local, national, regional and global levels
- synthesize theoretical and factual knowledge with quantitative/qualitative research to produce high-quality written material
- employ an interdisciplinary perspective to analyze key international issues and identify critical areas of concern
- apply advanced oral communication skills to relay accurate information and explain complex ideas and concepts
- evaluate disparate points of view to design effective, ethical and sustainable solutions to global challenges

### Admission Requirements

Applicants are required to fulfill the general university requirements for graduate admission. Applicants who meet the general university requirements for graduate admission but have not completed undergraduate level courses on globalization, imperialism, global political economy or international organizations may be required to complete remedial courses offered through the Department of International Studies or at an accredited institution recognized by the UAE Ministry of Education's Higher Education Affairs Division.

### Bridging Courses

The undergraduate remedial (bridging) courses do not generate credit hours towards completion of the degree program graduation requirements. Students required to complete remedial courses are normally not eligible to register for degree program courses prior to the successful completion of these courses.

For further details, refer to Bridging Courses in Registration and Course Information within the Academic Policies and Regulations section earlier in this catalog.

### Accelerated Master's Program – AUS Undergraduate Students

AUS undergraduate degree-seeking students interested in pursuing a MAIS degree may register for a maximum of six credit hours from MAIS courses while completing their undergraduate degree program by seeking acceptance to the Accelerated Master's Program (AMP) of the MAIS degree program. The master's level courses may be counted towards meeting the graduation requirements for both the bachelor's and master's degrees.

To qualify for acceptance to the AMP, students must satisfy the following requirements at AMP application time:

- have earned a minimum of 90 credit hours (excluding credit hours earned in Achievement Academy/Bridge Program courses and preparatory courses)
- have achieved a minimum cumulative GPA of 3.50

For further details on the AMP, refer to Accelerated Master's Program in the Academic Policies and Regulations section of the *AUS Undergraduate Catalog*. Course prerequisites and background requirements must be met.

### Degree Requirements

To qualify for graduation with a MAIS degree, students must successfully complete all the requirements of the program, which consist of a minimum of 30 credit hours in required and elective courses, inclusive of a research thesis, with a minimum cumulative GPA of 3.00.

Students must successfully complete the degree requirements within five years from the time of initial enrollment in the program.

Graduation residence requirements must be met. For details, refer to Graduation Requirements in the Academic Policies and Regulations section earlier in this catalog.

To be awarded a MAIS degree, students must successfully complete the following requirements:

- 12 credit hours of required course work
- a minimum of 12 credit hours of elective courses
- six credit hours of Master's Thesis

### Required Courses (18 credit hours)

Students must successfully complete all the required courses, for a total of 18 credit hours, including a six-credit-hour master's thesis.

- INS 501 Advanced International Affairs
- INS 503 Research Methods
- INS 505 Theory and Practice of Leadership
- INS 507 Conflict Resolution

*Master's Thesis (6 credit hours)*

- INS 699 Master's Thesis

### Elective Courses (minimum of 12 credit hours)

Students must successfully complete a minimum of four elective courses (for a minimum of 12 credit hours). Students select their elective courses from the following list of courses, in consultation with their advisor:

- INS 511 Advanced International Security
- INS 513 Topics in Global Affairs
- INS 515 Environmental Ethics
- INS 517 Global Migration
- INS 519 Advanced Social Theory
- INS 521 Women's and Minority Rights
- INS 523 Civil Wars in History
- INS 525 Law, Politics and International Crime
- INS 527 Contemporary MENA Politics and the World
- INS 529 The Transnational Gulf
- INS 531 Governing Environmental Sustainability: Theories and Practices
- INS 694 Special Topics in INS

With the approval of the student's advisor and the student's head of department, students may choose to take one elective course outside of the list of elective courses. The course must provide knowledge and skills that contribute to the program learning outcomes. The request must be approved by the student's associate dean for graduate affairs, who will inform the Office of the Registrar before course registration.

Students could elect to complete courses outside of the list of elective courses that do not meet the above conditions; such courses will not meet any of the degree program graduation requirements. Approvals of the student's advisor and the student's head of department are required.

### Master's Thesis

Students must complete their master's thesis under close supervision of a

faculty member from the Department of International Studies who will act as the student's principal advisor.

The master's thesis must be defended to the satisfaction of the thesis review committee, which consists of the principal advisor and two additional faculty members, one of which must be selected from outside the program. A complete guide for forming the thesis committee and for preparing the master's thesis is given in the *Graduate Studies Policies and Procedures* document available on iLearn and accessible using the following path: iLearn-Community-Graduate Studies-Graduate Studies Policies and Procedures.

For the master's thesis registration details, please refer to Master's Thesis, Professional Research Project, Professional Project and Dissertation under the Academic Policies and Regulations section in this catalog.

### Master of Arts in Teaching English to Speakers of Other Languages (MA TESOL)

Kristen Highland, Interim Head, Department of English

The Master of Arts in Teaching English to Speakers of Other Languages (MA TESOL) degree program is offered by the Department of English.

The mission of the MA TESOL degree program is to provide students a balanced foundation of both practical and theoretical knowledge needed to teach English at various proficiency levels, and to prepare them for doctoral studies in areas related to language learning and teaching. By combining theory and practice, the program aims to produce informed teachers capable of using theory to enhance their teaching practice.

#### Program Goals

To fulfill this mission, the program goals are:

- to develop in students a critical approach to assessing second language learning models, teaching methodologies and materials appropriate to the UAE cultural context
- to prepare students for positions requiring high levels of proficiency in teaching English as a foreign or second language at the secondary and tertiary levels
- to equip its graduates with the required competencies to contribute to the field and prepare them to enroll in PhD programs

### Program Learning Outcomes

Upon graduation from the MA TESOL degree program, students will be able to:

- demonstrate an understanding of the basic models of language learning/teaching
- explain the role of culture in language learning and teaching in an ESL/EFL environment
- demonstrate critical and practical knowledge in the field of computer assisted/enhanced language learning
- apply pedagogical theories in applied linguistics to teaching practices
- apply testing and assessment concepts to real classroom situations
- develop/adapt and evaluate learner-centered curricula and materials for specific language teaching situations
- use effective classroom observation and research skills to improve teaching
- conduct original research

### Admission Requirements

Applicants are required to fulfill the general university requirements for graduate admission. Applicants who meet the general university requirements for graduate admission but have not completed at least one undergraduate course in general linguistics may be required to complete an undergraduate course in linguistics.

Conditional admission applicants must have achieved a minimum Internet-Based TOEFL score of 80 or a minimum IELTS (Academic Version) score of 6.5 or a minimum EmsAT (Achieve English) score of 1550, in addition to meeting the general university conditional admission requirements as outlined in the Admission to Graduate Studies section earlier in this catalog.

### Bridging Course

The undergraduate remedial (bridging) course in linguistics does not generate credit hours towards completion of the degree program graduation requirements. Students required to complete the remedial course are normally not eligible to register for degree program courses prior to successful completion of the course.

*For further details, refer to Bridging Courses in Registration and Course Information within the Academic Policies and Regulations section earlier in this catalog.*

### Accelerated Master's Program – AUS Undergraduate Students

AUS undergraduate degree seeking students interested in pursuing an MATESOL degree may register for a

maximum of six credit hours from MATESOL courses while completing their undergraduate degree program by seeking acceptance to the Accelerated Master's Program (AMP) of the MATESOL degree program. The master's level courses may be counted towards meeting the graduation requirements for both the bachelor's and master's degrees.

To qualify for acceptance to the AMP, students must satisfy the following requirements at AMP application time:

- have earned a minimum of 90 credit hours (excluding credit hours earned in Achievement Academy/Bridge Program courses and preparatory courses)
- have achieved a minimum cumulative GPA of 3.50

For further details on the AMP, refer to Accelerated Master's Program in the Academic Policies and Regulations section of the *AUS Undergraduate Catalog*. For the list of MATESOL courses available to AMP students, consult the Course Descriptions section of this catalog. Course prerequisites and background requirements must be met.

### Degree Requirements

To qualify for graduation with an MA TESOL degree, students must successfully complete all the requirements of the program, which consist of a minimum of 30 credit hours in required courses and elective courses, inclusive of a research thesis, with a minimum cumulative GPA of 3.00.

Students must successfully complete the degree requirements within five years from the time of initial enrollment in the program.

Graduation residence requirements must be met. For details, refer to Graduation Requirements in the Academic Policies and Regulations section earlier in the catalog.

To be awarded an MA TESOL degree, students must successfully complete the following requirements:

- 12 credit hours of required course work
- a minimum of 12 credit hours of elective courses
- six credit hours of Master's Thesis

### Required Courses (18 credit hours)

Students must successfully complete all the required courses, for a total of 18 credit hours, including a six-credit-hour master's thesis.

- ELT 511 Linguistics for ESL Teachers

- ELT 513 Language Acquisition and Development
- ELT 515 Methods and Materials Development
- ELT 619 Practicum in TESOL

*Master's Thesis (6 credit hours)*

- ELT 699 Master's Thesis

### Elective Courses (minimum of 12 credit hours)

Students must successfully complete a minimum of four elective courses (for a minimum of 12 credit hours). Students select their elective courses from the following list of courses, in consultation with their advisor:

- ELT 501 Advanced English Grammar
- ELT 507 Culture, Society and Language Learning
- ELT 517 Curriculum Design
- ELT 521 Reading and Writing in ESL
- ELT 523 Bilingual Education
- ELT 551 Language Testing and Evaluation
- ELT 617 Quantitative, Qualitative and Action Research in ELT
- ELT 694 Special Topics in ELT

With the approval of the student's advisor and the student's head of department, students may choose to take one elective course outside of the list of elective courses. The course must provide knowledge and skills that contribute to the program learning outcomes. The request must be approved by the student's associate dean for graduate affairs who will inform the Office of the Registrar before course registration.

Students could elect to complete courses outside of the list of elective courses that do not meet the above conditions; such courses will not meet any of the degree program graduation requirements. Approvals of the student's advisor and the student's head of department are required.

### Master's Thesis

Students must complete their master's thesis under close supervision of a faculty supervisor on a topic related to some aspect of TESOL.

The master's thesis must be defended to the satisfaction of the thesis committee, which is composed of TESOL program faculty and one external member. A complete guide for forming the thesis committee and for preparing the master's thesis is given in the *Graduate Studies Policies and Procedures* document available on iLearn and accessible using the following path: iLearn-Community-Graduate Studies-Graduate Studies Policies and Procedures.

For the master's thesis registration details, please refer to Master's Thesis, Professional Research Project, Professional Project and Dissertation under the Academic Policies and Regulations section of this catalog.

### Master of Science in Mathematics (MSMTH)

Abdul Salam Jarrah, Head, Department of Mathematics and Statistics

The Master of Science in Mathematics (MSMTH) degree program is offered by the Department of Mathematics and Statistics.

The MSMTH degree program provides students with rigorous and thorough knowledge of a broad range of pure and applied areas of mathematics. It is designed to train students with different professional goals, ranging from employment or career advancement in business, industry or government, to basic training in foundations needed to obtain a research career or pursue a PhD in mathematics or mathematics-related fields.

### Program Goals

The program seeks to accomplish the following:

- provide the analytical skills necessary to formulate and solve complex mathematical problems that are of contemporary relevance in the fields of pure and applied mathematics
- develop the mathematical skills and knowledge to facilitate career advancement in education, business or industry, or to pursue more advanced study such as a PhD degree in mathematics or mathematics related-fields
- provide the mathematical skills and knowledge to describe and solve complex quantitative problems that arise in business or industry

### Program Outcomes

Upon completion of the program, graduates will be able to:

- apply advanced mathematical analysis to mathematical models
- demonstrate a comprehensive understanding of a broad domain of mathematics from (but not all) areas such as analysis, algebra, geometry and applied mathematics
- formulate and construct proofs
- clearly communicate mathematical concepts
- apply advanced mathematical techniques in their professional activities
- conduct independent research in specialized areas of mathematics

- employ mathematical methods to model and solve practical problems
- formulate problems in mathematical terms arising in related areas such as engineering, finance, and the natural sciences

### Admission Requirements

In addition to meeting the university's general graduate admission requirements, applicants must hold a bachelor's degree in an area of mathematical science (applied or pure mathematics, actuarial science, statistics, etc.) from an independently accredited university recognized by the UAE Ministry of Education's Higher Education Affairs Division and by AUS, or a bachelor's degree from a related field with a minimum of:

- nine credit hours in calculus
- three credit hours in differential equations
- three credit hours in linear algebra
- three credit hours in abstract algebra
- three credit hours in real analysis

### Bridging Courses

Applicants with a bachelor's degree from a related field of study, who meet the university's general graduate admission requirements but who have not completed the prescribed undergraduate courses, are required to complete these remedial (bridging) courses and will not be eligible to register for degree program courses prior to successful completion of these courses. The undergraduate remedial courses do not generate credit hours towards completion of the degree program graduation requirements. For further details, refer to Bridging Courses in Registration and Course Information within the Academic Policies and Regulations section earlier in this catalog.

### Accelerated Master's Program—AUS Undergraduate Students

AUS undergraduate degree seeking students interested in pursuing an MSMTM degree may register for a maximum of six credit hours from MSMTM courses while completing their undergraduate degree program by seeking acceptance to the Accelerated Master's Program (AMP) of the MSMTM degree program. The master's level courses may be counted towards meeting the graduation requirements for both the bachelor's and master's degrees.

To qualify for acceptance to the AMP, students must satisfy the following requirements at AMP application time:

- be enrolled in a science or engineering major, or in the

accounting, finance or economics majors

- have earned a minimum of 90 credit hours (excluding credit hours earned in Achievement Academy/Bridge Program courses and preparatory courses)
- have a minimum cumulative GPA of 3.50
- have successfully completed MTH 221 (Linear Algebra) and one course from the following subject areas:
  - Differential Equations
  - Abstract Algebra
  - Real Analysis
  - Probability Theory

For further details on the AMP, refer to Accelerated Master's Program in the Academic Policies and Regulations section of the *AUS Undergraduate Catalog*. For the list of MSMTM courses available to AMP students, consult the Course Descriptions section of this catalog. Course prerequisites and background requirements must be met.

### Degree Requirements

To qualify for graduation with an MSMTM degree, students must successfully complete all the requirements of the program which consist of a minimum of 30 credit hours in required courses and elective courses, inclusive of a zero-credit seminar and a research thesis, with a minimum cumulative GPA of 3.00.

Students must successfully complete the degree requirements within five years from the time of initial enrollment in the program.

Graduation residence requirements must be met. For details, refer to Graduation Requirements in the Academic Policies and Regulations section earlier in the catalog.

To be awarded an MSMTM degree, students are required to successfully complete the following:

- 12 credit hours in required course work
- a minimum of 12 credit hours in elective courses
- a zero-credit-hour seminar
- six credit hours in Master's Thesis

### Required Courses (18 credit hours)

Students must successfully complete all the required courses for a total of 18 credit hours, including a zero-credit-hour seminar and a six-credit-hour master's thesis.

- MTH 505 Ordinary Differential Equations
- MTH 511 Real Analysis

- MTH 512 Advanced Linear Algebra
- MTH 532 Abstract Algebra
- MTH 595 Seminar

*Master's Thesis (6 credit hours)*

- MTH 599 Master's Thesis

### Elective Courses (minimum of 12 credit hours)

Students must successfully complete a minimum of four elective courses (for a minimum of 12 credit hours).

Students select their electives from the following list of courses, in consultation with their advisor:

- MTH 500 Mathematical Statistics with Applications
- MTH 506 Partial Differential Equations
- MTH 507 Financial Mathematics I
- MTH 508 Mathematical Biology
- MTH 517 Numerical Methods for Derivative Pricing
- MTH 520 Complex Analysis
- MTH 551 Methods of Applied Mathematics
- MTH 555 Loss and Risk Models
- MTH 560 Topology
- MTH 565 Numerical Analysis
- MTH 570 Optimal Control Theory
- MTH 594 Special Topics in Mathematics
- STA 501 Advanced Data Mining: Theory and Applications
- STA 594 approved special topics in statistics. Consult the online course catalog or the online class schedule accessible via the AUS student information system to verify course classifications.

With the approval of the student's advisor and the student's head of department, students may choose to take one elective course outside of the list of elective courses. The course must provide knowledge and skills that contribute to the program learning outcomes. The request must be approved by the student's associate dean for graduate affairs who will inform the Office of the Registrar before course registration.

Students could elect to complete courses outside of the list of elective courses that do not meet the above conditions; such courses will not meet any of the degree program graduation requirements. Approvals of the student's advisor and the student's head of department are required.

### Master's Thesis

A student must prepare and successfully defend a master's thesis presenting results of independent

research performed under the close supervision of a faculty member from the Department of Mathematics and Statistics who will act as the student's principal advisor. The principal advisor serves as the chair of the thesis examining committee. The committee includes two additional faculty members. One of the additional faculty members must be selected from outside the program. The committee could also include one co-advisor or more. For students accepted in a dual master's degree program, the master's thesis committee must include a co-advisor from the partner institution who must have a demonstrated record of scholarly activities related to the thesis topic and have prior supervisory experience at the graduate level.

A complete guide for forming the thesis committee and for preparing the master's thesis is given in the *Graduate Studies Policies and Procedures* document available on iLearn and accessible using the following path: iLearn-Community-Graduate Studies-Graduate Studies Policies and Procedures.

For the master's thesis registration details, please refer to Master's Thesis, Professional Research Project, Professional Project and Dissertation under the Academic Policies and Regulations section of this catalog.

## Doctor of Philosophy in Materials Science and Engineering (PhD-MSE)

Ali Alnaser, Coordinator

The PhD in Materials Science and Engineering (PhD-MSE) degree program is an interdisciplinary degree program that draws on the expertise of faculty from the College of Arts and Sciences, the College of Engineering and the College of Architecture, Arts and Design. The PhD-MSE degree program offers advanced education in four focus research areas that are aligned with the UAE Economic Vision 2030:

- Advanced Materials
- Materials for Energy and Environment
- Structures
- Analytical and Computational Modeling.

The PhD-MSE degree program is designed to provide future scholars with the skills and abilities that will allow them to contribute to the advancement of knowledge in the focus research areas of the program.

### Mission Statement

The mission of the PhD-MSE degree program is to prepare future researchers and academics equipped with interdisciplinary cutting-edge

knowledge and advanced skills that can be utilized in meeting the societal needs and in contributing to promising entrepreneurship in the UAE, the region, and globally.

### Program Goals

The PhD-MSE program aims to:

- prepare students to meet the highest challenges of scholarship and become distinguished faculty members
- provide a research-based learning environment that is conducive to acquiring and analyzing data, developing experimental approaches to materials science and engineering, and practicing the proper scientific research methods
- provide students with the latest developments and techniques in the field through a dynamic curriculum that reflects the evolving needs of the region and the world
- prepare students for careers in the government, industry and academia sectors, and train them to lead in creating strategies and developing operations for research and development in corporate organizations as well as in government agencies.

### Program Learning Outcomes

Graduates of the PhD-MSE degree program will be prepared to:

- develop advanced knowledge in the core subjects and theories of materials science and engineering
- apply relevant analytical and numerical techniques to model physical phenomena and solve complex problems
- design and conduct experiments, and demonstrate proficiency in data acquisition and analysis using state-of-the-art research techniques
- communicate research outcomes effectively to academic and relevant audiences, both orally and in writing
- carry out original independent research of theoretical and methodological rigor
- uphold standards of ethical academic conduct.

### Admission Requirements

In addition to meeting the university's general requirements for admission to PhD degree programs, applicants to the PhD-MSE degree program are required to have completed a master of science degree or a bachelor of science degree (direct admission) in any of the following fields: materials science, materials engineering, physics, chemistry, mechanical engineering, electrical engineering, chemical engineering or civil engineering.

Applicants with a relevant degree but not in materials science or materials engineering could be required to complete bridging courses (for details, refer to Bridging Courses hereafter).

### Degree Requirements

To qualify for graduation with a PhD-MSE degree, students admitted with a master's degree must successfully complete a minimum of 54 credit hours with a minimum cumulative GPA of 3.00, as follows:

- a minimum of 24 credit hours of coursework (8 courses), inclusive of a zero-credit hours seminar (MSE 795)
- a minimum of 30 credit hours of research work (MSE 799)

Direct admission students must successfully complete a minimum of 60 credit hours with a minimum cumulative GPA of 3.00, as follows:

- a minimum of 30 credit hours of coursework (10 courses), inclusive of a zero-credit-hour seminar (MSE 795)
- a minimum of 30 credit hours of research work (MSE 799)

The expected minimum duration for completion of the PhD-MSE degree program for students admitted with a master's degree is four years. Direct admission students are expected to need a minimum of five years to complete the program. All graduation requirements must be completed within 10 years of admission to AUS as a doctoral student, inclusive of any leave.

Graduation residence requirements must be met. For details, refer to Graduation Requirements in the Academic Policies and Regulations section earlier in this catalog.

### Bridging Courses

Applicants with a relevant master's or bachelor's degree but not in materials science or materials engineering could be required to complete the following remedial (bridging) courses:

- MSE 500 Fundamentals of Materials Science and Engineering
- MSE 510 Thermodynamics in Materials Science and Engineering

Direct admission students are required to complete the following additional bridging courses:

- NGN 500 Advanced Engineering Mathematics
- NGN 509 Computational Methods for Engineering

The bridging courses do not generate credit hours towards completion of the degree program graduation requirements. Students required to complete bridging course are normally not eligible to register for degree

program courses prior to successful completion of these courses. For further details, refer to Bridging Courses in Registration and Course Information within the Academic Policies and Regulations section earlier in this catalog.

#### Waiver Policy

A bridging course may be waived if the student has completed comparable course work at the undergraduate or master's level. Students may be required to submit course documentation. For details, refer to the Admission to Graduate Studies/Course Waiver earlier in this catalog. NGN 500 and NGN 509 cannot be waived based on completion of relevant undergraduate course work.

#### Required Courses (minimum of 30/33 credit hours)

Students must successfully complete the following required courses:

- MSE 700 Research Methods in Materials Science and Engineering (for direct admission students only)
- MSE 795 Doctoral Seminar
- MSE 799 Dissertation (for a minimum of 30 credit hours)

#### Elective Courses (minimum of 24/27 credit hours)

Students admitted with a master's degree must successfully complete a minimum of eight courses (for a minimum of 24 credit hours) selected from the following courses. Direct admission students must successfully complete a minimum of 27 credit hours of elective courses. The choice of courses must be approved by the program coordinator.

- MSE 700 Research Methods in Materials Science and Engineering (for non-direct admission students)
- 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

#### Qualifying Examination

To be considered as a candidate for the PhD-MSE degree, a student must pass a written qualifying examination. Registration for the qualifying examination is conditional upon meeting the following requirements:

- the student must be in good academic standing
- the student must have successfully completed a minimum of 12 credit hours of course work.

The qualifying examination may result in a pass or a fail grade. A student who fails the qualifying examination is academically dismissed from the university. A student who was academically dismissed as a result of failing the qualifying examination may petition for reinstatement and a repeat of the failed qualifying examination to the Program Coordinator, one month ahead of the registration of the semester immediately following academic dismissal. The student petition form is available at [www.aus.edu/registration/forms](http://www.aus.edu/registration/forms). The petition will be reviewed by the Program Coordinator who will make a written recommendation to the Associate Dean for Graduate Affairs. The associate dean will then provide a recommendation to the Vice Provost for Graduate Studies. Decisions regarding reinstatement and repeat of the qualifying examination will be made by the Vice Provost for Graduate Studies. A student who failed the qualifying examination may be allowed to repeat the qualifying examination only once.

Students need to seek guidance from the Program Coordinator regarding the qualifying examination requirements and deadlines.

Further details on the qualifying examination are provided in the *Graduate Studies Policies and Procedures* document available on iLearn and accessible using the

following path: iLearn-Community-Graduate Studies-Graduate Studies Policies and Procedures.

For registration details, please refer to Master's Thesis, Professional Research Project, Professional Project and Dissertation under the Academic Policies and Regulations section of this catalog.

#### PhD Dissertation

The PhD dissertation includes the preparation of a research proposal, presentation and defense of the research proposal, write-up of the dissertation, and presentation and defense of the dissertation.

A PhD-MSE candidate develops his/her dissertation research proposal and completes the dissertation under the direct supervision and guidance of a principal advisor. The principal advisor serves as the chair of the student's Dissertation Advisory Committee (DAC). The DAC also includes at least two additional faculty members. The student may request the appointment of an external committee member.

A PhD-MSE candidate is eligible to defend the dissertation research proposal only after all coursework is successfully completed. The research proposal defense includes a comprehensive examination of all coursework completed. PhD candidates are expected to successfully complete the dissertation proposal within three semesters of dissertation first registration. Failure to complete the dissertation proposal within the specified time frame or failure to demonstrate progress after the proposal defense may result in assigning an NP grade, resulting in withdrawal of candidacy from the PhD degree program.

The dissertation must be publicly defended to the satisfaction of the Final Oral Defense Committee (FODC). The FODC is formed by the Program Coordinator in consultation with the DAC chair; it is approved by the Associate Dean for Graduate Affairs and appointed by the Vice Provost for Graduate Studies.

A complete guide for forming the DAC and the FODC, and preparing the dissertation, including the dissertation research proposal, the dissertation defense schedule and deadlines, is given in the *Graduate Studies Policies and Procedures* document available on iLearn and accessible using the following path: iLearn-Community-Graduate Studies-Graduate Studies Policies and Procedures.

For registration details, please refer to Master's Thesis, Professional Research Project, Professional Project and

Dissertation under the Academic Policies and Regulations section of this catalog.

## Doctor of Philosophy in Mathematics (PhD-MTH)

Abdul Salam Jarrah, Coordinator

The Doctor of Philosophy in Mathematics (PhD-MTH) degree program, offered by the Department of Mathematics and Statistics, draws on the expertise of faculty in a wide range of areas in pure and applied mathematics. The PhD-MTH offers advanced education and research opportunities at the frontier of mathematics and mathematical innovation.

### Mission Statement

The mission of the PhD-MTH degree program is to train mathematicians and equip them with advanced knowledge and skills to conduct original and quality research at the frontiers of mathematics, apply contemporary mathematical tools to solve complex problems, and poise them to have successful careers in academia, government or industry.

### Program Goals

The PhD-MTH degree program seeks to accomplish the following:

- develop the student's competencies to become an effective and independent research scholar capable of expanding mathematical knowledge by conducting quality research and producing and communicating original results
- provide, in an inquiry-based environment and through a comprehensive curriculum, advanced mathematical knowledge and skills that can be utilized to solve complex problems and benefit society
- prepare students for careers that require advanced mathematics, such as research and teaching at the university level or research and development in industry and government

### Program Learning Outcomes

Upon completion of the PhD-MTH degree program, graduates will be able to:

- demonstrate mastery of comprehensive, deep and overarching knowledge of at least two main areas of mathematics such as algebra, analysis, dynamical systems and statistics
- apply advanced mathematical skills to solve problems and communicate solutions in precise mathematical language

- design, conduct and defend independent and original research in a specialized area of mathematics
- effectively disseminate and communicate research outcomes to relevant audiences in both written and oral formats
- uphold standards of ethical academic and professional conduct

### Admission Requirements

In addition to meeting the university's general requirements for admission to PhD degree programs, applicants to the PhD-MTH degree program are required to have completed a Master of Science in Mathematics or Applied Mathematics from an independently accredited university recognized by the UAE Ministry of Education's Higher Education Affairs Division and by AUS.

### Degree Requirements

For graduation with a PhD-MTH degree, students must successfully complete a minimum of 54 credit hours with a minimum cumulative GPA of 3.00 as follows:

- a minimum of 24 credit hours of coursework (8 courses)
- a doctoral seminar (0 credit hours)
- a qualifying examination
- a minimum of 30 credit hours of research work (dissertation)

The expected minimum duration for completion of the PhD-MTH degree program is four years. All graduation requirements must be completed within 10 years of admission to AUS as a doctoral student, inclusive of any leave. Graduation residence requirements must be met.

For details, refer to Graduation Requirements in the Academic Policies and Regulations section earlier in this catalog.

### Required Courses (minimum of 42 credit hours)

The required courses cover advanced topics in main areas of mathematics and provide fundamental knowledge to students. Students must successfully complete the following courses:

- MTH 705 Theory of Ordinary Differential Equations
- MTH 710 Functional Analysis
- MTH 711 Measure Theory
- MTH 733 Commutative Algebra
- MTH 795 Doctoral Seminar
- MTH 799 Dissertation (for a minimum of 30 credit hours)

### Elective Courses (minimum of 12 credit hours)

Students must successfully complete a minimum of four courses (for a minimum of 12 credit hours) selected from the following list and subject to the approval of the program coordinator:

- MTH 701 Advanced Probability Theory
- MTH 706 Analysis of Partial Differential Equations
- MTH 707 Extreme Values and Financial Risk
- MTH 715 Operator Theory
- MTH 735 Nonlinear Algebra
- MTH 736 Multiplicative Ideal Theory
- MTH 741 Dynamical Systems and Chaos
- MTH 751 Algebraic Coding Theory
- MTH 761 Algebraic Topology
- MTH 762 Applied Topology
- MTH 775 Computational Differential Equations
- MTH 794 special topics in mathematics

### Qualifying Examination

To be considered as a candidate for the PhD-MTH degree, the student must pass a written qualifying examination (MTH 790). The student may choose to do the examination in two of the following areas: analysis, algebra, numerical analysis, differential equations and topology.

Registration for the qualifying examination is conditional upon meeting the following requirements:

- The student must be in good academic standing.
- The student must have successfully completed a minimum of 12 credit hours of course work. Completed courses must include courses related to the two areas selected for the qualifying examination.

The qualifying examination may result in a pass or a fail grade. A student who fails the qualifying examination is academically dismissed from the university. A student who was academically dismissed as a result of failing the qualifying examination may petition for reinstatement and a repeat of the failed qualifying examination to the program coordinator, one month ahead of the registration of the semester immediately following academic dismissal. The student petition form is available at [www.aus.edu/registration/forms](http://www.aus.edu/registration/forms). The petition will be reviewed by the program coordinator, who will make a written recommendation to the Associate Dean for Graduate Affairs.

The associate dean will then provide a recommendation to the Vice Provost for Graduate Studies. Decisions regarding reinstatement and repeat of the qualifying examination will be made by the Vice Provost for Graduate Studies. A student who failed the qualifying examination may be allowed to repeat the qualifying examination only once.

Students need to seek guidance from the program coordinator regarding the qualifying examination requirements and deadlines.

Further details on the qualifying examination are provided in the *Graduate Studies Policies and Procedures* document available on iLearn and accessible using the following path: iLearn-Community-Graduate Studies-Graduate Studies Policies and Procedures. For registration details, please refer to Master's Thesis, Professional Research Project, Professional Project and Dissertation under the Academic Policies and Regulations section of this catalog.

### PhD Dissertation

The PhD dissertation (MTH 799) includes the preparation of a research proposal, presentation and defense of the research proposal, write-up of the dissertation, and presentation and defense of the dissertation. The expected research outcomes of the dissertation work should be sufficiently significant and contribute to creating new knowledge in the field.

A PhD-MTH candidate develops a dissertation research proposal and completes the dissertation under the direct supervision and guidance of a principal advisor. The principal advisor serves as the chair of the student's Dissertation Advisory Committee (DAC). The DAC also includes at least two additional faculty members. The student may request the appointment of an external committee member.

A PhD-MTH candidate is eligible to defend the dissertation research proposal only after all course work is successfully completed. The research proposal defense includes a comprehensive examination of all coursework completed. PhD candidates are expected to successfully complete the dissertation proposal within three semesters of dissertation first registration. Failure to complete the dissertation proposal within the specified time frame or failure to demonstrate progress after the proposal defense may result in assigning an NP grade, resulting in withdrawal of candidacy from the PhD degree program.

The dissertation must be publicly defended to the satisfaction of the Final Oral Defense Committee (FODC). The

FODC is formed by the program coordinator in consultation with the DAC chair; it is approved by the Associate Dean for Graduate Affairs and appointed by the Vice Provost for Graduate Studies.

A complete guide for forming the DAC and the FODC, and preparing the dissertation, including the dissertation research proposal, the dissertation defense schedule and deadlines, is given in the *Graduate Studies Policies and Procedures* document available on iLearn and accessible using the following path: iLearn-Community-Graduate Studies-Graduate Studies Policies and Procedures.

For registration details, please refer to Master's Thesis, Professional Research Project, Professional Project and Dissertation under the Academic Policies and Regulations section of this catalog.

### Dual Master's Degree: University of Michigan-Flint (UM-Flint)

The dual master's degree program between AUS and the University of Michigan at Flint (UM-Flint) College of Innovation and Technology (UMF-CIT) offers AUS master's degree students the opportunity to broaden their academic horizons and gain expertise from both institutions. Upon successful completion of the degree requirements of both institutions, students in the dual master's degree program will be awarded two master's degrees, one from AUS and one from UM-Flint.

Acceptance in the dual master's degree program occurs once a year. Students may contact the CAS Associate Dean for Graduate Affairs for details about the application process and the dual degree study plan.

AUS students who are selected to be part of the dual master's degree program will spend the second year of their master's degree program at UM-Flint. Upon approval of the CAS Associate Dean for Graduate Affairs, a student could transfer up to six credit hours of the coursework successfully completed at UM-Flint. For their thesis work, dual master's degree students will be under the supervision of faculty from both universities, and they will complete a single thesis that contributes to the graduation requirements of both the AUS and the UM-Flint degree programs.

Further details on transfer of credit hours are provided in Transfer of Credit Hours within the Admission to Graduate Studies section earlier in this catalog.



# College of Engineering

## Dean

Fadi Aloul

## Associate Dean for Graduate Studies

Lotfi Romdhane

## Associate Dean for Undergraduate Studies

Assim Sagahyoon

## Associate Dean for Research, Innovation and Outreach

Mehdi Ghommem

## Master of Science in Biomedical Engineering (MSBME)

Sameer Al Asheh, Coordinator

The Master of Science in Biomedical Engineering (MSBME) degree program is an interdisciplinary degree program offered by the College of Engineering that draws on the expertise of faculty from the College of Engineering and the College of Arts and Sciences.

The MSBME degree program will prepare professionals in an environment that combines biomedical engineering practice and technical research to contribute to the growing body of biomedical engineering knowledge, research and development, both regionally and internationally.

### Mission Statement

The mission of the MSBME degree program at AUS is to prepare professionals for advanced careers and/or doctoral studies related to biomedical engineering. The program continuously strives to create a stimulating academic environment that promotes excellence in teaching and research, thereby assisting the students to become competent, innovative and responsible professionals.

### Program Educational Objectives

Graduates of the MSBME degree program will be prepared to:

- be successful professionals in a specialized area of biomedical engineering
- maintain a desire for research, innovation and lifelong learning
- uphold the responsibilities of the engineering profession

### Student Outcomes

Upon graduation, an AUS MSBME graduate should demonstrate the ability to:

- perform research emphasizing creativity, independent learning and scientific methods in a chosen area of biomedical engineering
- apply advanced mathematics and engineering knowledge in identifying, formulating and solving biomedical engineering problems
- select and use techniques, skills and modern tools necessary for research or professional practice
- communicate effectively
- recognize the need for, and engage in, lifelong learning
- attend to biomedical engineering professional and ethical responsibilities

### Admission Requirements

In addition to meeting the university's general graduate admission requirements, applicants must hold a Bachelor of Science in Biomedical Engineering or Chemical Engineering or Computer Engineering or Electrical Engineering or Civil Engineering or 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.

### Accelerated Master's Program—AUS Undergraduate Students

AUS undergraduate degree seeking students interested in pursuing an MSBME degree may register for a maximum of six credit hours from MSBME courses while completing their undergraduate degree program by seeking acceptance to the Accelerated Master's Program (AMP) of the MSBME degree program. The master's level courses may be counted towards meeting the graduation requirements for both the bachelor's and master's degrees.

To qualify for acceptance to the AMP, students must satisfy the following requirements at AMP application time:

- be enrolled in a science or engineering major
- have earned a minimum of 90 credit hours (excluding credit hours earned in Achievement Academy/Bridge Program courses and preparatory courses)
- have achieved a minimum cumulative GPA of 3.50

For further details on the AMP, refer to Accelerated Master's Program in the Academic Policies and Regulations section of the *AUS Undergraduate Catalog*. For the list of MSBME courses available to AMP students, consult the Course Descriptions section of this catalog. Course prerequisites and background requirements must be met.

### Degree Requirements

To qualify for graduation with an MSBME degree, students must successfully complete a minimum of 30 credit hours consisting of college and program core courses, program elective courses, a seminar and a master's thesis, with a minimum cumulative grade point average of 3.00.

Students must complete the degree requirements within five years from the time of initial enrollment in the program.

Graduation residence requirements must be met. For details, refer to Graduation Requirements in the Academic Policies and Regulations section earlier in this catalog.

Students must successfully complete the following requirements:

- three credit hours from the required college core courses
- three credit hours from the required program core course
- a minimum of 15 credit hours in elective courses
- a zero-credit hour seminar including biomedical ethics
- nine credit hours in Master's Thesis

### Required Courses (15 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
- NGN 509 Computational Methods for Engineering
- MTH 508 Mathematical Biology

*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 zero-credit seminar course (BME 695).

*Master's Thesis (9 credit hours)*

- BME 699 Master's Thesis

### **Elective Courses (minimum of 15 credit hours)**

Students must successfully complete a minimum of 15 credit hours. Students may select their elective courses from the following list:

- BME 533 Microfluidics and Lab-on-a-Chip Devices
- BME 541 Biomedical Measurements and Devices
- BME 543 Biomedical Imaging Technologies
- BME 544 Neuroengineering
- 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 594 Special Topics in Biomedical Engineering
- CHE 611 Biomedical Engineering and Biotechnology
- ELE 544 Advanced Signal Processing
- ELE 648 Pattern Classification

With the approval of their advisor and the program coordinator, students may choose to take one graduate-level elective course outside of the list of elective courses. The course must provide knowledge and skills that contribute to the program learning outcomes. The request must be approved by the student's associate dean who will inform the Office of the Registrar before course registration.

Students can elect to complete graduate-level courses outside of the list of elective courses that do not meet the above conditions; such courses will not meet any of the degree program graduation requirements. Approvals of the student's advisor and the student's program coordinator are required.

### **Master's Thesis**

A student must complete his/her master's thesis under the direct supervision and guidance of a principal advisor. This principal advisor serves as the chair of the student's examining committee. The committee also includes two additional faculty members. One of the additional faculty members must be selected from outside the program. The committee

could also include one co-advisor or more.

A complete guide for preparing the master's thesis/professional project is given in the *Graduate Studies Policies and Procedures* document available on iLearn and accessible using the following path: iLearn-Community-Graduate Studies-Graduate Studies Policies and Procedures.

For registration details, please refer to Master's Thesis, Professional Research Project, Professional Project and Dissertation under the Academic Policies and Regulations section of this catalog.

### **Master of Science in Chemical Engineering (MSChE)**

Sameer Al-Asheh, Head, Department of Chemical and Biological Engineering

The Master of Science in Chemical Engineering (MSChE) degree program is offered by the Department of Chemical and Biological Engineering,

The MSChE degree program will prepare professionals in an environment that combines chemical engineering practice and technical research to contribute to the growing body of chemical engineering knowledge, research and development both regionally and internationally.

#### **Mission Statement**

The mission of the MSChE degree program at AUS is to prepare professionals for advanced careers and/or doctoral studies related to chemical engineering. The program is continuously striving to create a stimulating academic environment that promotes excellence in teaching and research to assist the students in becoming competent, innovative, and responsible professionals.

#### **Program Educational Objectives**

Graduates of the MSChE degree program will be prepared to:

- be successful professionals in a specialized area of chemical engineering
- maintain a desire for research, innovation and lifelong learning
- uphold the responsibilities of the engineering profession

#### **Student Outcomes**

Upon graduation, an AUS MSChE graduate should demonstrate the ability to:

- perform research emphasizing creativity, independent learning and scientific methods in a chosen area of chemical engineering

- apply advanced mathematics and engineering knowledge in identifying, formulating and solving engineering problems
- select and use techniques, skills and modern tools necessary for research or professional practice
- communicate effectively
- recognize the need for, and engage in, lifelong learning
- attend to professional and ethical responsibilities

### **Admission Requirements**

In addition to meeting the university's general graduate admission requirements, applicants must hold a Bachelor of Science in Chemical 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 chemical engineering field may be considered on a case-by-case basis.

### **Accelerated Master's Program— AUS Undergraduate Students**

AUS undergraduate degree seeking students interested in pursuing an MSChE degree may register for a maximum of six credit hours from MSChE courses while completing their undergraduate degree program by seeking acceptance to the Accelerated Master's Program (AMP) of the MSChE degree program. The master's level courses may be counted towards meeting the graduation requirements for both the bachelor's and master's degrees.

To qualify for acceptance to the AMP, students must satisfy the following requirements at AMP application time:

- be enrolled in the chemical engineering major
- have earned a minimum of 90 credit hours (excluding credit hours earned in Achievement Academy/Bridge Program courses and preparatory courses)
- have achieved a minimum cumulative GPA of 3.50
- have successfully completed all the 300-level major requirements from CHE courses.

For further details on the AMP, refer to Accelerated Master's Program in the Academic Policies and Regulations section of the *AUS Undergraduate Catalog*. For the list of MSChE courses available to AMP students, consult the Course Descriptions section of this catalog. Course prerequisites and background requirements must be met.

## Degree Requirements

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

To qualify for graduation with an MSChE degree, students must successfully complete a minimum of 30 credit hours consisting of college/program core courses, program elective courses, a seminar, and a master's thesis or a professional project, with a minimum cumulative grade point average of 3.00.

To ensure that students in the MSChE degree program will receive good exposure to the research environment, students in the project option are required to complete a professional project that includes research aspects.

Students must complete the degree requirements within five years from the time of initial enrollment in the program.

Graduation residence requirements must be met. For details, refer to Graduation Requirements in the Academic Policies and Regulations section earlier in this catalog.

### Thesis Option

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

- six credit hours of required college core courses
- nine credit hours of required program core courses
- a minimum of six 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:

- six credit hours of required college core courses
- nine credit hours of required program core courses
- a minimum of 12 credit hours in elective courses
- a zero-credit hour seminar
- three credit hours in Professional Project

### Required Courses (24/18 credit hours)

*College Core Courses (6 credit hours)*

Students must successfully complete the following courses:

- NGN 500 Advanced Engineering Mathematics

- NGN 509 Computational Methods for Engineering

*Program Core Courses (9 credit hours)*

Students must successfully complete the following courses:

- CHE 510 Transport Phenomena
- CHE 511 Advanced Chemical Engineering Thermodynamics
- CHE 512 Advanced Kinetics and Reactor Design

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

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

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

### Elective Courses (minimum of 6/12 credit hours)

Students in the thesis option must successfully complete a minimum of six credit hours in elective courses. Students in the project option must successfully complete a minimum of 12 credit hours.

Students may select their elective courses from the following list:

- CHE 594 special topic courses in chemical engineering
- CHE 610 Catalysis and Reaction Engineering
- CHE 611 Biomedical Engineering and Biotechnology
- CHE 613 Advanced Materials Science
- CHE 614 Environmental Engineering
- CHE 615 Particle Technology and Fluidization
- CHE 694 special topic courses in chemical engineering

With the approval of their advisor and the head of department, students in the thesis option may choose to take one graduate-level elective course outside the list of elective courses. Students in the project option may elect to take up to two elective courses. The courses must provide knowledge and skills that contribute to the program learning outcomes. The request must be approved by the student's associate dean who will inform the Office of the Registrar before course registration.

Students can elect to complete graduate-level courses outside of the list of elective courses that do not meet the above conditions; such courses will not meet any of the degree program graduation requirements. Approvals of the student's advisor and the student's head of department are required.

## Master's Thesis/Professional Project

A student must complete his/her master's thesis/professional project under the direct supervision and guidance of a principal advisor. This principal advisor serves as the chair of the student's examining committee. The committee also includes two additional faculty members. For the thesis option, one of the additional faculty members must be selected from outside the program. The committee could also include one co-advisor or more.

A complete guide for forming the master's thesis/professional project committee and for preparing the master's thesis/professional project is given in the *Graduate Studies Policies and Procedures* document available on iLearn and accessible using the following path: iLearn-Community-Graduate Studies-Graduate Studies Policies and Procedures.

For registration details, please refer to Master's Thesis, Professional Research Project, Professional Project and Dissertation under the Academic Policies and Regulations section of this catalog.

### Master of Science in Civil Engineering (MSCE)

Sameh El-Sayegh, Head, Department of Civil Engineering

The Master of Science in Civil Engineering (MSCE) degree program is offered by the Department of Civil Engineering.

The MSCE degree program will prepare professionals in an environment that combines civil engineering practice and technical research to contribute to the growing body of civil engineering knowledge, research and development efforts both regionally and internationally.

### Mission Statement

The mission of the MSCE degree program at AUS is to prepare professionals for advanced careers and/or doctoral studies related to civil engineering. The program strives to create a conducive academic environment that promotes excellence in teaching and research to assist the students in becoming competent, innovative and responsible professionals with effective communication skills.

### Program Educational Objectives

Graduates of the MSCE degree program will be prepared to:

- be successful professionals in a specialized area of civil engineering

- maintain a desire for research, innovation and lifelong learning
- uphold the responsibilities of the engineering profession

### Student Outcomes

Upon graduation, an AUS MSCE graduate should demonstrate the ability to:

- perform research emphasizing creativity, independent learning and scientific methods in a chosen area of civil engineering
- apply advanced mathematics and engineering knowledge in identifying, formulating and solving engineering problems
- select and use techniques, skills and modern tools necessary for research or professional practice
- communicate effectively
- recognize the need for, and engage in, lifelong learning
- attend to professional and ethical responsibilities

### Admission Requirements

In addition to meeting the university's general graduate admission requirements, applicants must hold a Bachelor of Science in Civil 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 civil engineering field may be considered on a case-by-case basis.

### Accelerated Master's Program—AUS Undergraduate Students

AUS undergraduate degree seeking students interested in pursuing an MSCE degree may register for a maximum of six credit hours from MSCE courses while completing their undergraduate degree program by seeking acceptance to the Accelerated Master's Program (AMP) of the MSCE degree program. The master's level courses may be counted towards meeting the graduation requirements for both the bachelor's and master's degrees.

To qualify for acceptance to the AMP, students must satisfy the following requirements at AMP application time:

- be enrolled in the civil engineering major
- have earned a minimum of 90 credit hours (excluding credit hours earned in Achievement Academy/Bridge Program courses and preparatory courses)

- have achieved a minimum cumulative GPA of 3.50

For further details on the AMP, refer to Accelerated Master's Program in the Academic Policies and Regulations section of the *AUS Undergraduate Catalog*. For the list of MSCE courses available to AMP students, consult the Course Descriptions section of this catalog. Course prerequisites and background requirements must be met.

### Degree Requirements

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

To qualify for graduation with an MSCE degree, students must successfully complete a minimum of 30 credit hours consisting of college/program core courses, program elective courses, a seminar, and a master's thesis or a professional project with a minimum cumulative grade point average of 3.00.

To ensure that students in the MSCE program will receive good exposure to the research environment, students in the project option are required to complete a professional project that includes research aspects. In addition, many of the civil engineering graduate courses have research components that reinforce the research element in the program.

Students must complete the degree requirements within five years from the time of initial enrollment in the program.

Graduation residence requirements must be met. For details, refer to Graduation Requirements in the Academic Policies and Regulations section earlier in this catalog.

### 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 hour 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
- NGN 509 Computational Methods for Engineering

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

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

- CVE 698 Professional Project (3 credit hours—project option)
- CVE 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 may select their elective courses from the following list:

- CMT 520 Advanced Construction Scheduling
- CVE 520 Sustainable Construction and Methods
- CVE 521 Finite Element Methods for Solids and Structures
- CVE 522 Advanced Water Resources Engineering
- CVE 524 Design of Strengthened Concrete Structures
- CVE 525 Structural Earthquake Engineering
- CVE 526 Advanced Structural Steel Design
- CVE 527 Optimization Techniques for Civil Engineering Systems
- CVE 531 Dynamics of Machine Foundations
- CVE 551 Wastewater Treatment
- CVE 572 Satellite Remote Sensing
- CVE 594 special topic courses in civil engineering
- CVE 621 Analysis and Design of Tall Buildings
- CVE 622 Physical and Chemical Processes in Water Treatment
- CVE 624 Advanced Geotechnical Engineering
- CVE 625 Highway Bridge Design

- CVE 626 Bridge Management Systems
- CVE 630 Designing with Geosynthetics
- CVE 651 Biological Treatment Process Control
- CVE 694 special topic courses in civil engineering
- ESM 570 Project Management

With the approval of their advisor and the head of department, students may choose to take one graduate-level elective course outside of the list of elective courses. The course must provide knowledge and skills that contribute to the program learning outcomes. The request must be approved by the student's associate dean who will inform the Office of the Registrar before course registration.

Students can elect to complete graduate-level courses outside of the list of elective courses that do not meet the above conditions; such courses will not meet any of the degree program graduation requirements. Approvals of the student's advisor and the student's head of department are required.

### Master's Thesis/Professional Project

A student must complete his/her master's thesis or professional project under the direct supervision and guidance of a principal advisor. This principal advisor serves as the chair of the student's examining committee. The committee also includes two additional faculty members. For the thesis option, one of the additional faculty members must be selected from outside the program. The committee could also include one co-advisor or more.

A complete guide for forming the master's thesis/professional project committee and for preparing the master's thesis/professional project is given in the *Graduate Studies Policies and Procedures* document available on iLearn and accessible using the following path: iLearn-Community-Graduate Studies-Graduate Studies Policies and Procedures.

For registration details, please refer to Master's Thesis, Professional Research Project, Professional Project and Dissertation under the Academic Policies and Regulations section of this catalog.

### Master of Science in Computer Engineering (MSCoE)

Imran Zualkernan, Head, Department of Computer Science and Engineering

The Master of Science in Computer Engineering (MSCoE) degree program is

offered by the Department of Computer Science and Engineering.

The MSCoE degree program prepares professionals in an environment that combines computer engineering practice and technical research to contribute to the growing body of computer engineering knowledge, research and development both regionally and internationally.

#### Mission Statement

The mission of the MSCoE degree program at AUS is to prepare professionals for advanced careers and/or doctoral studies related to computer engineering. The program strives to create a stimulating academic environment that promotes excellence in teaching and research to assist the students in becoming competent, innovative and responsible professionals with effective communication skills.

#### Program Educational Objectives

Graduates of the MSCoE degree program will be prepared to:

- be successful professionals in a specialized area of computer engineering
- maintain a desire for research, innovation and lifelong learning
- uphold the responsibilities of the engineering profession

#### Student Outcomes

Upon graduation, an AUS MSCoE graduate should demonstrate the ability to:

- perform research emphasizing creativity, independent learning and scientific methods in a chosen area of computer engineering
- apply advanced mathematics and engineering knowledge in identifying, formulating and solving engineering problems
- select and use techniques, skills and modern tools necessary for research or professional practice
- communicate effectively
- recognize the need for, and engage in, lifelong learning
- attend to professional and ethical responsibilities

#### Admission Requirements

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 computer engineering field may be considered on a case-by-case basis.

### Accelerated Master's Program—AUS Undergraduate Students

AUS undergraduate degree seeking students interested in pursuing an MSCoE degree may register for a maximum of six credit hours from MSCoE courses while completing their undergraduate degree program by seeking acceptance to the Accelerated Master's Program (AMP) of the MSCoE degree program. The master's level courses may be counted towards meeting the graduation requirements for both the bachelor's and master's degrees.

To qualify for acceptance to the AMP, students must satisfy the following requirements at AMP application time:

- be enrolled in the computer engineering or computer science major
- have earned a minimum of 90 credit hours (excluding credit hours earned in Achievement Academy/Bridge Program courses and preparatory courses)
- have achieved a minimum cumulative GPA of 3.50

For further details on the AMP, refer to Accelerated Master's Program in the Academic Policies and Regulations section of the *AUS Undergraduate Catalog*. For the list of MSCoE courses available to AMP students, consult the Course Descriptions section of this catalog. Course prerequisites and background requirements must be met.

### Degree Requirements

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

To qualify for graduation with an MSCoE degree, students must successfully complete a minimum of 30 credit hours consisting of college/program core courses, program elective courses, a seminar, and a master's thesis or a professional project with a minimum cumulative grade point average of 3.00.

To ensure that students in the MSCoE degree program will receive good exposure to the research environment, students in the project option are required to complete a professional project that includes research aspects. In addition, many of the computer engineering courses have research components that reinforce the research element in the program.

Students must complete the degree requirements within five years from the

time of initial enrollment in the program.

Graduation residence requirements must be met. For details, refer to Graduation Requirements in the Academic Policies and Regulations section earlier in this catalog.

### 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 hour 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
- NGN 509 Computational Methods for Engineering

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

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

- COE 698 Professional Project (3 credit hours—project option)
- COE 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 may select their elective courses from the following list:

- BME 543 Biomedical Imaging Technologies
- BME 581 Biomedical Infomatics
- COE 505 Cloud Computing Infrastructure
- COE 530 Advanced Computer Networks
- COE 533 Advanced Computer Architecture
- COE 545 Modeling and Testing in Software Engineering
- COE 555 Cyber Security
- COE 570 Big Data and Analytics
- COE 594 special topic courses in computer engineering
- COE 630 Wireless Networks
- COE 632 Advanced Database Systems
- COE 636 Advanced Multicore and GPU Computing
- COE 637 Advanced Machine Learning and Data Mining
- COE 639 Digital Video Compression
- COE 694 special topic courses in computer engineering

With the approval of their advisor and the head of department, students may choose to take up to two graduate-level elective courses outside of the list of elective courses. The courses must provide knowledge and skills that contribute to the program learning outcomes. The request must be approved by the student's associate dean who will inform the Office of the Registrar before course registration.

Students can elect to complete graduate-level courses outside of the list of elective courses that do not meet the above conditions; such courses will not meet any of the degree program graduation requirements. Approvals of the student's advisor and the student's head of department are required.

### Master's Thesis /Professional Project

A student must complete his/her master's thesis/professional project under the direct supervision and guidance of a principal advisor. This principal advisor serves as the chair of the student's examining committee. The committee also includes two additional faculty members. For the thesis option, one of the additional faculty members must be selected from outside the program. The committee could also include one co-advisor or more.

A complete guide for forming the master's thesis/professional project committee and for preparing the

master's thesis/professional project is given in the *Graduate Studies Policies and Procedures* document available on iLearn and accessible using the following path: iLearn-Community-Graduate Studies-Graduate Studies Policies and Procedures.

For registration details, please refer to Master's Thesis, Professional Research Project, Professional Project and Dissertation under the Academic Policies and Regulations section of this catalog.

## Master of Science in Construction Management (MSCM)

Sameh El-Sayegh, Coordinator

The Master of Science in Construction Management (MSCM) degree program is a multidisciplinary degree program offered by the College of Engineering (CEN) that draws on the expertise of faculty from several departments across CEN and other colleges/schools. The MSCM degree program attracts students from several disciplines including engineering, architecture and construction.

The MSCM degree program is primarily intended for professionals interested in advancing their knowledge and pursuing a career to face contemporary challenges in the construction industry.

### Mission Statement

The mission of the MSCM degree program at AUS is to prepare professionals for advanced careers and/or doctoral studies related to construction management. The program strives to create a stimulating and supportive academic environment that promotes excellence in teaching and research to assist the students in becoming competent, innovative and responsible professionals with effective communication skills.

### Program Educational Objectives

Graduates of the MSCM degree program will be prepared to:

- be successful professionals in a specialized area of construction management
- maintain a desire for research, innovation and lifelong learning
- uphold the responsibilities of the construction profession

### Student Outcomes

Upon graduation, an AUS MSCM graduate should demonstrate the ability to:

- perform research emphasizing creativity, independent learning and scientific methods in a chosen area of construction management

- apply knowledge in solving problems, making decisions and managing risks
- select and use techniques, skills and modern tools necessary for research or professional practice
- communicate effectively
- recognize the need for, and engage in, lifelong learning
- attend to professional and ethical responsibilities

### Admission Requirements

In addition to meeting the university's general graduate admission requirements, applicants must hold a bachelor's degree in engineering, architecture or construction from an independently accredited university recognized by UAE Ministry of Education's Higher Education Affairs Division and by AUS. Individuals degreed in other fields that are closely related to the construction management field may be considered on a case-by-case basis. Students from disciplines other than civil engineering or construction may be required to complete bridging course(s) at the discretion of the program admission committee and the program coordinator.

### Accelerated Master's Program—AUS Undergraduate Students

AUS undergraduate degree seeking students interested in pursuing an MSCM degree may register for a maximum of six credit hours from MSCM courses while completing their undergraduate degree program by seeking acceptance to the Accelerated Master's Program (AMP) of the MSCM degree program. The master's level courses may be counted towards meeting the graduation requirements for both the bachelor's and master's degrees.

To qualify for acceptance to the AMP, students must satisfy the following requirements at AMP application time:

- be enrolled in the civil engineering, architecture, interior design or design management major
- have earned a minimum of 90 credit hours (excluding credit hours earned in Achievement Academy/Bridge Program courses and preparatory courses)
- have achieved a minimum cumulative GPA of 3.50

For further details on the AMP, refer to Accelerated Master's Program in the Academic Policies and Regulations section of the *AUS Undergraduate Catalog*. For the list of MSCM courses available to AMP students, consult the Course Descriptions section of this

catalog. Course prerequisites and background requirements must be met.

### Degree Requirements

Students in the MSCM degree program must choose from three options: the thesis option, the project option and the course option.

To qualify for graduation with an MSCM degree, students must successfully complete a minimum of 30 credit hours consisting of required core courses, elective core courses, general elective courses, and a master's thesis or a professional project (for students in the thesis and project options only) with a minimum cumulative grade point average of 3.00.

To ensure that students in the MSCM program will receive good exposure to the research environment, many of the construction management graduate courses have research components that reinforce the research element in the program.

Students must complete the degree requirements within five years from the time of initial enrollment in the program.

Graduation residence requirements must be met. For details, refer to Graduation Requirements in the Academic Policies and Regulations section earlier in this catalog.

### Thesis Option

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

- nine credit hours of required program core courses
- a minimum of 12 credit hours in program and/or general elective courses as follows:
  - a minimum of six credit hours in program elective courses
  - a maximum of six credit hours in general elective courses
- nine credit hours in Master's Thesis

### Project Option

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

- nine credit hours of required program core courses
- a minimum of 18 credit hours in program and/or general elective courses as follows:
  - a minimum of nine credit hours in program elective courses
  - a maximum of nine credit hours in general elective courses
- three credit hours in Professional Project

### Course Option

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

- nine credit hours of required program core courses
- a minimum of 21 credit hours in program and/or general elective courses as follows:
  - a minimum of nine credit hours in program elective courses
  - a maximum of 12 credit hours in general elective courses

### Required Courses (18/12/9 credit hours)

*Program Core Courses (9 credit hours).*

Students must successfully complete the following courses:

- CMT 500 Management of Construction Projects
- CMT 510 Construction Automation
- CMT 520 Advanced Construction Scheduling

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

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

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

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

*Program Elective Courses (minimum of 6/9/9 credit hours)*

Students in the thesis option must successfully complete a minimum of 6 credit hours in program elective courses. Students in the project option must successfully complete a minimum of 9 credit hours in program elective courses. Students in the course option must successfully complete a minimum of 9 credit hours in program elective courses.

Students may select their program elective courses from the following list:

- CMT 600 Cost Analysis and Control
- CMT 610 Building Information modeling
- CMT 620 Construction Project Risk Management
- CMT 630 Construction Contracting
- CMT 640 International Construction
- CMT 650 Sustainable Infrastructure Management
- CMT 660 Sustainable Development and Construction

- CMT 665 Construction Safety Management
- CMT 670 Construction Equipment Management
- CMT 694 Special Topics in Construction Management

#### General Elective Courses (maximum of 6/9/12 credit hours)

Students in the thesis option can successfully complete a maximum of six credit hours in general elective courses. Students in the project option can successfully complete a maximum of nine credit hours of general elective courses. Students in the course option can successfully complete a maximum of 12 credit hours of general elective courses.

Students may select their general elective courses from the following list:

- COE 570 Big Data and Analytics
- CVE 520 Sustainable Construction and Methods
- CVE 572 Satellite Remote Sensing
- CVE 594-09 Sustainable Mobility
- ESM 520 Management for Engineers
- UPL 651 Negotiation Strategies

With the approval of their advisor and the program coordinator, students may choose to take up to two graduate-level elective courses outside of the list of elective courses. The courses must provide knowledge and skills that contribute to the program learning outcomes. The request must be approved by the student's associate dean who will inform the Office of the Registrar before course registration.

Students can elect to complete graduate-level courses outside of the list of elective courses that do not meet the above conditions; such courses will not meet any of the degree program graduation requirements. Approvals of the student's advisor and the student's head of department are required.

#### Master's Thesis/Professional Project

A student must complete his/her master's thesis/professional project under the direct supervision and guidance of a principal advisor. This principal advisor serves as the chair of the student's examining committee. The committee also includes two additional faculty members. For the thesis option, one of the additional faculty members must be selected from outside the program. The committee could also include one co-advisor or more.

A complete guide for forming the master's thesis/professional project committee and for preparing the master's thesis/professional project is

given in the *Graduate Studies Policies and Procedures* document available on iLearn and accessible using the following path: iLearn-Community-Graduate Studies-Graduate Studies Policies and Procedures.

For registration details, please refer to Master's Thesis, Professional Research Project, Professional Project and Dissertation under the Academic Policies and Regulations section of this catalog.

### Master of Science in Electrical Engineering (MSEE)

Ahmed Osman, Head, Department of Electrical Engineering

The Master of Science in Electrical Engineering (MSEE) degree program is offered by the Department of Electrical Engineering.

The MSEE degree program will prepare professionals in an environment that combines electrical engineering practice and technical research to contribute to the growing body of electrical engineering knowledge, research and development both regionally and internationally.

The Master of Science in Electrical Engineering program covers a wide spectrum of areas, including power systems and smart grids, autonomous vehicles, biomedical engineering, renewable energy, satellites, electric vehicles, drones, analog integrated circuits design, AI and machine learning, digital communications, optimization and decision-making, advanced microwave engineering, and radio frequency integrated circuits.

#### Mission Statement

The mission of the MSEE degree program at AUS is to prepare professionals for advanced careers and/or doctoral studies related to electrical engineering. The program is continuously striving to create a stimulating academic environment that promotes excellence in teaching and research to assist the students in becoming competent, innovative and responsible professionals.

#### Program Educational Objectives

Graduates of the MSEE degree program will be prepared to:

- be successful professionals in a specialized area of electrical engineering
- maintain a desire for research, innovation and lifelong learning
- uphold the responsibilities of the engineering profession

#### Student Outcomes

Upon graduation, an AUS MSEE graduate should demonstrate the ability to:

- perform research emphasizing creativity, independent learning and scientific methods in a chosen area of electrical engineering
- apply advanced mathematics and engineering knowledge in identifying, formulating and solving engineering problems
- select and use techniques, skills and modern tools necessary for research or professional practice
- communicate effectively
- recognize the need for, and engage in, lifelong learning
- attend to professional and ethical responsibilities

#### Admission Requirements

In addition to meeting the university's general graduate admission requirements, applicants must hold a Bachelor of Science in Electrical 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 electrical engineering field may be considered on a case-by-case basis.

#### Accelerated Master's Program—AUS Undergraduate Students

AUS undergraduate degree seeking students interested in pursuing an MSEE degree may register for a maximum of six credit hours from MSEE courses while completing their undergraduate degree program by seeking acceptance to the Accelerated Master's Program (AMP) of the MSEE degree program. The master's level courses may be counted towards meeting the graduation requirements for both the bachelor's and master's degrees.

To qualify for acceptance to the AMP, students must satisfy the following requirements at AMP application time:

- be enrolled in the electrical engineering or computer engineering major
- have earned a minimum of 90 credit hours (excluding credit hours earned in Achievement Academy/Bridge Program courses and preparatory courses)
- have achieved a minimum cumulative GPA of 3.50

For further details on the AMP, refer to Accelerated Master's Program in the



Academic Policies and Regulations section of the *AUS Undergraduate Catalog*. For the list of MSEE courses available to AMP students, consult the Course Descriptions section of this catalog. Course prerequisites and background requirements must be met.

### Degree Requirements

Students in the MSEE degree program must choose from three options: the thesis option, the project option and the course option.

To qualify for graduation with an MSEE degree, students must successfully complete a minimum of 30 credit hours consisting of college/program core courses, program elective courses, a seminar, and a master's thesis or a professional project (for students in the thesis and project options only) with a minimum cumulative grade point average of 3.00.

To ensure that students in the MSEE degree program will receive good exposure to the research environment, all students will be required to complete research-oriented class projects within many of the electrical engineering graduate courses.

Students must complete the degree requirements within five years from the time of initial enrollment in the program.

Graduation residence requirements must be met. For details, refer to Graduation Requirements in the Academic Policies and Regulations section earlier in this catalog.

#### Thesis Option

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

- six credit hours of required college core courses
- a minimum of 15 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:

- six credit hours of required college core courses
- a minimum of 21 credit hours in elective courses
- a zero-credit hour seminar
- 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
- a minimum of 24 credit hours in elective courses
- a zero-credit hour seminar

#### Required Courses (15/9 credit hours)

##### *College Core Courses (6 credit hours)*

Students must successfully complete two of the following courses:

- NGN 500 Advanced Engineering Mathematics
- NGN 505 Random Variables and Stochastic Processes
- NGN 509 Computational Methods for Engineering

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

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

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

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

#### Elective Courses (minimum of 15/21/24 credit hours)

Students in the thesis option must successfully complete a minimum of 15 credit hours in elective courses.

Students in the project option must successfully complete a minimum of 21 credit hours. Students in the course option must successfully complete a minimum of 24 credit hours in elective courses.

Students may select elective courses from the following list:

- ELE 540 Principles of Digital Communications
- ELE 542 Applied Electromagnetics
- ELE 543 Analog Integrated Circuits Design
- ELE 544 Advanced Signal Processing
- ELE 545 Power System Operation and Control
- ELE 547 Distributed Energy Resources in Smart Grids
- ELE 548 Photovoltaic Energy Systems
- ELE 549 Optimization in Electrical Engineering

- ELE 594 special topic courses in electrical engineering
- ELE 641 Advanced Microwave Engineering
- ELE 644 Dynamics and Control of Electrical Drives
- ELE 645 High Voltage Engineering
- ELE 646 Radio Frequency Integrated Circuits
- ELE 647 Digital Protection of Power Systems
- ELE 648 Pattern Classification
- ELE 650 Deep Learning
- ELE 660 RF Power Amplifiers for Wireless and Satellite Communications
- ELE 694 special topic courses in electrical engineering
- MTR 540 Advanced Control Systems

With the approval of their advisor and the head of department, students in the thesis and project options may choose to take one graduate-level elective course outside the list of elective courses. Students in the course option may elect to take up to two elective courses. The courses must provide knowledge and skills that contribute to the program learning outcomes. The request must be approved by the student's associate dean who will inform the Office of the Registrar before course registration.

Students can elect to complete graduate-level courses outside of the list of elective courses that do not meet the above conditions; such courses will not meet any of the degree program graduation requirements. Approvals of the student's advisor and the student's head of department are required.

### Master's Thesis/Professional Project

A student must complete his/her master's thesis/professional project under the direct supervision and guidance of a principal advisor. This principal advisor serves as the chair of the student's examining committee. The committee also includes two additional faculty members. For the thesis option, one of the additional faculty members must be selected from outside the program. The committee could also include one co-advisor or more.

A complete guide for forming the master's thesis/professional project committee and for preparing the master's thesis/professional project is given in the *Graduate Studies Policies and Procedures* document available on iLearn and accessible using the following path: iLearn-Community-Graduate Studies-Graduate Studies Policies and Procedures.

For registration details, please refer to Master's Thesis, Professional Research Project, Professional Project and Dissertation under the Academic Policies and Regulations section of this catalog.

## Master of Science in Engineering Systems Management (MSESM)

Abdulrahim Shamayleh, Head,  
Department of Industrial Engineering

The Master of Science in Engineering Systems Management (MSESM) degree program is offered by the Department of Industrial Engineering (INE).

The mission of the MSESM degree program is to considerably increase the opportunities for practicing engineers to be successful in their efforts to build effective teams, lead and manage major engineering projects, and expand economic development for the private and public sectors of the UAE and the Gulf region countries.

The curriculum provides core and elective courses with quality standards similar to those established in comparable North American institutions. The program offers a multidisciplinary curriculum designed to integrate management skills with technical knowledge from different engineering disciplines for the purpose of accomplishing work activities and entire projects more economically and productively. The program provides students from engineering and related disciplines with the knowledge and skills needed to plan, design, analyze and improve integrated systems of people, material, technology and information. It also aims to contribute to the related world body of knowledge and advance research and development efforts in the region.

### Program Educational Objectives

Graduates of the MSESM degree program will be prepared to:

- develop creative and effective engineered solutions that require engineering systems management skills to meet organizations' needs in product, service and project-based industries
- succeed in a wide range of different organizations, positions and complex projects and adapt to various work environments
- lead the change management process to meet organizational goals and objectives
- seek continual professional development and lifelong learning in a dynamic, global professional environment

- act professionally and ethically in the practice of engineering systems management

### Student Outcomes

Upon graduation, an AUS MSESM graduate should demonstrate the ability to:

- apply the techniques, tools and skills of engineering systems management to address real-world problems
- conduct economic and financial analysis of projects and engineering operations
- function as effective members of multidisciplinary teams and communicate effectively in both written and verbal forms
- recognize professional and ethical responsibilities and act accordingly within a global and social context
- engage in theoretical and applied research projects

### Admission Requirements

In addition to meeting the university's general graduate admission requirements, applicants must hold a Bachelor of Science degree in engineering from an independently accredited university recognized by the UAE Ministry of Education's Higher Education Affairs Division and by AUS.

Applicants with non-engineering degrees may be considered for conditional admission on a case-by-case basis. Preference will be given to applicants with relevant work experience. The following criteria must be met:

- The applicant should demonstrate that he/she has gained technical skills by working in an engineering/manufacturing/construction/petroleum/power utility organization for at least five years.
- The applicant should have held managerial positions in technical-oriented departments/divisions such as manufacturing/production/inventory/maintenance/quality/warehousing/scheduling/procurement.
- The applicant should demonstrate that he/she has been involved in technical-oriented projects.

### Accelerated Master's Program—AUS Undergraduate Students

AUS undergraduate degree seeking students interested in pursuing an MSESM degree may register for a maximum of six credit hours from MSESM courses while completing their undergraduate degree program by seeking acceptance to the Accelerated Master's Program (AMP) of the MSESM degree program. The master's level

courses may be counted towards meeting the graduation requirements for both the bachelor's and master's degrees.

To qualify for acceptance to the AMP, students must satisfy the following requirements at AMP application time:

- be enrolled in major offered by the College of Engineering
- have earned a minimum of 90 credit hours (excluding credit hours earned in Achievement Academy/Bridge Program courses and preparatory courses)
- have achieved a minimum cumulative GPA of 3.50

For further details on the AMP, refer to Accelerated Master's Program in the Academic Policies and Regulations section of the *AUS Undergraduate Catalog*. For the list of MSESM courses available to AMP students, consult the Course Descriptions section of this catalog. Course prerequisites and background requirements must be met.

### Blended Learning Mode of Delivery

The ESM degree program delivers several of its required and elective courses in a blended learning mode combining face-to-face teaching with online learning. These courses can be identified in the degree requirements section hereafter. Details about the delivery of the weekly sessions are provided in the course syllabi available from the department. Course assessments for courses delivered in blended learning mode are conducted in the same way as for courses delivered using the face-to-face mode.

To facilitate the effective use of the available learning tools, including the Learning Management System (iLearn) and online learning software, students are offered training sessions at the beginning of each semester. Furthermore, frequently asked questions related to e-learning tools are accessible to students and can be consulted at <https://itfaq.aus.edu/>.

### Degree Requirements

To qualify for graduation with an MSESM degree, students must successfully complete a minimum of 30 credit hours consisting of core courses, elective courses, a seminar and a master's thesis, with a minimum cumulative grade point average of 3.00.

Students must complete the degree requirements within five years from the time of initial enrollment in the program.

Graduation residence requirements must be met. For details, refer to Graduation Requirements in the

Academic Policies and Regulations section earlier in this catalog.

Students must successfully complete the following requirements:

- 12 credit hours in core courses
- a minimum of nine credit hours in elective courses
- a zero-credit hour seminar
- nine credit hours in Master's Thesis

### Required Courses (21 credit hours)

Students must successfully complete a total of 21 credit hours in required courses consisting of 12 credit hours of core courses and a nine-credit-hour master's thesis.

#### Core Courses (12 credit hours)

- ESM 520 Management for Engineers (blended learning mode)
- ESM 535 Introduction to Management Science
- ESM 570 Project Management (blended learning mode)
- ESM 575 Advanced Engineering Economy (blended learning mode)

In addition, all students must successfully complete a zero-credit seminar course (ESM 695)

#### Master's Thesis (9 credit hours)

- ESM 699 Master's Thesis

### Elective Courses (minimum of 9 credit hours)

Students must successfully complete a minimum of nine credit hours in elective courses. Students may select their elective courses from the following list of courses:

- BME 561 Healthcare Operations Management
- BME 562 Healthcare Planning and Risk Management
- ESM 600 Research Methodology (blended learning mode)
- ESM 615 Big Data and Business Analytics
- ESM 625 Enterprise Resource Planning Systems (blended learning mode)
- ESM 630 Quality Engineering and Management
- ESM 636 Human Resources Management for Engineers
- ESM 638 Decision Analysis
- ESM 640 Supply Chain Management
- ESM 644 Financial Management for Engineers
- ESM 670 Risk Management
- ESM 675 Procurement Management

- ESM 694 special topic courses in ESM

With the approval of their advisor and the head of department, students may choose to take one graduate-level elective course outside the list of elective courses. The course must provide knowledge and skills that contribute to the program learning outcomes. The request must be approved by the student's associate dean, who will inform the Office of the Registrar before course registration.

Students can elect to complete graduate-level courses outside of the list of elective courses that do not meet the above conditions; such courses will not meet any of the degree program graduation requirements. Approvals of the student's advisor and the student's head of department are required.

### Master's Thesis

A student must complete his/her master's thesis under the direct supervision and guidance of a principal advisor. This principal advisor serves as the chair of the student's examining committee. The committee also includes two additional faculty members. One of the additional faculty members must be selected from outside the program. The committee could also include one co-advisor or more.

A complete guide for forming the master's thesis committee and for preparing the master's thesis is given in the *Graduate Studies Policies and Procedures* document available on iLearn and accessible using the following path: iLearn-Community-Graduate Studies-Graduate Studies Policies and Procedures.

For registration details, please refer to Master's Thesis, Professional Research Project, Professional Project and Dissertation under the Academic Policies and Regulations section of this catalog.

### Master of Science in Machine Learning (MSMLR)

Imran Zualkernan, Head, Department of Computer Science and Engineering

The Master of Science in Machine Learning (MSMLR) degree program is offered by the Department of Computer Science and Engineering. The MSMLR degree program prepares professionals in an environment that combines computer science practice and technical research to contribute to the growing body of machine learning knowledge, research and development both regionally and internationally.

#### Mission Statement

The mission of the MSMLR degree program is to prepare professionals for

advanced careers and/or doctoral studies related to machine learning. The degree program strives to create a stimulating academic environment that promotes excellence in teaching and research to assist students in becoming competent, innovative and responsible professionals with effective communication skills.

#### Program Educational Objectives

Graduates of the MSMLR degree program will be prepared to:

- be successful professionals in a specialized area of machine learning
- maintain a desire for research, innovation and lifelong learning
- uphold the responsibilities of the engineering profession

#### Student Outcomes

Upon graduation, an AUS MSMLR graduate should demonstrate the ability to:

- perform research emphasizing creativity, independent learning and scientific methods in the field of machine learning
- apply advanced mathematics, computer science knowledge and software tools in identifying, formulating and solving real-world problems
- demonstrate an in-depth understanding of modern machine learning approaches, algorithms and tools
- select and use techniques, skills and modern tools necessary for research or professional practice
- communicate effectively through technical presentations and reports
- recognize the need for, and engage in, lifelong learning in professional areas
- attend to professional and ethical responsibilities within global and societal contexts

### Admission Requirements

In addition to meeting the university's general graduate admission requirements, applicants must hold a Bachelor of Science in Computer Science or 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 computer science and who possess a strong programming competency may be considered on a case-by-case basis.

### Accelerated Master's Program— AUS Undergraduate Students

AUS undergraduate degree seeking students interested in pursuing an MSMLR degree may register for a maximum of six credit hours from MSMLR courses while completing their undergraduate degree program by seeking acceptance to the Accelerated Master's Program (AMP) of the MSMLR degree program. The master's level courses may be counted towards meeting the graduation requirements for both the bachelor's and master's degrees.

To qualify for acceptance to the AMP, students must satisfy the following requirements at AMP application time:

- be enrolled in the computer engineering or computer science major
- have earned a minimum of 90 credit hours (excluding credit hours earned in Achievement Academy/Bridge Program courses and preparatory courses)
- have achieved a minimum cumulative GPA of 3.50

For further details on the AMP, refer to Accelerated Master's Program in the Academic Policies and Regulations section of the *AUS Undergraduate Catalog*. For the list of MSMLR courses available to AMP students, consult the Course Descriptions section of this catalog. Course prerequisites and background requirements must be met.

### Degree Requirements

To qualify for graduation with an MSMLR degree, students must successfully complete a minimum of 30 credit hours consisting of core courses, core electives and breadth elective courses, a seminar and a master's thesis with a minimum cumulative grade point average of 3.00.

Students must complete the degree requirements within five years from the time of initial enrollment in the program.

Graduation residence requirements must be met. For details, refer to Graduation Requirements in the Academic Policies and Regulations section earlier in this catalog.

Students must successfully complete the following requirements:

- six credit hours of required program core courses
- a minimum of nine credit hours in program core electives
- a minimum of six credit hours in breadth electives
- a zero-credit hour seminar

- nine credit hours in Master's Thesis

### Required Courses (15 credit hours)

Students must successfully complete a total of 15 credit hours in required courses consisting of six credit hours of core courses, a seminar and a nine-credit-hour master's thesis.

#### Core Courses (6 credit hours)

Students must successfully complete the following two courses:

- MLR 555 Advanced Artificial Intelligence
- MLR 570 Advanced Machine Learning

In addition, students must successfully complete a zero-credit seminar course (MLR 695).

#### Master's Thesis (9 credit hours)

- MLR 699 Master's Thesis

### Elective Courses (minimum of 15 credit hours)

#### Core Elective Courses (minimum of 9 credit hours)

Students must successfully complete a minimum of three elective courses for a minimum of nine credit hours. Students may select their electives from the following list:

- MLR 503 Data Mining and Knowledge Discovery
- MLR 506 Hardware Architectures for Machine Learning
- MLR 508 Cognitive Robotics
- MLR 510 Generative Deep Learning
- MLR 511 Mobile Application Development with Machine Learning
- MLR 512 Advanced Computer Vision
- MLR 513 Advanced Natural Language Processing
- MLR 694 special topic courses in machine learning

#### Breadth Elective Courses (minimum of 6 credit hours)

Students must successfully complete a minimum of two elective courses for a minimum of six credit hours from the following list:

- BME 543 Biomedical Imaging Technologies
- BME 581 Biomedical Informatics
- COE 505 Cloud Computing Infrastructure
- COE 545 Modeling and Testing in Software Engineering
- COE 555 Cyber Security
- COE 636 Advanced Multicore and GPU Computing

- any approved special topic courses. Consult the online course catalog or the online class schedule accessible via the AUS student information system to verify course classifications.

With the approval of their advisor and the head of department, students may choose to take up to two graduate-level elective courses outside the list of breadth elective courses. The courses must provide knowledge and skills that contribute to the program learning outcomes. The request must be approved by the student's associate dean, who will inform the Office of the Registrar before course registration.

Students can elect to complete graduate-level courses outside of the list of elective courses that do not meet the above conditions; such courses will not meet any of the degree program graduation requirements. Approvals of the student's advisor and the student's head of department are required.

### Master's Thesis

A student must complete his/her master's thesis under the direct supervision and guidance of a principal advisor. This principal advisor serves as the chair of the student's examining committee. The committee also includes two additional faculty members. One of the additional faculty members must be selected from outside the program. The committee could also include one co-advisor or more.

A complete guide for forming the master's thesis committee and for preparing the master's thesis is given in the *Graduate Studies Policies and Procedures* document available on iLearn and accessible using the following path: iLearn-Community-Graduate Studies-Graduate Studies Policies and Procedures.

For registration details, please refer to Master's Thesis, Professional Research Project, Professional Project and Dissertation under the Academic Policies and Regulations section of this catalog.

### Master of Science in Mechanical Engineering (MSME)

Mamoun Abdel-Hafez, Head,  
Department of Mechanical Engineering

The Master of Science in Mechanical Engineering (MSME) degree program is offered by the Department of Mechanical Engineering.

The MSME degree program prepares mechanical engineering and associated professionals in an environment that combines mechanical engineering practice and technical research to

contribute to the growing body of mechanical engineering knowledge, research and development both regionally and internationally.

### Mission Statement

The mission of the MSME degree program at AUS is to prepare professionals for advanced careers and/or doctoral studies related to mechanical engineering. The program is continuously striving to create a stimulating proactive learning environment that promotes excellence in teaching and research to assist the students in becoming competent, innovative, and responsible professionals.

### Program Educational Objectives

Graduates of the MSME degree program will be prepared to:

- be successful professionals in a specialized area of mechanical engineering
- maintain a desire for research, innovation and lifelong learning
- uphold the responsibilities of the engineering profession

### Student Outcomes

Upon graduation, an AUS MSME graduate should demonstrate the ability to:

- perform research emphasizing creativity, independent learning and scientific methods in a chosen area of mechanical engineering
- apply advanced mathematics and engineering knowledge in identifying, formulating and solving engineering problems
- select and use techniques, skills and modern tools necessary for research or professional practice
- communicate effectively
- recognize the need for, and engage in, lifelong learning
- attend to professional and ethical responsibilities

### Admission Requirements

In addition to meeting the university's general graduate admission requirements, applicants must hold a Bachelor of Science in 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 engineering fields or a quantitative science field that is closely related to the mechanical engineering field may be considered on a case-by-case basis.

### Accelerated Master's Program—AUS Undergraduate Students

AUS undergraduate degree seeking students interested in pursuing an MSME degree may register for a maximum of six credit hours from MSME courses while completing their undergraduate degree program by seeking acceptance to the Accelerated Master's Program (AMP) of the MSME degree program. The master's level courses may be counted towards meeting the graduation requirements for both the bachelor's and master's degrees.

To qualify for acceptance to the AMP, students must satisfy the following requirements at AMP application time:

- be enrolled in the mechanical engineering major
- have earned a minimum of 90 credit hours (excluding credit hours earned in Achievement Academy/Bridge Program courses and preparatory courses)
- have achieved a minimum cumulative GPA of 3.50
- have successfully completed all the 300-level major requirements from MCE courses.

For further details on the AMP, refer to Accelerated Master's Program in the Academic Policies and Regulations section of the *AUS Undergraduate Catalog*. For the list of MSME courses available to AMP students, consult the Course Descriptions section of this catalog. Course prerequisites and background requirements must be met.

### Degree Requirements

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

To qualify for graduation with an MSME degree, students must successfully complete a minimum of 30 credit hours consisting of college core courses, program elective courses, a seminar, and a master's thesis or a professional project with a minimum cumulative grade point average of 3.00.

To ensure that students in the MSME degree program will receive good exposure to the research environment, students in the project option are required to complete a professional project that includes research aspects. In addition, all students will be required to complete research-oriented class projects within many of the mechanical engineering graduate courses.

Students must complete the degree requirements within five years from the time of initial enrollment in the program.

Graduation residence requirements must be met. For details, refer to Graduation Requirements in the Academic Policies and Regulations section earlier in this catalog.

### 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-hour 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 may select their elective courses from the following list:

- BME 533 Microfluidics and Lab-on-a-Chip Devices
- MCE 540 Advanced Dynamics

- MCE 551 Advanced Materials Science and Engineering
- MCE 553 Advanced Thermodynamics
- MCE 554 Advanced Fluid Dynamics
- MCE 562 Modeling and Simulation in MEMS
- MCE 563 Computational Mechanics
- MCE 653 HVAC Systems Design
- MCE 656 Advanced Fuel Cell Systems
- MCE 694 special topic courses in mechanical engineering
- MTR 540 Advanced Control Systems

With the approval of their advisor and the head of department, students may choose to take one graduate-level elective course outside the list of elective courses. The course must provide knowledge and skills that contribute to the program learning outcomes. The request must be approved by the student's associate dean who will inform the Office of the Registrar before course registration.

Students can elect to complete graduate-level courses outside of the list of elective courses that do not meet the above conditions; such courses will not meet any of the degree program graduation requirements. Approvals of the student's advisor and the student's head of department are required.

### **Master's Thesis/Professional Project**

A student must complete his/her master's thesis/professional project under the direct supervision and guidance of a principal advisor. This principal advisor serves as the chair of the student's examining committee. The committee also includes two additional faculty members. For the thesis option, one of the additional faculty members must be selected from outside the program. The committee could also include one co-advisor or more.

A complete guide for forming the master's thesis/professional project committee and for preparing the master's thesis/professional project is given in the *Graduate Studies Policies and Procedures* document available on iLearn and accessible using the following path: iLearn-Community-Graduate Studies-Graduate Studies Policies and Procedures.

For registration details, please refer to Master's Thesis, Professional Research Project, Professional Project and Dissertation under Academic Policies and Regulations section of this catalog.

### **Master of Science in Mechatronics Engineering (MSMTR)**

Mamoun Abdel-Hafez, Coordinator

The Master of Science in Mechatronics Engineering (MSMTR) degree program is an interdisciplinary degree program offered by the College of Engineering (CEN) that draws on the expertise of faculty from the different CEN departments.

The MSMTR degree program is committed to being an international, multidisciplinary center of excellence in synergistic applications of the latest techniques in embedded systems, precision mechanical engineering, control theory, computer science and electronics through education, research and outreach. The technological gap between developing and industrialized nations continues to widen at an alarming rate, largely due to the lack of skilled engineers capable of integrating new technologies into existing systems and networks. The mandate of the mechatronics engineering program is to improve this situation by equipping engineers with the design, analysis and synthesis abilities to plan, implement and manage the latest technologies. The curriculum of the mechatronics program meets the region's needs—both present and future—through the education of engineers and scientists.

Professional jobs considered to be in the mechatronics engineering field are grounded in the multidisciplinary aspects of electrical, mechanical, control, computer and software engineering. The unique skills of mechatronics graduates are becoming increasingly valuable to employers in a variety of areas, including modern industrial installations and systems, computer integrated manufacturing systems, maintenance diagnosis and troubleshooting, defense systems, vehicle design and manufacturing, robotics and many more.

The MSMTR degree program provides students with state-of-the-art knowledge in their areas of specialization with practical strategies for adapting that knowledge to serve the specific needs of the region. Multidisciplinary engineers are needed now more than ever to meet the demand for a flexible engineering workforce to deal with highly integrated engineering systems.

#### **Mission Statement**

The MSMTR degree program at AUS is an interdisciplinary program that synergistically integrates advances in science and technology to prepare students for advanced research and applied systems engineering practices. The program hosts a research laboratory equipped with world-class resources enabling hands-on teaching and advanced research, promoting entrepreneurial initiatives to assist students in becoming competent,

innovative and responsible professionals.

#### **Program Educational Objectives**

Graduates of the MSMTR degree program will be prepared to:

- lead multidisciplinary projects, which apply the latest techniques for the design and development of smart systems
- provide employers with interdisciplinary skills necessary to utilize cutting-edge technology tools in the design, development, and implementation of modern engineering systems
- develop new technologies in the areas of cyber physical systems, and smart cities
- apply Mechatronics principles in the broad context of engineering system design and address the aspect of commercialization
- address open-ended problems and maintain an attitude of self-learning

#### **Student Outcomes**

Upon graduation, an AUS MSMTR graduate should demonstrate the ability to:

- apply advanced engineering tools necessary to identify, model and analyze mechatronics engineering problems
- formulate and propose alternative solutions that satisfy specific performance requirements of a mechatronics system
- design and implement a mechatronics component, process or system and assess its performance
- function effectively in multidisciplinary teams in a leadership role or as an active member
- act professionally and ethically
- recognize contemporary issues and their influence on technology advancement in a global and societal context
- engage in lifelong learning in engineering and related professional areas
- conduct research and development activities in mechatronics and related areas
- communicate effectively through technical presentations and documentations

#### **Admission Requirements**

In addition to meeting the university's general graduate admission requirements, applicants must hold a bachelor of science degree in engineering from an independently accredited university recognized by the

UAE Ministry of Education's Higher Education Affairs Division and by AUS. Degreed individuals in fields closely related to engineering or a quantitative science may be considered on a case-by-case basis.

### Accelerated Master's Program— AUS Undergraduate Students

AUS undergraduate degree seeking students interested in pursuing an MSMTR degree may register for a maximum of six credit hours from MSMTR courses while completing their undergraduate degree program by seeking acceptance to the Accelerated Master's Program (AMP) of the MSMTR degree program. The master's level courses may be counted towards meeting the graduation requirements for both the bachelor's and master's degrees.

To qualify for acceptance to the AMP, students must satisfy the following requirements at AMP application time:

- be enrolled in the computer engineering, electrical engineering or mechanical engineering major
- have earned a minimum of 90 credit hours (excluding credit hours earned in Achievement Academy/Bridge Program courses and preparatory courses)
- have achieved a minimum cumulative GPA of 3.50
- have successfully completed a course in control systems.

For further details on the AMP, refer to Accelerated Master's Program in the Academic Policies and Regulations section of the *AUS Undergraduate Catalog*. For the list of MSMTR courses available to AMP students, consult the Course Descriptions section of this catalog. Course prerequisites and background requirements must be met.

### Degree Requirements

The program of study of the MSMTR degree program consists of a minimum of 30 credit hours with two options: the thesis option and the course option.

To qualify for graduation with an MSMTR degree, students must successfully complete the requirements detailed hereafter with a minimum cumulative grade point average of 3.00.

Students must complete the degree requirements within five years from the time of initial enrollment in the program.

Graduation residence requirements must be met. For details, refer to Graduation Requirements in the Academic Policies and Regulations section earlier in this catalog.

### Thesis Option

Students in the thesis option must successfully complete a minimum of 30 credit hours, as follows:

- 15 credit hours in core courses
- a minimum of six credit hours in elective courses
- nine credit hours in Master's Thesis

### Course Option

Students in the course option must successfully complete a minimum of 30 credit hours, as follows:

- 15 credit hours in core courses
- a minimum of 15 credit hours in elective courses

### Bridging Course

Students admitted to the MSMTR degree program, with the exception of students with a Bachelor of Science in Mechatronics Engineering, are required to complete the prerequisite discipline-bridging course MTR 501 Introduction to Mechatronics.

The prerequisite discipline-bridging course does not generate credit hours towards completion of the degree program graduation requirements. Students required to complete the bridging course are normally not eligible to register for degree program courses prior to successful completion of the course. For further details, refer to Bridging Courses in Registration and Course Information within the Academic Policies and Regulations section earlier in this catalog.

The prerequisite-discipline course could be waived by the Mechatronics Engineering Admissions Committee, depending on the student's background.

### Waiver Policy

The prerequisite discipline-bridging course may be waived if the student has completed comparable course work at the undergraduate or graduate level. Students may be required to submit course documentation. For details, refer to the Admission to Graduate Studies/Course Waiver earlier in this catalog.

### Required Courses (24/15 credit hours)

#### Core Courses (15 credit hours)

Students must successfully complete the following courses:

- MTR 520 Embedded Systems for Mechatronics
- MTR 540 Advanced Control Systems
- MTR 550 Robotic Systems

- MTR 615 Artificial Intelligent Systems for Mechatronics
- MTR 690 Mechatronics Design
- MTR 695 Mechatronics Seminar

#### Master's Thesis (9 credit hours)

- MCE 699 Master's Thesis (thesis option)

### Elective Courses (minimum of 6/15 credit hours)

Students in the thesis option must successfully complete a minimum of six credit hours in elective courses. Students in the course option must successfully complete a minimum of 15 credit hours in elective courses.

Students may select their elective courses from the following list:

- ELE 544 Advanced Signal Processing
- ELE 648 Pattern Classification
- MCE 562 Modeling and Simulation in MEMS
- MTR 610 Automated Manufacturing Systems
- MTR 644 Electric Drives for Mechatronics Systems
- MTR 650 Applied Linear Estimation
- MTR 670 Adaptive Control Systems
- MTR 694 special topic courses in mechatronics engineering
- NGN 500 Advanced Engineering Mathematics

With the approval of their advisor and the program coordinator, students may choose to take one graduate-level elective course outside the list of elective courses. The course must provide knowledge and skills that contribute to the program learning outcomes. The request must be approved by the student's associate dean who will inform the Office of the Registrar before course registration.

Students can elect to complete graduate-level courses outside of the list of elective courses that do not meet the above conditions; such courses will not meet any of the degree program graduation requirements. Approvals of the student's advisor and the student's program coordinator are required.

### Master's Thesis

Students in the thesis option must complete a program of research culminating in a master's thesis, for at least nine credits, that contributes to a selected area of knowledge.

A student must complete his/her master's thesis under direct supervision and guidance of a principal advisor. This principal advisor will serve as the chair of the student's examining committee and is appointed no later

than the end of the third semester of study in the program. The committee also includes two additional faculty members. One of the additional faculty members must be selected from outside the program. The committee could also include one or more co-advisor.

The master's thesis must be defended to the satisfaction of the thesis examining committee.

A complete guide for forming the master's thesis/professional project committee and for preparing the master's thesis, including the thesis proposal, thesis defense and deadlines, is given in the *Graduate Studies Policies and Procedures* document available on iLearn and accessible using the following path: iLearn-Community-Graduate Studies-Graduate Studies Policies and Procedures.

For registration details, please refer to Master's Thesis, Professional Research Project, Professional Project and Dissertation under Academic Policies and Regulations section of this catalog.

## Doctor of Philosophy in Biosciences and Bioengineering (PhD-BSBE)

Hasan Al-Nashash, Coordinator

The PhD in Biosciences and Bioengineering (PhD-BSBE) at American University of Sharjah is a multidisciplinary program delivered by the College of Engineering in collaboration with the College of Arts and Sciences.

The PhD-BSBE degree program offers advanced multidisciplinary education to equip students with the necessary knowledge and skills to become future researchers, academics and entrepreneurs.

The PhD-BSBE program addresses fundamental research problems in biosensors and implantable devices, biomechanics, cardiovascular disease, cancer, cellular physiology, drug delivery, healthcare management, infectious diseases, inflammation, medical imaging and bioinformatics, microfluidics and lab-on-a-chip, neuroscience, and neuroengineering. Graduates of this degree program will be prepared to combat current and future healthcare challenges nationally and globally.

### Program Mission Statement

The mission of the PhD-BSBE degree program is to educate future researchers, practitioners, innovators and academics with cutting-edge knowledge, skills and abilities in biosciences and bioengineering that

they can utilize in meeting the societal needs and shaping the healthcare and biotechnology trends in the United Arab Emirates, the region and globally.

### Program Educational Objectives

Graduates of the PhD-BSBE program will be prepared to:

- pursue successful academic, industry and/or government careers
- conduct research independently in multidisciplinary areas
- apply technical knowledge for long-term sustainable and economic development
- act professionally and ethically in the practice of biosciences and bioengineering

### Student Outcomes

Upon graduation, a PhD-BSBE graduate should demonstrate the ability to:

- perform advanced research works related to biosciences and bioengineering
- recognize economic, environmental and societal impacts of biosciences and bioengineering
- solve complex technical and scientific problems using BSBE tools and techniques
- demonstrate ethical responsibilities in an academic context
- communicate effectively in both written and verbal forms

### Admission Requirements

The PhD-BSBE degree program accepts applicants from a wide variety of natural sciences backgrounds, including biology, chemistry, physics and biotechnology, and from engineering backgrounds, including biomedical, chemical, computer, electrical, industrial and mechanical engineering. In addition to meeting the university's general requirements for admission to PhD degree programs, applicants to the PhD-BSBE degree program must have successfully completed university-level courses in calculus, physics, statistics, biology/cellular biology, and human anatomy and physiology, as demonstrated through their undergraduate or graduate-level degree courses.

Where a background requirement is not met, applicants will be required to demonstrate knowledge acquisition by successfully passing relevant admission test(s), as mandated by the program. Applicants who do not successfully pass a required admission test but otherwise meet all admission requirements must successfully complete undergraduate or master's-level courses specified by the

program coordinator prior to admission to the PhD-BSBE degree program.

### Degree Requirements

To qualify for graduation with a PhD-BSBE degree, students must successfully complete a minimum of 54 credit hours with a minimum cumulative GPA of 3.00, as follows:

- a minimum of 24 credit hours (eight courses) of required and elective coursework:
- six credit hours (two courses) of required courses
- a minimum of 18 credit hours (six courses) of elective courses
- a zero-credit hour seminar
- a zero-credit hour qualifying examination
- a minimum of 30 credit hours of research work (BSE 799)

The expected minimum duration for completion of the PhD-BSBE degree program is four years. All graduation requirements must be completed within 10 years of admission to AUS as a doctoral student, inclusive of any leave.

Graduation residence requirements must be met. For details, refer to Graduation Requirements in the Academic Policies and Regulations section earlier in this catalog.

### Required Courses (minimum of 36 credit hours)

Students must successfully complete the following required courses:

- BSE 701 Advanced Statistical Methods
- BSE 703 Research Methods
- BSE 790 Qualifying Examination
- BSE 795 Doctoral Seminar
- BSE 799 Dissertation (for a minimum of 30 credits)

### Elective Courses (minimum of 18 credit hours)

Students must successfully complete a minimum of six elective courses (for a minimum of 18 credit hours) selected from the following list of courses. The elective courses must be approved by the program coordinator.

- BSE 711 Cell and Molecular Biology Techniques
- BSE 712 Advanced Biological Systems Modeling
- BSE 713 Biomicrofluidics
- BSE 714 Directed Readings and Academic Presentation
- BSE 721 Medical Biotechnology
- BSE 722 Advanced Immunology
- BSE 723 Current Issues in Biomedical Sciences



- BSE 724 Human Molecular Genetics
- BSE 725 Advanced Neuroscience
- BSE 726 Human Parasitology
- BSE 731 Artificial Intelligence in Medicine
- BSE 732 Biorobotics and Medical Devices
- BSE 733 Advanced Biomaterials and Synthetic Biology
- BSE 734 Human Augmentation
- BSE 735 Advanced Biomedical Signal and Image Processing
- BSE 736 Healthcare Technology Innovation, Management and Transfer
- BSE 794 special topic courses in biosciences and bioengineering

### Qualifying Examination

To be considered as a candidate for the PhD-BSBE degree, a student must pass a written and an oral qualifying examination (BSE 790). Registration for the qualifying examination is conditional upon meeting the following requirements:

- The student must be in good academic standing.
- The student must have successfully completed a minimum of 12 credit hours of course work, including BSE 701 and BSE 703.

The qualifying examination may result in a pass or a fail grade. A student who fails the qualifying examination is academically dismissed from the university. A student who was academically dismissed because of failing the qualifying examination may petition for reinstatement and a repeat of the failed qualifying examination to the program coordinator, one month ahead of the registration of the semester immediately following academic dismissal. The student petition form is available at [www.aus.edu/registration/forms](http://www.aus.edu/registration/forms). The petition will be reviewed by the program coordinator, who will make a written recommendation to the Associate Dean for Graduate Studies. The associate dean will then provide a recommendation to the Vice Provost for Graduate Studies. Decisions regarding reinstatement and repeat of the qualifying examination will be made by the Vice Provost for Graduate Studies. A student who failed the qualifying examination may be allowed to repeat the qualifying examination only once.

Students need to seek guidance from the program coordinator regarding the qualifying examination requirements and deadlines.

Further details on the qualifying examination are provided in the *Graduate Studies Policies and*

*Procedures* document available on iLearn and accessible using the following path: iLearn-Community-Graduate Studies-Graduate Studies Policies and Procedures.

For registration details, please refer to Master's Thesis, Professional Research Project, Professional Project and Dissertation under the Academic Policies and Regulations section of this catalog.

### PhD Dissertation

The PhD dissertation includes the preparation of a research proposal, presentation and defense of the research proposal, write-up of the dissertation, and presentation and defense of the dissertation.

A PhD-BSBE candidate develops his/her dissertation research proposal and completes the dissertation under the direct supervision and guidance of a principal advisor. The principal advisor serves as the chair of the student's Dissertation Advisory Committee (DAC). The DAC also includes at least two additional faculty members. The student may request the appointment of an external committee member.

A PhD-BSBE candidate is eligible to defend the dissertation research proposal only after all coursework is successfully completed. The research proposal defense includes a comprehensive examination of all coursework completed. PhD candidates are expected to successfully complete the dissertation proposal within three semesters of first registering for the dissertation. Failure to complete the dissertation proposal within the specified time frame or failure to demonstrate progress after the proposal defense may result in assigning an NP grade, resulting in withdrawal of candidacy from the PhD degree program.

The dissertation must be publicly defended to the satisfaction of the Final Oral Defense Committee (FODC). The FODC is formed by the program coordinator in consultation with the DAC chair; it is approved by the Associate Dean for Graduate Studies and appointed by the Vice Provost for Graduate Studies.

A complete guide for forming the DAC and the FODC, and preparing the dissertation, including the dissertation research proposal, the dissertation defense schedule and deadlines, is given in the *Graduate Studies Policies and Procedures* document available on iLearn and accessible using the following path: iLearn-Community-Graduate Studies-Graduate Studies Policies and Procedures.

For registration details, please refer to Master's Thesis, Professional Research Project, Professional Project and Dissertation under the Academic Policies and Regulations section of this catalog.

### Doctor of Philosophy in Engineering–Engineering Systems Management (PhD-ESM)

Abdulrahim Shamayleh, Coordinator

The PhD in Engineering-Engineering Systems Management (PhD-ESM) degree program is an interdisciplinary degree program offered by the Department of Industrial Engineering (INE) that draws on the expertise of faculty from several departments across CEN and other colleges/schools.

The PhD-ESM degree program addresses fundamental research problems of national and global importance for the 21st century centered on four areas:

- supply chain management
- sustainable construction project management
- smart cities management
- engineering management

#### Program Mission Statement

The mission of the PhD-ESM degree program is to educate future researchers, practitioners, innovators and academics with cutting-edge knowledge, skills and abilities in engineering systems management that can be utilized in meeting societal needs and shaping contemporary market trends in the UAE, the region and globally.

#### Program Educational Objectives

Graduates of the PhD-ESM degree program will be prepared to:

- pursue successful academic, industry and/or government careers
- conduct research independently in multidisciplinary areas
- apply technical knowledge for long-term sustainable and economic development
- act professionally and ethically when practicing the principles of engineering systems management.

#### Student Outcomes

Upon graduation, an AUS PhD-ESM graduate should demonstrate the ability to:

- perform advanced research related to ESM areas

- assess economic, environmental and societal impacts of engineering management systems
- formulate and solve complex technical problems using ESM tools and techniques
- manage highly complex ethical issues related to engineering systems management
- use advanced written and oral communications skills to present research outcomes and evaluate scholarly publications for diverse audiences.

### Admission Requirements

In addition to meeting the university's general requirements for admission to PhD degree programs, applicants to the PhD-ESM degree program must meet the following program admission requirements:

#### Applicants with a Master's Degree

Applicants must have completed a relevant master of science degree. Applicants with non-engineering master's degrees may be considered on a case-by-case basis.

#### Applicants with a Bachelor's Degree (Direct Admission)

Applicants must have completed a bachelor of science degree with a minimum cumulative grade point average of 3.50 in any of the following or related fields: chemical engineering, civil engineering, computer engineering, electrical engineering, industrial engineering, mechanical engineering or architecture/architectural engineering.

### Degree Requirements

To qualify for graduation with a PhD-ESM degree, students admitted with a master's degree must successfully complete a minimum of 54 credit hours with a minimum cumulative GPA of 3.00, as follows:

- a minimum of 24 credit hours (eight courses) of required and elective coursework:
- a minimum of six credit hours (two courses) of required courses
- a minimum of 18 credit hours (six courses) of elective courses
- a zero-credit hour seminar
- a zero-credit hour qualifying examination
- a minimum of 30 credit hours of research work (dissertation)

Direct admission students must complete a minimum of 60 credit hours with a minimum cumulative GPA of 3.00, as follows:

- a minimum of 30 credit hours (10 courses) of required and elective coursework:
- a minimum of six credit hours (two courses) of required courses
- a minimum of 24 credit hours (six courses) of elective courses
- a zero-credit hour seminar
- a zero-credit hour qualifying examination
- a minimum of 30 credit hours of research work (ESM 799)

In addition, direct admission students must successfully complete six credit hours in bridging courses. For details, see Bridging Courses thereafter.

The expected minimum duration for completion of the PhD-ESM degree program for students admitted with a master's degree is four years. The expected minimum duration for completion of the PhD-ESM degree program for direct admission students is five years. All graduation requirements must be completed within 10 years of admission to AUS as a doctoral student, inclusive of any leave.

Graduation residence requirements must be met. For details, refer to Graduation Requirements in the Academic Policies and Regulations section earlier in this catalog.

#### Bridging Courses

Direct admission students are required to complete six credit hours of the following bridging courses:

- ESM 520 Management for Engineers
- ESM 570 Project Management
- ESM 575 Advanced Engineering Economy
- any of the 500-level and 600-level courses offered by the master of science engineering degree programs offered by the College of Engineering, subject to the approval of the program coordinator

The bridging courses do not generate credit hours towards completion of the degree program graduation and are not counted in the grade point average of the student.

#### Required Courses (minimum of 36 credit hours)

Students must successfully complete the following required courses:

- ESM 701 Research Methods
- ESM 702 Multivariate Data Analysis
- ESM 790 Qualifying Examination
- ESM 795 Doctoral Seminar
- ESM 799 Dissertation (for a minimum of 30 credits)

#### Elective Courses (18/24 credit hours)

Students admitted with a master's degree must successfully complete a minimum of six elective courses (for a minimum of 18 credit hours) selected from the following research areas. Direct admission students must complete a minimum of eight elective courses (for a minimum of 24 credit hours). The choice of courses must be approved by the program coordinator.

#### Supply Chain Management Research Area

- ESM 710 Advanced Decision Making Analysis
- ESM 711 Deterministic Optimization Techniques
- ESM 712 Advanced Supply Chain Management
- ESM 794 Special Topics in ESM—Supply Chain Management

#### Sustainable Construction Project Management Research Area

- ESM 720 Sustainable Development for Engineers
- ESM 721 Sustainable Development and Global Competitiveness
- ESM 722 Sustainable Analytics and Resource Management
- ESM 723 The Living Building
- ESM 724 Sustainable Ecosystems
- ESM 725 Programs and Portfolio Management
- ESM 794 Special Topics in ESM—Sustainable Construction Project Management

#### Smart Cities Research Area

- ESM 730 Tools for Big Data
- ESM 732 Networking Architectures for Smart Cities
- ESM 794 Special Topics in ESM—Smart Cities

#### Engineering Management Research Area

- ESM 710 Advanced Decision Making Analysis
- ESM 740 Advanced Quality Engineering
- ESM 741 Organizational Performance Management
- ESM 742 Strategic Human Resources Management
- ESM 743 Strategic Management
- ESM 794 Special Topics in ESM—Engineering Management

### Qualifying Examination

To be considered as a candidate for the PhD-ESM degree, a student must pass a written and an oral qualifying examination (ESM 790). Registration for the qualifying examination is

conditional upon meeting the following requirements:

- The student must be in good academic standing.
- The student must have successfully completed a minimum of 12 credit hours of course work, including ESM 701 and ESM 702.

The qualifying examination may result in a pass or a fail grade. A student who fails the qualifying examination is academically dismissed from the university. A student who was academically dismissed as a result of failing the qualifying examination may petition for reinstatement and a repeat of the failed qualifying examination to the program coordinator, one month ahead of the registration of the semester immediately following academic dismissal. The student petition form is available at [www.aus.edu/registration/forms](http://www.aus.edu/registration/forms). The petition will be reviewed by the program coordinator who will make a written recommendation to the Associate Dean for Graduate Studies. The associate dean will then provide a recommendation to the Vice Provost for Graduate Studies. Decisions regarding reinstatement and repeat of the qualifying examination will be made by the Vice Provost for Graduate Studies. A student who failed the qualifying examination may be allowed to repeat the qualifying examination only once.

Students need to seek guidance from the program coordinator regarding the qualifying examination requirements and deadlines.

Further details on the qualifying examination are provided in the *Graduate Studies Policies and Procedures* document available on iLearn and accessible using the following path: iLearn-Community-Graduate Studies-Graduate Studies Policies and Procedures.

For registration details, please refer to Master's Thesis, Professional Research Project, Professional Project and Dissertation under the Academic Policies and Regulations section of this catalog.

### PhD Dissertation

The PhD dissertation includes the preparation of a research proposal, presentation and defense of the research proposal, write-up of the dissertation, and presentation and defense of the dissertation.

A PhD-ESM candidate develops his/her dissertation research proposal and completes the dissertation under the direct supervision and guidance of a principal advisor. The principal advisor serves as the chair of the student's

Dissertation Advisory Committee (DAC). The DAC also includes at least two additional faculty members. The student may request the appointment of an external committee member.

A PhD-ESM candidate is eligible to defend the dissertation research proposal only after all coursework is successfully completed. The research proposal defense includes a comprehensive examination of all coursework completed. PhD candidates are expected to successfully complete the dissertation proposal within three semesters of first registering for the dissertation. Failure to complete the dissertation proposal within the specified time frame or failure to demonstrate progress after the proposal defense may result in assigning an NP grade, resulting in withdrawal of candidacy from the PhD degree program

The dissertation must be publicly defended to the satisfaction of the Final Oral Defense Committee (FODC). The FODC is formed by the program coordinator in consultation with the DAC chair; it is approved by the Associate Dean for Graduate Studies and appointed by the Vice Provost for Graduate Studies.

A complete guide for forming the DAC and the FODC, and preparing the dissertation, including the dissertation research proposal, the dissertation defense schedule and deadlines, is given in the *Graduate Studies Policies and Procedures* document available on iLearn and accessible using the following path: iLearn-Community-Graduate Studies-Graduate Studies Policies and Procedures.

For registration details, please refer to Master's Thesis, Professional Project and Dissertation under the Academic Policies and Regulations section of this catalog.

### Dual Master's Degree: University of Michigan-Flint (UM-Flint)

The dual master's degree program between AUS and the University of Michigan at Flint (UM-Flint) - College of Innovation and Technology (UMF-CIT) offers AUS master's degree students the opportunity to broaden their academic horizons and gain expertise from both institutions. Upon successful completion of the degree requirements of both institutions, students in the dual master's degree program will be awarded two master's degrees, one from AUS and one from UM-Flint.

Acceptance in the dual master's degree program occurs once a year. Students may contact the CEN Associate Dean for Graduate Studies for details about

the application process and the dual degree study plan.

AUS students who are selected to be part of the dual master's degree program will spend the second year of their master's degree program at UM-Flint. Upon approval of the CEN Associate Dean for Graduate Studies, a student could transfer up to six credit hours of the coursework successfully completed at UM-Flint. For their thesis work, dual master's degree students will be under the supervision of faculty from both universities, and they will complete a single thesis that contributes to the graduation requirements of both the AUS and the UM-Flint degree programs.

Further details on transfer of credit hours are provided in Transfer of Credit Hours within the Admission to Graduate Studies section earlier in this catalog.

# School of Business Administration

## Dean

Narjess Boubakri

## Associate Dean for Graduate Programs

Taisier Zoubi

## Associate Dean for Undergraduate Programs

Mohsen Saad

## Associate Dean for Research and Innovation

George Christodoulides

## Master of Business Administration (MBA)

Taisier Zoubi, Coordinator

The Master of Business Administration (MBA) degree program is an interdisciplinary program offered by the School of Business Administration (SBA) that draws on the expertise of faculty from all the SBA departments.

The MBA degree program prepares students for leadership positions in the private and public sectors.

The MBA is designed to help managers in the MENA region think and act globally by integrating the latest business knowledge into problem solving. The program provides advanced management education in an environment that encourages students to extend their leadership capabilities.

The high-quality curriculum, taught in the evening, requires a total 33 credit hours. The MBA degree program comprises seven core courses that cover the principles of analysis and leadership skills expected of an executive manager, two elective courses and a professional research project.

More details on the program are available at [www.aus.edu/mba](http://www.aus.edu/mba).

### Program Goals

The MBA degree program prepares graduate students to demonstrate:

- proficiency in the core business knowledge required of an executive manager
- understanding of the interrelations between business organizations and other societal institutions
- teamwork, interpersonal, communication and leadership skills expected of an executive manager

- application of critical thinking, analysis and problem-solving skills to crucial business decisions

### Program Learning Outcomes

Upon graduation from the MBA degree program, students will be able to:

- integrate knowledge from different business-related disciplines to solve complex business problems, utilizing a research-informed approach
- critically examine principles of ethics and social responsibility to analyze and reflect on the management of relationships between a business enterprise and its key internal and external stakeholders
- demonstrate graduate-level cognitive, creative and leadership competences in team interaction, effective writing and presentation deliveries
- utilize, with justification, appropriate research methods/approaches to critically analyze business problems
- develop, evaluate and select from competing alternative courses of action, and design relevant implementation options for solving business problems

### Admission Requirements

Admission to the MBA degree program is competitive. In addition to meeting the university's general graduate admission requirements, applicants are required to take the MBA Admission Test (administered through the AUS Testing Center) or provide a GMAT score. These tests can be taken online. The score is considered with the student's work experience and the undergraduate grade point average, particularly for the last two years of study. These results are used to assist the SBA Graduate Committee in determining the admission status of an applicant. The results are also used to assist the program coordinator in awarding graduate research assistantships to admitted applicants.

Applicants who lack the requisite undergraduate training in business may be required to complete a business bridging course prior to matriculating in the major. For details, please see the Business Bridging Courses section hereafter.

### Bridging Course

Applicants admitted to the MBA degree program may be required to complete a three-credit-hour bridging course that serves as the foundation for the core MBA program. The decision will normally depend on

courses completed by the applicant as an undergraduate student and is determined by the program at the time of admission.

The business bridging course does not generate credit hours toward completion of the degree program graduation requirements. Students required to complete the bridging course are normally not eligible to register for degree program courses prior to successful completion of the bridging course. For further details, refer to Bridging Courses in Registration and Course Information within the Academic Policies and Regulations section earlier in this catalog.

The business bridging course may be waived when the waiver policy requirements are met. Matriculation into the major requires successful completion or waiver of the business bridging course.

### Business Bridging Course (3 credit hours)

- BUS 507 Quantitative Analysis for Business Decisions

### Waiver Policy

Applicants may qualify to waive the business bridging course. In general, the bridging course may be waived if the applicant has completed comparable course work at the undergraduate or master's levels. The waiver is evaluated at the time of admission. For more information, consult the Course Waiver in the Admission to Graduate Studies section earlier in this catalog.

### Blended Learning Mode of Delivery

The MBA degree program requires students to complete seven core courses and two elective courses as part of the degree requirements in addition to a six-credit professional research project. The MBA degree program offers four of the core courses fully online and the rest of the core and elective courses fully face-to-face. The online courses use a combination of asynchronous and synchronous delivery modes. Emphasis will be placed to ensure the students' learning experience is equivalent to the traditional face-to-face mode of delivery. Students will be able to maintain a high level of engagement with the instructor and with their classmates through the online learning software.

The online courses can be identified in the Degree Requirements section

hereafter. Details about the delivery of the weekly sessions are provided in the course syllabi available from the office of the Associate Dean of Graduate Programs. Course assessments for courses delivered in online learning mode are conducted in the same way as for courses delivered using the face-to-face mode.

### Course Timings

Both the online and face-to-face MBA courses are offered in the evenings, with classes typically beginning at 6:00 p.m. and ending at 9:00 p.m.

### Degree Requirements

To qualify for graduation with an MBA degree, students must successfully complete 33 credit hours in core courses and electives as follows:

- 21 credit hours in core courses
- a minimum of six credit hours in elective courses
- a zero-credit-hour seminar
- six credit hours in Professional Research Project

Students must complete the degree requirements within five years from the time of initial enrollment in the program. A minimum cumulative grade point average of 3.00 is required.

Graduation residence requirements must be met. For more information, refer to Graduation Requirements in the Academic Policies and Regulations section earlier in this catalog.

### Required Courses (27 credit hours)

#### Core Courses Requirement (21 credit hours)

Students must successfully complete the following MBA core courses:

- MBA 601 Economics for Managers (online)
- MBA 603 Introduction to Business Analytics (online)
- MBA 609 Operations and Supply Chain Management (online)
- MBA 610 Financial Statement Analysis and Capital Budgeting (online)
- MBA 614 Marketing in the 21st Century
- MBA 618 Strategic Management
- MBA 640 Leadership and Change Management
- MBA 695 Seminar

#### Professional Research Project (6 credit hours)

- MBA 699 Professional Research Project (6 credit hours)

### Elective Courses (6 credit hours)

Students must successfully complete a minimum of six credit hours in courses selected from the following:

- MBA 602 Organizational Theory and Behavior
- MBA 605 Financial Management
- MBA 613 Managerial Accounting
- MBA 641 Innovation and Entrepreneurship
- MBA 642 Knowledge Management
- MBA 661 Strategic Human Resources Management
- MBA 680 Project Management
- MBA 681 Technology, Innovation and Digital Strategy
- MBA 697 Business Co-op
- MBA 694 Approved special topic MBA courses. Consult the online course catalog or the online class schedule accessible via the AUS student information system to verify course classifications.

### Academic Advising

The MBA degree program curriculum draws from several departments in SBA, with students having backgrounds in different disciplines. The Associate Dean for Graduate Programs provides academic and career advising to students. Faculty teaching in the MBA program may also advise continuing students.

### Professional Research Project

A student must complete his/her professional research project under the direct supervision and guidance of a principal advisor. This principal advisor serves as the chair of the student's examining committee. The committee also includes two additional faculty members. One of the additional faculty members must be selected from outside the program. The committee could also include one co-advisor or more.

A complete guide for preparing the professional research project is given in the *Graduate Studies Policies and Procedures* document available on iLearn and accessible using the following path: iLearn-Community-Graduate Studies-Graduate Studies Policies and Procedures.

For registration details, please refer to Master's Thesis, Professional Research Project, Professional Project and Dissertation under the Academic Policies and Regulations section of this catalog.

### Master of Science in Accounting (MSA)

Abed Al-Nasser Abdallah, Head, Department of Accounting

The Master of Science in Accounting (MSA) degree program is offered by the Department of Accounting.

The MSA degree program is designed to provide students with knowledge and preparation to pursue professional careers in public and private accounting; develop skills necessary to solve accounting problems that are of contemporary relevance and more challenging in the fields of accounting, finance and other business areas; and teach the required technical and nontechnical accounting competencies. Although pre-class readings and in-class lectures remain essential for presenting key accounting theories and concepts, the reinforcement and assessment methods are oriented toward experiential exercises that require the students to apply the material to real-life cases. Thus, the degree program makes extensive use of case studies, individual and team projects and other "real-world" opportunities to use the material covered.

The MSA degree program creates additional employment opportunities and promotes the career success of our graduates. Career options for graduates will include positions in public accounting such as auditors, controllers, financial analysts and management consultants.

This degree program will allow students to meet the current 150-semester-hour education requirement to take the Certified Public Accountant (CPA) Examination in most US states. The objective of the MSA degree program is to give our students an edge in passing the CPA exam and to prepare them for careers in professional accountancy. Courses in the MSA degree program will strengthen students' competencies in business in general and accounting in particular. This knowledge is needed to achieve professional certifications such as CPA, CMA, CFE and CIA—qualifications expected of top professionals in the accounting field. The Big Four accounting firms in the region and other top employers will hire graduates from the MSA degree program particularly because of its solid auditing/assurance component

### Program Goals

MSA graduates will have achieved the following goals:

- proficiency in the core knowledge required to pursue careers in private and public accounting
- mastery of the knowledge required to pass the CPA exam
- ability to solve challenging accounting problems that are of contemporary relevance in finance and other business areas
- development of the accounting skills needed to facilitate career advancement in business or pursuit of further advanced study in accounting
- professional sophistication required to manage business complexities using leadership and critical-thinking skills
- development of technical and non-technical accounting competencies

### Program Learning Outcomes

Upon graduation from the MSA degree program, students will be able to:

- demonstrate advanced knowledge of financial statements, regulations, auditing standards and procedures, standards of ethical conduct and their applications
- critically assess the financial, ethical and social implications of selecting various accounting policies to support decisions made by internal and external user of accounting information
- integrate accounting skills and knowledge to resolve current complex accounting issues
- implement judgment in selecting financial reporting standards in relation to a set of financial statements
- apply appropriate professional skepticism in evaluating financial assertions
- critique technical accounting concepts in written and oral form
- apply research skills and knowledge to identify, examine, analyze and construct solutions to accounting and market-based accounting issues

### Admission Requirements

Applicants to the MSA degree program must meet the general university requirements for graduate admission.

Applicants who lack the necessary prerequisite knowledge in accounting may be required to complete accounting bridging courses prior to matriculating in the major.

### Bridging Courses

Applicants admitted to the MSA degree program may be required to successfully complete a maximum of nine credit hours in accounting bridging courses that serve as prerequisites to the MSA degree requirements. The number of bridging courses required will normally depend on courses completed by the applicant as an undergraduate student and is determined by the program at the time of admission.

Bridging courses do not generate credit hours towards completion of the degree program graduation requirements. Students required to complete bridging courses are normally not eligible to register for degree program courses prior to successful completion of these courses. For further details, refer to Bridging Courses in Registration and Course Information within the Academic Policies and Regulations section earlier in this catalog.

Bridging courses may be waived when the waiver policy requirements are met. Matriculation into the major requires successful completion or waiver of the bridging courses.

#### *Bridging Courses (9 credit hours)*

- ACC 510 Financial Accounting for Managers
- ACC 520 Managerial Accounting
- ACC 530 Auditing for Managers

#### *Waiver Policy*

Applicants may qualify to waive any or all of the bridging courses. In general, a course may be waived if the applicant has completed comparable course work at the undergraduate or master's levels. Waivers are evaluated by the Head of the Department of Accounting at the time of admission. For more information, consult the Course Waiver in the Admission to Graduate Studies section earlier in this catalog.

### Accelerated Master's Program—AUS Undergraduate Students

AUS undergraduate degree seeking students interested in pursuing an MSA degree may register for a maximum of six credit hours from MSA courses while completing their undergraduate degree program by seeking acceptance to the Accelerated Master's Program (AMP) of the MSA degree program. The master's-level courses may be counted towards meeting the graduation requirements for both the bachelor's and master's degrees.

To qualify for acceptance to the AMP, students must satisfy the following requirements at AMP application time:

- be enrolled in the accounting major
- have earned a minimum of 90 credit hours (excluding credit hours earned in Achievement Academy/Bridge Program courses and preparatory courses)
- have achieved a minimum cumulative GPA of 3.50
- have successfully completed the following courses:
  - ACC 302 Intermediate Financial Accounting II
  - ACC 303 Cost Accounting

For further details on the AMP, refer to Accelerated Master's Program in the Academic Policies and Regulations section of the *AUS Undergraduate Catalog*. For the list of MSA courses available to AMP students, consult the Course Descriptions section of this catalog. Course prerequisites and background requirements must be met.

### Course Timings

MSA courses are offered in the evenings, with classes typically beginning at 6:00 p.m. and ending at 9:00 p.m.

### Degree Requirements

To qualify for graduation with an MSA degree, students must successfully complete 30 credit hours in MSA core courses and electives as follows:

- 18 credit hours in core courses
- a minimum of six credit hours in ACC elective courses
- a zero-credit-hour seminar
- six credit hours in Professional Research Project

Students must complete the degree requirements within five years from the time of initial enrollment in the program. A minimum cumulative grade point average of 3.00 is required.

Graduation residence requirements must be met. For more information, refer to Graduation Requirements in the Academic Policies and Regulations section earlier in this catalog.

### Required Courses (24 credit hours)

#### *Core Courses Requirement (18 credit hours)*

Students must successfully complete 18 credit hours in core courses:

- ACC 610 Topics in Financial Accounting

- ACC 611 Auditing and Attestation
- ACC 612 Advanced Topics in Managerial and Cost Accounting
- ACC 614 Regulatory Environment in Accounting
- ACC 615 Enterprise Database Systems and Analytics
- ACC 616 Advanced Topics in Financial Reporting
- ACC 695 Seminar

#### *Professional Research Project* (6 credit hours)

- ACC 699 Professional Research Project (6 credit hours)

#### **Elective Courses (minimum of 6 credit hours)**

Students must successfully complete two accounting (ACC) elective courses (for a minimum of six credit hours) selected from the following:

- ACC 620 Forensic Accounting and Fraud Examination
- ACC 622 Internal Auditing
- ACC 623 Financial Statement Reporting and Analysis
- ACC 628 Fraudulent Financial Reporting
- ACC 694 approved special topic ACC courses. Consult the online course catalog or the online class schedule accessible via the AUS student information system to verify course classifications.

#### **Academic Advising**

The Department of Accounting provides academic and career advising to MSA students through the head of the department. Department of Accounting faculty teaching in the MSA program may also advise continuing students.

#### **Professional Research Project**

A student must complete his/her professional research project under the direct supervision and guidance of a principal advisor. This principal advisor serves as the chair of the student's examining committee. The committee also includes two additional faculty members. One of the additional faculty members must be selected from outside the program. The committee could also include one co-advisor or more.

A complete guide for preparing the professional research project is given in the *Graduate Studies Policies and Procedures* document available on iLearn and accessible using the following path: iLearn-Community-Graduate Studies-Graduate Studies Policies and Procedures.

For registration details, please refer to Master's Thesis, Professional Research Project, Professional Project and Dissertation under the Academic Policies and Regulations section of the *AUS Graduate Catalog*.

### **Master of Science in Economics and Policy (MSEP)**

Samer Kherfi, Head, Department of Economics

The Master of Science in Economics and Policy (MSEP) degree program is offered by the Department of Economics.

#### **Program Goals**

The MSEP degree program equips graduates with:

- advanced understanding of economic theory and applications, and a range of skills to pursue careers as economists or data and policy analysts in the private sector, non-profit organizations and government entities
- strong training in research skills and modern data analysis to address business or public policy issues
- in-depth knowledge of specific areas of applied economics
- solid academic preparation for students who wish to acquire further doctoral studies in economics, finance, or related fields.

#### **Program Learning Outcomes**

Upon successful completion of the degree program, graduates will be able to:

- analyze individual and market incentives and behavior to explain business and socio-economic problems, including the reasons for market or government failures
- apply economic concepts and tools to recommend private solutions or public policies pertinent to the allocation of resources, sustainable growth, entrepreneurship and innovation, and the distribution of socioeconomic outcomes
- implement modern quantitative methods to evaluate economic ideas, findings and policies
- undertake and present largely independent research using appropriate economic methodology.

#### **Admission Requirements**

In addition to meeting the general university requirements for graduate admission, applicants to the MSEP degree program must hold a bachelor's degree, from an

independently accredited university recognized by the UAE Ministry of Education's Higher Education Affairs Division and by AUS, in economics, any business discipline, mathematics, statistics, computer science, engineering, natural sciences (such as biology, chemistry, physics, and environmental science) or in social sciences (such as psychology and international relations).

Applicants must have an adequate background in quantitative methods and introductory economics. The minimum program admission requirements include:

- a minimum of a 2.70 average in one calculus course equivalent to MTH 102 (Calculus for Business) and two statistics courses, of which one is equivalent to QBA 201 (Quantitative Business Analysis). ECO 351 (Introduction to Econometrics) or an equivalent course may satisfy the second statistics course requirement.
- a minimum of a 2.70 average in an introductory microeconomics course equivalent to ECO 201 (Principles of Microeconomics) and an introductory macroeconomics course equivalent to ECO 202 (Principles of Macroeconomics).

Where a background requirement is not met, applicants will be required to demonstrate knowledge acquisition by successfully passing relevant admission test(s), as mandated by the program.

Admission to MSEP is competitive. Meeting all the admission requirements is necessary but may not be a sufficient condition for admission.

Applications are accepted for both part-time and full-time study. Students can start the program in the fall semester only. The GRE score is not required for admission; it nonetheless enhances the chances of admission for the applicant.

#### **Course Timings**

MSEP courses are offered in the evenings, with classes typically beginning at 6:00 p.m. and ending at 9:00 p.m.

#### **Degree requirements**

To qualify for graduation with an MSEP degree, students must successfully complete a minimum of 30 credit hours consisting of program required courses, electives courses and a master's thesis, with a minimum grade point average of 3.00, as follows:

- 15 credit hours in required courses

- a minimum of nine credit hours in elective courses
- six credit hours in master's thesis

The expected minimum duration for completion of the MSEP degree program for a full-time student is four regular semesters. Part-time students may need more time to complete the degree. All students must successfully complete the degree program graduation requirements within five years from the time of initial enrollment in the program.

Graduation residence requirements must be met. For details, please refer to the Graduation Requirements in the Academic Policies and Regulations section of the *AUS Graduate Catalog*.

### Required Courses (21 credit hours)

Students must successfully complete the following courses:

- ECO 601 Microeconomics
- ECO 602 Macroeconomics
- ECO 603 Applied Econometrics I
- ECO 604 Contemporary Issues and Economic Policy
- ECO 606 Applied Econometrics II

### Master's Thesis (6 credit hours)

- ECO 699 Master's Thesis in Economics

### Elective Courses (minimum of 9 credit hours)

Students may successfully complete a minimum of nine credit hours in elective courses. Students may select their elective courses from the following list:

- ECO 605 Time Series Analysis and Forecasting
- ECO 607 Behavioral Economics and Policy Design
- ECO 608 Money, Banking and Financial Markets
- ECO 609 Market Power and Competition Policy
- ECO 610 Poverty, Inequality and Development
- ECO 611 Economics of Sustainability and Resource Use
- ECO 612 Economics of Agglomeration, Urban Development and Real Estate

### Academic Advising

The Department of Economics provides academic advising to MSEP students through the head of the department and through faculty teaching in the program.

### Master's Thesis

Students are required to complete original research work in economics and policy under the supervision and guidance of a faculty member from the Department of Economics who will act as the student's principal advisor and will serve as the chair of the student's examining committee. The committee also includes two additional faculty members. One of the additional faculty members must be selected from outside the program. The committee could also include one co-advisor or more. Students must successfully defend their research work before the thesis examining committee.

A complete guide for preparing the master's thesis is given in the *Graduate Studies Policies and Procedures* document available on iLearn and accessible using the following path: iLearn-Community-Graduate Studies Policies and Procedures.

The master's thesis requires registration in ECO 699 over at least two semesters. For registration details, please refer to Master's Thesis, Professional Research Project, Professional Project and Dissertation under the Academic Policies and Regulations section of the *AUS Graduate Catalog*.

### Master of Science in Finance (MSF)

Osamah AlKhazali, Head, Department of Finance

The Master of Science in Finance (MSF) degree program is offered by the Department of Finance.

The MSF degree program offers graduate-level business finance education to meet the needs for financial analysis, and analytical and technical expertise in the Gulf region.

The MSF degree program at American University of Sharjah prepares students with the analytical skills needed for a successful professional career in today's global financial environment.

Featuring a rigorous curriculum that provides cutting-edge training in finance—focusing on all dimensions of learning that include knowledge, attitudes, values, skills, understanding and analysis—the program endows students with the necessary quantitative and theoretical expertise for analytical jobs in the finance sector. Because the curriculum covers the CFA body of knowledge, it also encourages students to prepare for the CFA exams.

A concentration in corporate finance and investments prepares students to effectively utilize their analytic skills to project earnings, conduct valuations, construct and manage portfolios, and assess an organization's assets and liabilities to identify opportunities for global business growth.

### Program Goals

The MSF degree program prepares graduates to:

- meet the highest levels of proficiency in the functional or technical knowledge required for professional finance careers
- address key issues in professional decision making through the application of critical analysis and integration of knowledge relevant to changing environments
- be at the forefront of academic and professional research related to the practice of finance and investment

### Program Learning Outcomes

Graduates of the MSF degree program will be prepared to:

- evaluate risk in investments and devise risk management strategies
- price major financial assets and securities, including in complex environments
- assess and devise alternative financing decisions and strategies, based on advanced analysis and the application of research skills
- use financial modeling and problem-solving techniques to facilitate financial decision making
- analyze advanced financial statements to inform high-level strategic thinking.

### Concentration in Corporate Finance and Investment

Upon graduation from the MSF degree program with a concentration in corporate finance and investment, graduates will be able to:

- solve key decision problems including valuation of corporate securities, capital budgeting under certainty, capital budgeting under uncertainty, investment decisions, corporate capital structure decisions, dividend decisions and policy, capital raising decisions, leasing decisions and analysis of takeovers
- critically assess risk-return relationship, demonstrating the ability to create an investment policy statement, and show how the financial markets operate
- examine the principles of modern portfolio theory and the effect of



diversification on investment portfolios

- measure and evaluate portfolio performance demonstrating the key features of futures and options and how they can be used to manage the risk of the portfolio

### Admission Requirements

In addition to meeting the general university requirements for graduate admission, applicants to the MSF degree program must hold a bachelor's degree in business-related areas from an independently accredited university recognized by the UAE Ministry of Education's Higher Education Affairs Division and by AUS.

### Bridging Course

Applicants admitted to the MSF degree program may be required to complete a three-credit-hour business bridging course that serves as the foundation for the core MSF program. The decision will normally depend on courses completed by the applicant as an undergraduate student and is determined by the program at the time of admission.

The business bridging course does not generate credit hours towards completion of the degree program graduation requirements. Students required to complete the bridging course are normally not eligible to register for degree program courses prior to successful completion of the bridging course. For further details, refer to Bridging Courses in Registration and Course Information within the Academic Policies and Regulations section earlier in this catalog.

The business bridging course may be waived when the waiver policy requirements are met. Matriculation into the major requires successful completion or waiver of the business bridging course.

#### *Business Bridging Course* (3 credit hours)

- BUS 506 Introduction to Finance and Econometrics

#### *Waiver Policy*

Applicants may qualify to waive of the business bridging course. In general, a course may be waived if the applicant has completed comparable course work at the undergraduate level. Waivers are evaluated at the time of admission. For more information, consult the Course Waiver in the Admission to Graduate Studies section earlier in this catalog.

### Accelerated Master's Program— AUS Undergraduate Students

AUS undergraduate degree seeking students interested in pursuing an MSF degree may register for a maximum of six credit hours from MSF FIN courses while completing their undergraduate degree program by seeking acceptance to the Accelerated Master's Program (AMP) of the MSF degree program. The master's-level courses may be counted towards meeting the graduation requirements for both the bachelor's and master's degrees.

To qualify for acceptance to the AMP, students must satisfy the following requirements at AMP application time:

- be enrolled in the finance or economics (BSBA or BAE) majors
- have earned a minimum of 90 credit hours (excluding credit hours earned in Achievement Academy/Bridge Program courses and preparatory courses)
- have achieved a minimum cumulative GPA of 3.50
- have successfully completed the following courses:
  - ECO 201 Principles of Microeconomics
  - ECO 202 Principles of Microeconomics
  - FIN 201 Fundamentals of Financial Management
  - FIN 310 Analysis of Financial Statements
  - FIN 320 Banking
  - FIN 330 Investments

For further details on the AMP, refer to Accelerated Master's Program in the Academic Policies and Regulations section of the *AUS Undergraduate Catalog*. For the list of MSF FIN courses available to AMP students, consult the Course Descriptions section of this catalog. Course prerequisites and background requirements must be met.

### Course Timings

MSF courses are offered in the evenings, with classes typically beginning at 6:00 p.m. and ending at 9:00 p.m.

### Degree Requirements

To qualify for graduation with an MSF degree, students must successfully complete a minimum of 30 credit hours consisting of program core courses, concentration courses, program elective courses and a master's thesis, with a minimum grade point average of 3.00.

The expected minimum duration for completion of the MSF degree program for a full-time student is 18 months. Part-time students may need more time to complete the degree. All students must successfully complete the degree program graduation requirements within five years from the time of initial enrollment in the program.

Graduation residence requirements must be met. For details, please refer to the Graduation Requirements in the Academic Policies and Regulations section of the *AUS Graduate Catalog*.

To be awarded an MSF degree, students must successfully complete the following requirements:

- 12 credit hours in core courses
- nine credit hours in concentration courses
- a minimum of three credit hours in elective courses
- six credit hours in Master's Thesis

### Required Courses (27 credit hours)

#### *Core Courses* (12 credit hours)

Students must successfully complete the following courses:

- FIN 681 Advanced Financial Statements Analysis
- FIN 682 Advanced Corporate Finance
- FIN 683 Applied Econometrics Methods
- FIN 684 Investment Analysis and Portfolio Management

#### *Concentration Courses* *Corporate Finance and Investment Concentration* (9 credit hours)

Students must successfully complete the following courses:

- FIN 685 Advanced Asset Valuation
- FIN 686 Pricing and Hedging of Financial Derivatives
- FIN 687 Financial Markets and Institutions

#### *Master's Thesis* (6 credit hours)

- FIN 699 Master's Thesis (6 credit hours)

### Elective Courses (minimum of 3 credit hours)

Students must complete a minimum of three credit hours in elective courses. Students may select their elective course from the following list:

- FIN 688 Private Equity and Venture Capital
- FIN 689 Risk Management

- FIN 691 International Financial Management
- FIN 692 Islamic Finance
- FIN 694 Special Topics in Finance

### Academic Advising

The Department of Finance provides academic and career advising to MSF students through the head of the department. Department of Finance faculty teaching on the MSF program may also advise continuing students.

### Master's Thesis

The thesis allows in-depth specialization in a particular topic area and provides students with the opportunity to receive individualized attention from their thesis faculty supervisor, equipping them with the research skills required for a master's degree. MSF students will select a thesis advisor after successfully completing the core courses.

A student must complete his/her master's thesis under the direct supervision and guidance of a principal advisor. This principal advisor serves as the chair of the student's examining committee. The committee also includes two additional faculty members. One of the additional faculty members must be selected from outside the program. The committee could also include one co-advisor or more.

A complete guide for preparing the master's thesis is given in the *Graduate Studies Policies and Procedures* document available on iLearn and accessible using the following path: iLearn-Community-Graduate Studies-Graduate Studies Policies and Procedures.

For registration details, please refer to Master's Thesis, Professional Research Project, Professional Project and Dissertation under the Academic Policies and Regulations section of the *AUS Graduate Catalog*.

## Doctor of Philosophy in Business Administration (PhD-BA)

Taisier Zoubi, Coordinator

The Doctor of Philosophy in Business Administration (PhD-BA) degree program is an interdisciplinary program offered by the School of Business Administration (SBA) that draws on the expertise of faculty from all the SBA departments.

The PhD-BA offers advanced business education to enable students in the program to develop strong knowledge and skills in identified research areas of primary importance to the UAE. In

particular, these research areas align closely with the UAE Economic Vision 2030.

Students pursuing the PhD-BA may apply for acceptance to the dual PhD degree program where they may receive two doctoral degrees, one from AUS and one for the University of South Carolina (UoSC). For details, consult Dual Degree at the end of the program section.

### Mission Statement

The PhD-BA degree program fosters excellence in teaching, learning and research using the American model of higher education, while recognizing the distinctive culture and organizational forms and practices of the Gulf region. The nature of the program will generate both professors and experts employed outside of academia who are able to further the development and publication of their knowledge while training a new generation of scholars steeped in innovative thinking.

### Program Goals

The PhD-BA will prepare graduates to:

- meet the highest challenges of scholarship, and become distinguished faculty members
- be at the forefront of creating and disseminating knowledge
- lead in creating strategies, proposing structures and developing operations for corporate organizations as well as government agencies

### Program Learning Outcomes

Graduates of the PhD-BA degree program will be prepared to:

- critique methods of research and academic inquiry in the field of business administration
- reconcile the results of research in the business field of study with extant theory
- identify, investigate and synthesize complex issues within the field by applying a range of analytical tools and theoretical models
- communicate research outcomes effectively to academic and practitioner audiences both orally and in writing
- publish scholarship in peer-reviewed journals related to business administration and economics
- teach effectively and disseminate fundamental knowledge in the field of study and related areas in business administration
- uphold standards of ethical academic conduct

### Admission Requirements

In addition to meeting the university's general requirements for admission to PhD degree programs, applicants to the PhD-BA degree program must meet the following program admission requirements:

- applicants must have completed a master of science relevant to the concentration applied for, or a Master of Business Administration degree
- applicants must submit an official Graduate Record Examination (GRE) score or Graduate Management Admission Test (GMAT) score
- applicants to the PhD-BA with a concentration in finance will be required to have completed a graduate-level course in applied econometrics.

### Bridging Courses

Applicants admitted to the PhD-BA degree program with a concentration in finance may be required to complete a maximum of 15 credit hours in bridging courses that serve as the foundation for the PhD-BA degree program with a concentration in finance. The number of bridging courses required will normally depend on courses completed by the applicant as an undergraduate or master's student and is determined by the program at the time of admission.

Bridging courses do not generate credit hours towards completion of the degree program graduation requirements. Students required to complete bridging courses are normally not eligible to register for degree program courses prior to successful completion of these courses. For further details, refer to Bridging Courses in Registration and Course Information within the Academic Policies and Regulations section earlier in this catalog.

Bridging courses may be waived when the waiver policy requirements are met. Matriculation into the major requires successful completion or waiver of the bridging courses required for the concentration.

#### *Bridging Courses*

#### *Finance Concentration (15 credit hours)*

- BUS 506 Introduction to Finance and Econometrics
- FIN 681 Advanced Financial Statements Analysis
- FIN 682 Advanced Corporate Finance
- FIN 683 Applied Econometrics Methods
- FIN 684 Investment

### Waiver Policy

Applicants may qualify to waive any or all of the bridging courses. In general, a course may be waived if the applicant has completed comparable course work at the undergraduate or master's levels. Waivers are evaluated at the time of admission. For more information, consult the Course Waiver in the Admission to Graduate Studies section earlier in this catalog.

### Degree Requirements

To qualify for graduation with a PhD-BA degree, students must successfully complete a minimum of 60 credit hours with a minimum cumulative GPA of 3.00 as follows:

- a minimum of 33 credit hours (11 courses) of required and elective coursework:
  - 12 credit hours (four courses) of business core courses
  - 15 credit hours (five courses) of required courses in the area of concentration
  - a minimum of six credit hours (two courses) of elective courses in the area of concentration
- a minimum of 27 credit hours of research work (Dissertation)

The expected minimum duration for completion of the PhD-BA degree program is four years. All graduation requirements must be completed within 10 years of admission to AUS as a doctoral student, inclusive of any leave.

Graduation residence requirements must be met. For details, refer to Graduation Requirements in the Academic Policies and Regulations section earlier in this catalog.

### Required Courses (minimum of 54 credit hours)

#### Business Core Courses (12 credit hours)

Students must successfully complete the following required business core courses:

- BUS 701 Philosophical Foundations of Business Research
- BUS 702 Seminar in Business Administration
- BUS 703 Advanced Applied Econometrics
- BUS 704 Applied Time Series Analysis

#### Concentration Required Courses Finance Concentration (15 credit hours)

Students must successfully complete the following finance concentration required courses:

- FIN 711 Finance Theory
- FIN 712 Contemporary Issues in Financial Research
- FIN 713 Advanced Topics in Financial Markets and Institutions
- FIN 714 Empirical Research Methods in Finance: Asset Pricing
- FIN 715 Advanced Corporate Finance Research

#### Comprehensive Examination

- BUS 791 Comprehensive Examination

#### PhD Dissertation

- BUS 799 Dissertation (for a minimum 27 credit hours)

### Elective Courses (minimum of 6 credit hours)

#### Finance Concentration

Students must successfully complete two elective courses (for a minimum of six credit hours) selected from the following list of courses. The elective courses must be approved by the program coordinator.

- BUS 794 Special Topics in Business Administration (finance-related topic)
- FIN 721 Seminar in International Finance
- FIN 722 Corporate Restructuring and Reorganization
- FIN 723 Advanced Topics in Corporate Governance and Compensation

### Qualifying Examination

To be considered as a candidate for the PhD-BA degree, a student must pass a qualifying examination (BUS 790). Eligibility to take the qualifying examination is conditional upon meeting the following requirements:

- The student must be in good academic standing.
- The student must have successfully completed a minimum of 18 credit hours of course work, including at least six credit hours from the concentration required courses.
- The student must have registered for the qualifying examination (BUS 790) by the end of the add/drop period of the semester/term when the examination will be taken.

The qualifying examination consists of a written and an oral component. Taking the oral examination is conditional upon having successfully completed the written examination. In order to pass the qualifying examination, the student must pass both components.

The qualifying examination may result in a pass or a fail grade. A student

who fails the qualifying examination is academically dismissed from the university.

A student who was academically dismissed as a result of failing the qualifying examination may petition for reinstatement and a repeat of the failed qualifying examination to the program coordinator one month ahead of the registration of the semester immediately following academic dismissal. The student petition form is available at [www.aus.edu/registration/forms](http://www.aus.edu/registration/forms). The petition will be reviewed by the program coordinator, who will make a written recommendation to the Associate Dean for Graduate Programs. The associate dean will then provide a recommendation to the Vice Provost for Graduate Studies. Decisions regarding reinstatement and repeat of the qualifying examination will be made by the Vice Provost for Graduate Studies. A student who failed the qualifying examination may be allowed to repeat the qualifying examination only once.

Students need to seek guidance from the program coordinator regarding the qualifying examination requirements and deadlines.

Further details on the qualifying examination are provided in the *Graduate Studies Policies and Procedures* document available on iLearn and accessible using the following path: iLearn-Community-Graduate Studies-Graduate Studies Policies and Procedures.

For registration details, please refer to Master's Thesis, Professional Research Project, Professional Project and Dissertation under the Academic Policies and Regulations section of this catalog.

### Comprehensive Examination

The comprehensive examination (BUS 791) covers the degree program required and elective coursework. The examination consists of a written and an oral component designed to assess the candidate's mastery of the concepts of the area of the concentration.

Eligibility to take the comprehensive examination is conditional upon meeting the following requirements:

- The student must be in good academic standing.
- The student must have passed the qualifying examination.
- The student must have successfully completed the coursework (33 credit hours).

- The student must have registered for the comprehensive examination by the end of the add/drop period of the semester/term when the examination will be taken.

In order to successfully complete the comprehensive examination, the student must pass both the written and the oral components. Taking the oral examination is conditional upon having successfully completed the written examination.

The comprehensive examination may result in a pass or a fail grade. A student who fails the comprehensive examination is academically dismissed from the university. The grade of the comprehensive examination is final. A student who was dismissed as a result of having failed the comprehensive examination may not petition for reinstatement.

Students need to seek guidance from the program coordinator regarding the comprehensive examination requirements, deadlines and registration procedures.

### PhD Dissertation

The PhD dissertation includes the preparation of a research proposal, presentation and defense of the research proposal, write-up of the dissertation, and presentation and defense of the dissertation.

A PhD-BA candidate develops his/her dissertation research proposal and completes the dissertation under the direct supervision and guidance of a principal advisor. The principal advisor serves as the chair of the student's Dissertation Advisory Committee (DAC). The DAC also includes at least two additional faculty members. The student may request the appointment of an external committee member.

A PhD-BA candidate is eligible to defend the dissertation research proposal only after all coursework is successfully completed. The research proposal defense includes a comprehensive examination of all coursework completed. PhD candidates are expected to successfully complete the dissertation proposal within three semesters of first registering for the dissertation. Failure to complete the dissertation proposal within the specified time frame or failure to demonstrate progress after the proposal defense may result in assigning an NP grade, resulting in withdrawal of candidacy from the PhD degree program.

The dissertation must be publicly defended to the satisfaction of the Final Oral Defense Committee (FODC). The FODC is formed by the program coordinator in consultation

with the DAC chair; it is approved by the Associate Dean for Graduate Studies and appointed by the Vice Provost for Graduate Studies.

A complete guide for forming the DAC and the FODC, and preparing the dissertation, including the dissertation research proposal, the dissertation defense schedule and deadlines, is given in the *Graduate Studies Policies and Procedures* document available on iLearn and accessible using the following path: iLearn-Community-Graduate Studies-Graduate Studies Policies and Procedures.

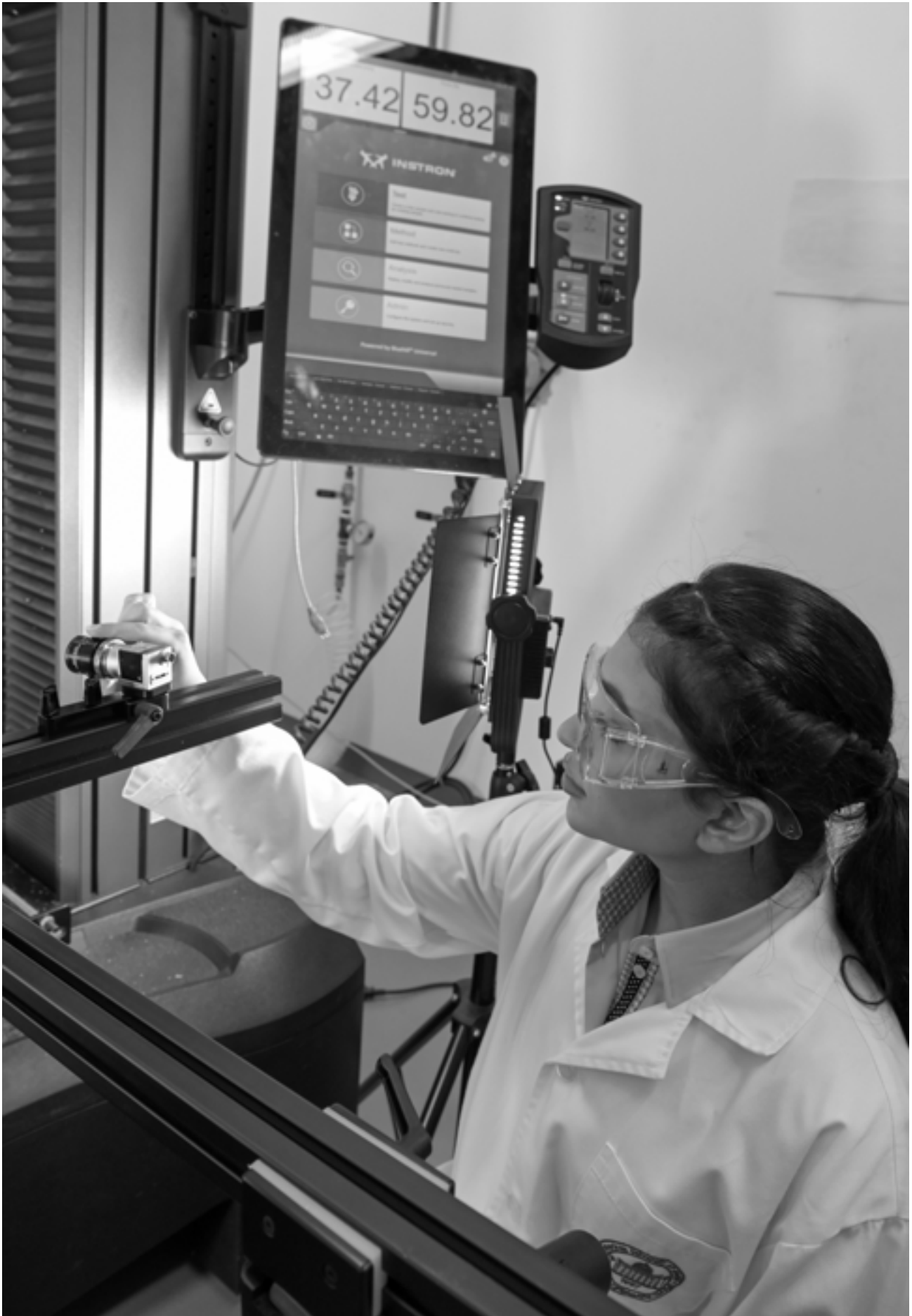
For registration details, please refer to Master's Thesis, Professional Research Project, Professional Project and Dissertation under the Academic Policies and Regulations section of this catalog.

### Dual Degree

Students pursuing the PhD-BA degree program with a concentration in finance may apply for the dual degree program offered by AUS and the University of South Carolina (UoSC) Darla Moore School of Business (DMSB), one of the United States' most renowned business schools. Upon successful completion of the degree requirements of both institutions, students in the dual degree program will be awarded two doctoral degrees, one from AUS and one from UoSC.

Acceptance in the dual degree program occurs every two years. Due to limited places, admission to the program is competitive. Students may contact the SBA Associate Dean of Graduate Programs for more details about the application process and the study plan for the dual PhD program.

AUS students who are selected to be part of the dual degree program will spend the second year of their PhD program at UoSC. Upon approval of the SBA Associate Dean of Graduate Programs, they could transfer up to 15 credit hours of the coursework successfully completed at UoSC. For their dissertation work, dual degree students will be under the supervision of faculty from both universities, and they will complete a single dissertation that contributes to both the AUS and the UoSC degree programs graduation requirements. Further details on transfer of credits in provided in Transfer of Credit Hours within the Admission to Graduate Studies section earlier in this catalog.





# College of Architecture, Art and Design

Courses with titles in *italic* are available to undergraduate students in the Accelerated Master's Program (AMP). Course prerequisites must be met. For full details on the AMP, refer to the Accelerated Master's Program section of the AUS Undergraduate Catalog or [www.aus.edu/amp](http://www.aus.edu/amp).

## UPL Urban Planning

**UPL 600 *Planning History, Theory and Principles (3-0-3)***. (Blended learning mode). (Introduces the profession of urban planning and its cardinal doctrines. Surveys the history of the profession and its links to other environmental design fields. Reviews basic procedural and substantive theories that inform planning practice. Previews planning specializations, what planners do, and the tools they use and need to nurture sustainable cities. Prerequisite: admission to the MUP program.

**UPL 602 *Computer Applications in Planning (4-0-3)***. Introduces key concepts and technical skills involved in analyzing spatial phenomena. Includes the following topics: spatial inferences, cartographic quality, geospatial data and exploratory spatial data analysis. Introduces and applies key software tools in urban and regional contexts. Prerequisite/concurrent: UPL 600. Lab/Tech fee rate A applies.

**UPL 604 *Urban Planning Research and Analysis (3-0-3)***. Introduces quantitative and qualitative research and analysis methods used in urban planning practice. Considers various sources of primary and secondary data (surveys, interviews and observations; national and international data repositories) and associated analytical skills (statistical analysis, qualitative analysis, forecasting, analysis of local economies). Emphasizes effective presentation of data and analyses. Prerequisite/concurrent: UPL 600.

**UPL 621 *Environmental and Land Use Planning (3-0-3)***. (Blended learning mode). Provides a comprehensive overview of the field of sustainable environmental and land use planning, focusing on key principles, processes and skills for assessing, managing and protecting environmental resources—land, air, water, flora and fauna. Reviews the social, economic, political and legal dimensions of environmental and land use planning through case studies and best practices worldwide. Prerequisite/concurrent: UPL 600.

**UPL 623 *Urban Design Principles, Processes and Skills (4-0-3)***. (Blended learning mode). Examines urban design principles, processes and necessary skill sets. Differentiates between urban design as a discipline

and as a profession and gives an overview of its evolution in the West. Examines the applicability and limitations of discussed concepts, processes and skills by engaging in projects ranging from problem formulation and analysis to spatial solutions and recommendations in the local/regional contexts. Prerequisite/concurrent: UPL 600.

**UPL 625 *Plan Making, Communication and Process (4-0-3)***. Introduces skills relevant to making useable plans. Reviews the need for and logic of plans, the challenges of collective choice, and the institutional context of plan making. Covers topics such as problem formulation and decision analysis; forecasting, impact assessment and scenario development; and facilitation, negotiation and mediation. Emphasizes effective presentation of data, analyses and recommendations. Requires individual and group work on applied tasks. Prerequisite/concurrent: UPL 600.

**UPL 633 *Urban Infrastructure Planning (3-0-3)***. (Blended learning mode). Explores the challenges and prospects for planning sustainable urban infrastructure. Examines the conceptual basis of infrastructure planning, as well as empirical cases of planning, financing and managing sustainable urban infrastructure. Reviews case studies and best practices of infrastructure planning worldwide and locally. Prerequisite: UPL 600.

**UPL 634 *Tourism and Hospitality Planning (3-0-3)***. (Blended learning mode). Covers the history of tourism and hospitality planning as a specialized field of study. Critiques tourism and hospitality concepts, trends, genres and case studies. Analyzes the political, economic, environmental and socio-cultural dimensions and implications of the tourism and hospitality industry. Assesses the links between tourism and sustainable development. Prerequisite: admission to the MUP program.

**UPL 639 *Urban Planning and Housing Policy (3-0-3)***. Provides an overview of housing policy as it relates to urban planning. Reviews different approaches to housing provision from around the world including housing finance mechanisms. Considers housing typologies as well as policy issues specific to the UAE. Prerequisite: UPL 600.

**UPL 651 *Negotiation Strategies (3-0-3)***. Introduces key principles, strategies and dynamics of negotiation in the governmental, corporate, non-profit and grassroots sectors. Reviews relevant social theories and simulates experiences in negotiation and conflict resolution. Highlights relevance of negotiation to urban planning. Prerequisite: UPL 600.

**UPL 655 *Ecological Urbanism (3-0-3)***. Examines the history, theory and debates on urban environmental sustainability, based on the notion of cities as human ecosystems. Introduces an environmentally led approach to urban planning and design to achieve a symbiotic relationship between the built environment and natural systems. Covers current knowledge on ecological urban design including sustainable urban forms and densities, sustainable mobility, urban biophilia, new public spaces for food production, non-fossil fuel energy production, and wastewater and organic waste recycling. Reviews case studies of sustainable neighborhoods worldwide. Prerequisite/concurrent: UPL 600.

**UPL 680 *Urban Research and Planning Workshop (8-0-6)***. (Blended learning mode). Requires application of research skills and substantive knowledge of urban planning to a question associated with a planning project followed by formulation of plan components using outcomes from that research. Culminates in an individual research paper and plan poster. Prerequisites: UPL 602, UPL 604, UPL 621, UPL 623 and UPL 625.

## Special Topic Courses

**Special Topic (1 to 4 credit hours)**. 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 694 courses. The three-letter course prefix reflects the field of study of the course.

Descriptions of particular special topic courses are made available in the college during registration.

# College of Arts and Sciences

*Courses with titles in italic are available to undergraduate students in the Accelerated Master's Program (AMP). Course prerequisites must be met. For full details on the AMP, refer to the Accelerated Master's Program section of the AUS Undergraduate Catalog or [www.aus.edu/amp](http://www.aus.edu/amp).*

## ELT

**ELT 501 Advanced English Grammar (3-0-3).** Examines the structure, function and meaning of contemporary English. Discusses issues relative to descriptive/prescriptive approaches to language and ESL instruction.

***ELT 507 Culture, Society and Language Learning (3-0-3).*** Explores the influence of cultural diversity on teaching and learning an additional language and the implications of language use in social contexts, like world, regional and international Englishes. Analyzes methods and approaches for intercultural research and prepares language teachers in practical and theoretical areas of pragmatics and sociolinguistics, providing opportunities to prepare, present and evaluate authentic lessons that enrich intercultural competence.

***ELT 511 Linguistics for ESL Teachers (3-0-3).*** Focuses on areas in linguistics relevant to ESL teachers. Explores ways of utilizing research and generalizations derived from linguistics to inform ESL teaching practice.

***ELT 513 Language Acquisition and Development (3-0-3).*** Focuses on processes involved in acquiring first and second languages. Examines different theoretical perspectives explaining acquisition and analyzes the factors that affect language development and learning. Explores the implications of SLA research in ELT classroom contexts.

**ELT 515 Methods and Materials Development (3-0-3).** Examines traditional and contemporary approaches to English language teaching. Various aspects of classroom practice are analyzed, including teacher and learner roles, classroom management, and integrated versus separate teaching of the language skills.

**ELT 517 Curriculum Design (3-0-3).** Introduces the principles of ESL course design. Examines the stages of developing and evaluating learning centered curricula and materials. Prerequisite: admission to the MATESOL program.

**ELT 521 Reading and Writing in ESL (3-0-3).** Discusses various theoretical models dealing with teaching literacy skills in a second language to children and adults. Explores ways to adapt and apply these models for effective ESL instruction.

## TESOL

***ELT 523 Bilingual Education (3-0-3).*** Reviews different models of bilingual education and issues in bilingualism. Discusses how to achieve a balanced bilingual education system by examining the challenges posed by cultural and linguistic diversity in a bilingual education setting.

**ELT 551 Language Testing and Evaluation (3-0-3).** Covers the fundamental goals, principles, standards and uses of language assessment and language assessment research. Reviews the factors involved in assessing proficiency in second language skills and in selecting appropriate testing instruments and evaluation tools.

**ELT 617 Quantitative, Qualitative and Action Research in ELT (3-0-3).** Surveys quantitative, qualitative and action research approaches in language learning and teaching. Emphasizes the role of research design, data collection and the interpretation of results. Graduate students pursuing the thesis option may use this course to develop their proposals. Prerequisite: admission to the MATESOL program.

**ELT 619 Practicum in TESOL (3 credit hours).** Provides the opportunity to observe, explore and implement effective ESL teaching strategies. Involves weekly seminars in which the students discuss their classroom experiences and reflect on their personal growth as ESL teachers. Prerequisites: ELT 511 or ELT 513; prerequisite/concurrent: ELT 515.

**ELT 699 Master's Thesis (6 credit hours).** Requires completion of individual and original research work on a topic related to some aspect of TESOL that addresses both theoretical and practical aspects of ELT. The thesis is supervised by the thesis faculty supervisor and is defended to the satisfaction of the thesis committee. Graded as Pass/No Pass. Prerequisite: good academic standing.

## INS International Studies

***INS 501 Advanced International Affairs (3-0-3).*** Provides an advanced survey of the field of international relations since its inception in 1945. Covers theories of international relations, war, foreign policy, among other areas of scholarship. Requires a background in globalization or global problems. Prerequisite: admission to the MAIS program.

***INS 503 Research Methods (3-0-3).*** Enhances research skills required to develop and evaluate evidence-based arguments using both quantitative and qualitative evidence. Applies research skills to multidisciplinary research questions of academic and policy importance. Explores how research methods can be combined to produce high-quality research and sustained impact. Requires background in basic statistics concepts and sampling methods. Prerequisite: admission to the MAIS program.

***INS 505 Theory and Practice of Leadership (3-0-3).*** Analyzes theories of leadership at the individual and group level and applies the principles to selected case studies. Emphasizes transformative leadership and the skills needed to make ethical decisions and manage emergencies and crises. Requires a background in organizations and theories of international relations. Prerequisite: admission to the MAIS program.

***INS 507 Conflict Resolution (3-0-3).*** Examines the theory and practice of conflict resolution at the local, national, regional, and international levels. Analyzes and applies foundational concepts in conflict resolution, including power, interests, values, identity and culture. Assesses the strengths and weaknesses of alternative strategies of conflict resolution by states, international organizations, non-governmental organizations and individuals. Requires a background in global political economy and international organizations. Prerequisite: admission to the MAIS program.

***INS 511 Advanced International Security (3-0-3).*** Provides a nuanced exploration into the field of contemporary security studies. Surveys many of the major concepts and theories in contemporary security studies and explores their applications in a variety of contexts. Covers areas of security studies at the international and domestic levels. Requires a background in global political economy and imperialism. Prerequisite: admission to the MAIS program.

**INS 513 Topics in Global Affairs (3-0-3).** Applies international relations theory and historical cases to current events, such as war, civil disturbances, regime change and environmental or



economic crises. Examines different topics depending upon the pressing issues of the moment. Prerequisite: INS 501.

**INS 515 Environmental Ethics (3-0-3).** Explores the philosophical dimensions of how we are related to the environment in the new geological era of the Anthropocene. Studies why and how life on earth should be respected. Reflects on the philosophy of nature. Requires a background in sociology, anthropology and/or philosophy. Prerequisite: admission to the MAIS program.

**INS 517 Global Migration (3-0-3).** Examines the patterns of global migration in history and at present. Analyzes the political, economic and social impacts of global migration on both the sending and receiving countries. Provides an overview of the cross-disciplinary approaches to global migration. Evaluates the key social theories on immigration. Assesses the impacts of immigration policies on related social issues, including social inequality, nationalism, nativism, gender, race, religion and crime. Prerequisite: INS 503.

**INS 519 Advanced Social Theory (3-0-3).** Explores the central texts and movements in modern and contemporary social theory. Examines various methodological and theoretical approaches within social theory from a critical and comparative perspective (e.g., functionalism, structuralism, pragmatism, genealogy, and critical theory, among others). Requires a background in sociology, political science and/or philosophy. Prerequisite: admission to the MAIS program.

**INS 521 Women's and Minority Rights (3-0-3).** Examines the struggle for women's and minority rights over time from a comparative perspective. Critically assesses the status and prospects of women's and minority rights as human rights. Analyzes the historical, political, social and economic factors that have influenced the development of these rights, including the role of international organizations in advancing women's and minority rights globally. Applies multidisciplinary methods to conduct research in the field. Requires background in global political economy and imperialism. Prerequisite: admission to the MAIS program.

**INS 523 Civil Wars in History (3-0-3).** Examines the causes of civil conflict throughout history, with a particular focus on religious, ethnic and regional divisions. Analyzes why some civil conflicts reach a definite conclusion while others recur over time. Explores

the risks of intervention by third parties or commercial involvement in intra-state conflicts. Prerequisite: INS 507.

**INS 525 Law, Politics and International Crime (3-0-3).** Examines the clandestine underbelly of global affairs: human trafficking, drug smuggling, money laundering, cybercrime, counterfeit trade. Analyzes how illicit activities across borders are organized and how they are related to the legal side of global affairs. Assesses alternative strategies by states and international organizations to police the illicit side of global affairs. Prerequisite: INS 501.

**INS 527 Contemporary MENA Politics and the World (3-0-3).** Examines the evolution of political and social issues in the Middle East and North Africa (MENA) through the lens of world politics. Explores the effects of various political, social, economic and cultural factors on contemporary MENA politics, with a focus on changes since 2011. Analyzes how regional and international shifts in power affect modern MENA politics. Requires a background in global political economy and imperialism. Prerequisite: admission to the MAIS program.

**INS 529 The Transnational Gulf (3-0-3).** Examines the GCC states' connections with the wider world focusing on Iran, South Asia, East Africa, Britain and America from the 19th century to the present day, as well as the significance of those connections for the region's politics, security, society and culture. Analyzes the nature of the Gulf's engagement with these countries and regions and their impact on the Gulf. Applies social science theories to uncover the international dynamics behind the political structures and processes in the GCC states. Prerequisite: INS 503.

**INS 531 Governing Environmental Sustainability: Theories and Practices (3-0-3).** Examines environmental governance and regulation at the local, national and international levels. Employs social science theories and empirical cases and practices to understand how the environment is problematized and governed through state policies, economic markets and social institutions in the real world. Analyzes different kinds of environmental governance models and approaches in different parts of the world. Prerequisites: INS 501 and INS 503.

**INS 699 Master's Thesis (6 credit hours).** Under the guidance of a faculty advisor, students are to complete original research work in the field of study, complete a thesis and attend a

final defense to the examining committee. Graded as Pass/No Pass. Prerequisites: INS 501, INS 503, INS 505, INS 507 and good academic standing.

## MSE Materials Science and Engineering

**MSE 500 Fundamentals of Materials Science and Engineering (3-0-3).** Provides advanced description for the structure of different materials including metals, ceramics and polymers. Examines material defects, and the fundamentals of mechanical, electrical, magnetic and optical properties. Covers the connection between material properties, structure and function. Addresses different modes of material failure such as fracture, creep and fatigue. Graded as Pass/No Pass. Prerequisite: admission to the PhD-MSE program.

**MSE 510 Thermodynamics in Materials Science and Engineering (3-0-3).** Covers the basic concepts and laws of thermodynamics and their applications. Focuses on the use of internal energy, enthalpy, entropy and Gibbs free energy; Maxwell relations; ideal and real cycles and processes; chemical equilibrium; phases and solutions, phase equilibrium and other applications. Graded as Pass/No Pass. Prerequisite: admission to the PhD-MSE program.

**MSE 700 Research Methods in Materials Science and Engineering (3-0-3).** Covers qualitative and quantitative methods employed in materials science and engineering research. Introduces the basic tenets of research, knowledge, methods, and success in research. Covers problem formulation, literature review, hypotheses formulation and proposal preparation. Explores open-source databases and software libraries developed for materials, programming for data analysis, modeling, instrument design and control, and statistical methods. Prerequisite: approval of the program coordinator.

**MSE 705 Diffraction and Crystallography (3-0-3).** Introduces the fundamentals of X-ray crystallography and diffraction. Provides knowledge on how X-ray diffraction can be used to determine the crystal structure for both single and poly crystalline materials. Covers reciprocal lattices, space groups, Ewald sphere construction, elements of diffraction measurements and instrumentation, and the interpretation of diffraction data. Discusses diffraction studies using synchrotron radiation and neutrons sources. Requires knowledge in differential equations analysis techniques. Prerequisite: MSE 500.

**MSE 707 Magnetic Materials and Devices (3-0-3).** Introduces basic concepts of magnetism, experimental methods, and applications of magnetic materials. Describes magnetic order and excitations in magnetic materials using quantum mechanics. Covers magnetic moment, types of magnetic materials and their properties, domains and effects of nanostructuring, soft and hard magnetic materials, magnetoresistance, spintronics and magnetic superconductors. Explores applications in magnetic memories and magnetic data storage devices. Requires knowledge in differential equations analysis techniques. Prerequisite: MSE 500.

**MSE 708 Electronic Properties of Materials (3-0-3).** Provides deep insights into the electronic properties of functional materials. Covers the concepts of energy bands and electrons behaviors in crystals. Introduces various transport mechanisms for a large spectrum of materials including metals, semiconductors and polymers. Requires knowledge in quantum mechanics. Prerequisite: admission to the PhD-MSE program.

**MSE 710 Advanced Thermodynamics in Materials Science and Engineering (3-0-3).** Explores applications of the laws of thermodynamics in materials science and engineering. Covers chemical reactions, magnetism, polarizability, models and properties of solutions; thermodynamic analysis of the phase diagrams of different materials; thermodynamic activities in solid and liquid systems; equilibrium constant; and phase equilibria. Prerequisite: MSE 510.

**MSE 711 Kinetics of Materials (3-0-3).** Covers topics related to analysis of kinetic processes in materials including irreversible thermodynamics and diffusion. Explores mechanisms of materials processing, microstructural behavior and phase transformations. Introduces equations for diffusion, reaction rates and rate theories. Prerequisites: MSE 500 and MSE 510.

**MSE 718 Materials for Energy Production and Storage (3-0-3).** Provides comprehensive knowledge about the importance of the physical and chemical properties of materials as applied in energy generation and storage. Describes the effects of materials structure, chemistry and defects on performance and efficiency in energy production, conversion, storage and utilization. Covers topics related to materials used in solar cells and solar heat, batteries, hydrogen technology and fuel cells. Prerequisites: MSE 500 and MSE 510.

**MSE 720 Advanced Characterization and Analytical techniques (3-0-3).** Focuses on advanced characterization

and analytical techniques in materials science and engineering research. Explores the operating principles and applications of electron microscopes and their spectroscopical tools. Covers X-ray diffraction (XRD), X-ray Photoelectron Spectroscopy (XPS), Scanning Probe Microscopy (SPM) and Raman spectroscopy. Addresses the utility and the limitation of each analytical tool. Requires advanced undergraduate laboratory in physical sciences or engineering. Prerequisite: MSE 500. Lab/Tech fee rate A applies.

**MSE 721 Surface Science and Technology (3-0-3).** Provides advanced knowledge of the properties of surfaces and interfaces, with focus on their structure, electronic and chemical properties. Covers surface fabrication and modification methods, surface characterization techniques, adsorption/desorption isotherms, and surface reactions for catalytic applications. Discusses a range of applications including the shape of nanostructures, hydrophilic surfaces, electrochromic and thermochromic coatings, self-cleaning, self-healing and bio-inspired surfaces. Prerequisites: MSE 500 and MSE 510.

**MSE 730 Advanced Mechanics of Materials (3-0-3).** Covers fundamental concepts of solid mechanics with focus on elastic deformable bodies. Includes tensor algebra, kinematics, strain-displacement relationship, compatibility, stress and traction, equilibrium equations, constitutive relationships, linear elasticity, and solutions to selective boundary value problems. Explores the necessary mechanics background needed for other specific areas of solid mechanics, including plasticity, fatigue and fracture mechanics. Requires knowledge in mechanics of materials. Prerequisite: MSE 500.

**MSE 731 Plasticity (3-0-3).** Focuses on constitutive laws of plasticity, yield criteria, stress-strain relations, flow rules and formulation for rate-dependent and rate-independent plasticity. Covers basic numerical implementation of constitutive models and solutions for boundary value problems. Introduces advanced topics including crystal plasticity and applications of plasticity concepts in materials science and engineering. Requires knowledge in mechanics of materials. Prerequisite: MSE 500.

**MSE 732 Fatigue of Materials and Structures (3-0-3).** Covers materials response under cyclic loading with focus on predicting the fatigue life of materials and structural components. Focuses on stress-life, strain-life and fracture mechanics approaches to fatigue life. Requires knowledge in mechanics of materials. Prerequisite: MSE 500.

**MSE 733 Mechanics of Laminated Composite Structures (3-0-3).** Introduces the continuous fiber-reinforced composite materials with emphasis on equations of anisotropic elasticity, environmentally induced stresses, and constitutive equations of a lamina. Covers micromechanics of stiffness and expansional coefficients. Discusses transformation of stresses, strains and material coefficients. Explores the classical and first-order theories of laminated composite plates, bending, buckling and the vibrations of composite plates using selected analytical solutions. Requires knowledge in mechanics of materials. Prerequisite: MSE 500.

**MSE 734 Physical Metallurgy (3-0-3).** Focuses on structure-property relationship of metals and alloys based on composition and processing. Covers types of solid solutions, ferrous and non-ferrous phase diagrams with focus on cooling curve and heat treatment. Examines Fe-C phase diagrams, steel and its types, and the microstructure associated with the individual phases. Explores design of alloys and the effect of alloying element and heat treatment in different applications. Prerequisites: MSE 500 and MSE 510.

**MSE 740 Computational Methods in Materials Science and Engineering (3-0-3).** Covers advanced computational methods and simulation in materials science and engineering. Focuses on modeling techniques from the microscopic up to the macroscopic structural scale. Explores molecular dynamics, classical mechanics, potentials for solids, Monte-Carlo simulation for atomic systems, and finite element method applications in materials and solids. Introduces computer aided design and simulation software. Requires knowledge in differential equations techniques or numerical analysis. Prerequisite: admission to the PhD-MSE program.

**MSE 741 Advanced Finite Element Methods in Materials Science and Engineering (3-0-3).** Covers different finite element methods in materials science and engineering. Emphasizes on formulation and assembly of finite elements using shell and solid elements. Covers materials and geometric nonlinearities, heat transfer and structural dynamics and vibrations. Focuses on practical considerations and software use in materials and structures. Requires knowledge in finite element methods. Prerequisite: admission to the PhD-MSE program.

**MSE 750 Nanomaterials: Science and Applications (3-0-3).** Provides detailed knowledge of the physical phenomena, theoretical concepts and experimental techniques to fabricate and manipulate nanostructures. Covers the preparation, testing and the physical

properties (mechanical, electrical, magnetic, optical) of nanomaterials. Explores a wide spectrum of applications such as catalysis, adsorption, sensors, high wear resistant and corrosion resistant coatings, nanophotonics and nanoelectronics. Prerequisites: MSE 500 and MSE 510.

**MSE 760 Advanced Corrosion (3-0-3).** Provides a strong foundation in electrochemical thermodynamics and kinetics related to corrosion processes. Covers the principles behind corrosion and methods for prevention and control. Addresses materials selection, testing, design consideration and practical high-temperature corrosion problems. Requires knowledge in physical chemistry or electrochemistry. Prerequisite: admission to the PhD-MSE program.

**MSE 761 Advanced Polymers and Composite Materials (3-0-3).** Provides an overview of polymers, polymer composites, plastics, elastomers and fibers with concentration on specialty polymeric materials and hybrid polymer composites and their applications. Discusses the processing, fabrication and characterization techniques of polymers and polymer composites. Explores the characteristics, composition, adhesion and morphology of polymers and polymer composites. Prerequisites: MSE 500 and MSE 510.

**MSE 790 Qualifying Examination (0-0-0).** Includes written and/or oral parts to test the student's breadth of knowledge, understanding of fundamentals, and ability to perform independent research work in one of the research areas in materials science and engineering. Graded as Pass/Fail. Prerequisites: successful completion of at least 12 credit hours, good academic standing and approval of the program coordinator.

**MSE 795 Doctoral Seminar (1-0-0).** Provides a unique discussion forum for all doctoral students to interact with a diverse group of faculty from different sciences and engineering departments, as well as outside presenters. Encompasses a wide variety of pertinent topics from different MSE research areas. Graded as Pass/Fail. Prerequisite: admission to the PhD-MSE program.

**MSE 799 Dissertation (a minimum of 30 credit hours).** Includes the preparation, presentation and defense of the research proposal, as well as the write-up, presentation and defense of the dissertation. Graded as Pass/No Pass. Prerequisites: MSE 790, DAC appointment and approval of the program coordinator.

## MTH Mathematics

**MTH 500 Mathematical Statistics with Applications (3-0-3).** Introduces formulation of statistical models,

transformations and expectations, methods of estimation and optimal theory, hypothesis testing and methods of evaluations, nonparametric statistics, and Monte Carlo simulation and applications using statistical packages. Prerequisite: approval of department head.

**MTH 505 Ordinary Differential Equations (3-0-3).** Covers the following topics: scalar and planar autonomous systems, nonlinear systems and linearization, existence and uniqueness of solutions, matrix solution of linear systems, series solutions, phase plane analysis, stability analysis, bifurcation theory, Liapunov's method, limit cycles and Poincare Bendixon theory. Prerequisite: admission to the MSMTH program.

**MTH 506 Partial Differential Equations (3-0-3).** Covers the classification of first- and second-order partial differential equations and analyzing its applications. Introduces eigenfunction expansions, separation of variables, and transform methods for solving PDEs, Green's functions for PDEs, and the method of characteristics. Prerequisite: admission to the MSMTH program.

**MTH 507 Financial Mathematics I (3-0-3).** Provides a basic introduction to financial mathematics. Introduces mathematical perspective on the valuation of financial instruments such as futures and options, and their risk-management using the Cox-Ross-Rubenstein framework. Introduces the stochastic techniques employed in derivative pricing. Prerequisite: approval of department head.

**MTH 508 Mathematical Biology (3-0-3).** Explores continuous and discrete methods for modeling biological systems. Covers ordinary differential equations models, multistate logical models and polynomial dynamical systems. Introduces phase portraits, bifurcation diagrams, perturbation theory, parameter estimation and system identification. Examines some biological systems and their mathematical models. Prerequisite: admission to the MSBME or MSMTH programs.

**MTH 511 Real Analysis (3-0-3).** Covers metric spaces, functions of bounded variation, Riemann-Stieltjes integral, Lebesgue measure on the real line, Lebesgue measurable sets, Lebesgue measurable functions, Lebesgue integration on the real line, convergence theorems for the Lebesgue integral, and  $L_p$  spaces. Prerequisite: admission to the MSMTH program.

**MTH 512 Advanced Linear Algebra (3-0-3).** Covers the proof-based theory of matrices, determinants, vector spaces, linear spaces, linear

transformations and their matrix representations, linear systems, linear operators, eigenvalues and eigenvectors, invariant subspaces of operators, spectral decompositions, functions of operators, and applications to science, industry and business. Prerequisite: admission to the MSMTH program.

**MTH 517 Numerical Methods for Derivative Pricing (3-0-3).** Covers modeling and pricing of security derivatives in the Black-Scholes framework including analytic methods, tree methods and simulation methods. Examines pricing of exotic options. Explores option pricing in non-Black-Scholes models. Requires basic knowledge of probability theory. Prerequisite: approval of the department head.

**MTH 520 Complex Analysis (3-0-3).** Covers the following topics: analytic functions, Cauchy's theorem and consequences, singularities and expansion theorems, maximum modulus principle, residue theorem and its application, compactness and convergence in space of analytic and meromorphic functions, elementary conformal mappings, Riemann mapping theorem, elliptic functions, analytic continuation and Picard's theorem. Prerequisite: admission to the MSMTH program.

**MTH 532 Abstract Algebra (3-0-3).** Covers rings, quotient rings, ring homomorphisms, ideals, polynomial rings, irreducible and prime elements of rings, domains, modules, fields, finite fields, field extensions and Galois theory. Introduces Sylow's theorems and their applications. Prerequisite: admission to the MSMTH program.

**MTH 551 Methods of Applied Mathematics (3-0-3).** Covers integral equations, Volterra and Fredholm type equations, relation to differential equations, solutions by Neumann series, Green's functions, asymptotic analysis of solutions, and perturbation techniques with eigenvalue problems. Prerequisite: admission to the MSMTH program.

**MTH 555 Loss and Risk Models (3-0-3).** Covers severity models, frequency models, aggregate models, the impacts of coverage modifications, and risk measures. Prerequisite: admission to the MSMTH program.

**MTH 560 Topology (3-0-3).** Introduces topological spaces, continuous functions and homeomorphisms. Covers connectedness, compactness, separation axioms, product and quotient topologies and metric spaces. Introduces algebraic topology: homotopy, fundamental groups, covering spaces and applications such as the Brouwer Fixed Point theorem and the Borsuk-Ulam

theorem. Prerequisite: admission to the MSMTM program.

**MTH 565 Numerical Analysis (3-0-3).** Covers interpolation, numerical evaluation of definite integrals and solution of ordinary differential equations, stability and convergence methods, and error estimates. Prerequisite: admission to the MSMTM program.

**MTH 570 Optimal Control Theory (3-0-3).** Introduces deterministic optimal control. Covers examples involving calculus of variations, optimal trajectories, and engineering control problems. Prerequisite: admission to the MSMTM program.

**MTH 595 Seminar (1-0-0).** Explores the planning, realization and presenting of research projects. Provides a unique forum for the students to discuss mathematical research and interact with the faculty. Covers a wide variety of contemporary topics from different research areas in mathematics and statistics. Discusses the requirements for preparing and writing a thesis. Graded as Pass/Fail. Prerequisite: admission to the MSMTM program.

**MTH 599 Master's Thesis (6 credit hours).** Requires completion of original research work in the field of study. Requires the thesis to be completed under the supervision of a faculty member from the department serving as thesis advisor, and a final defense to the examining committee. Graded as Pass/No Pass. Prerequisites: good academic standing and approval of department head; prerequisite/concurrent: MTH 595.

**MTH 701 Advanced Probability Theory (3-0-3).** Introduces the notion of probability spaces, random variables and random vectors, distribution functions, expectations, limit theorems and laws of large numbers, characteristic functions and their properties, exchangeability, stable laws and infinite divisibility. Covers conditional expectations and martingale theory. Prerequisite: MTH 711.

**MTH 705 Theory of Ordinary Differential Equations (3-0-3).** Discusses the existence, uniqueness, extensibility of solutions, Picard-Lindelof theorem, Peano's theorem, Kneser's theorem, flows, linear systems theory, Gronwall's inequality and differential inequalities and Floquet theory. Covers Hamiltonian systems, periodic solutions and the Poincare map, limit sets and Poincare-Bendixson theory, Sturm Liouville theory, self-adjoint boundary value problems and Green's functions, Lyapunov stability, linearization and stability, the Hartman-Grobman theorem and perturbation theory of ODEs. Prerequisite: admission to the PhD-MTH program.

**MTH 706 Analysis of Partial Differential Equations (3-0-3).** Discusses fundamental solutions and maximum principles for the Laplace equation and the Heat equation. Covers d'Alembert's solution and solution by spherical means of the wave equation. Addresses energy methods, local estimates and regularity of solutions, method of characteristics and first order PDEs, conservation laws and shocks. Discusses analytic solutions and the Cauchy Kowalewskaya theorem. Introduces Sobolev spaces, among other related topics. Prerequisite: MTH 705.

**MTH 707 Extreme Values and Financial Risk (3-0-3).** Gives probabilistic and statistical analysis of univariate and bivariate extreme value theory. Explores the fundamentals of univariate extreme value theory, the three extreme value distributions, models for univariate extremes, fundamentals of bivariate extreme value theory, and various models for bivariate extremes. Contains applications of the models to finance. Uses R software. Prerequisite: admission to the PhD-MTH program.

**MTH 710 Functional Analysis (3-0-3).** Covers Hilbert spaces, Banach spaces, dual spaces, Riesz representation theorem, Hahn-Banach theorem, open mapping theorem, and closed graph theorem. Includes principle of uniform boundedness, Banach fixed point theorem, spectral mapping theory for bounded linear operators, and compact operators. Prerequisite: admission to the PhD-MTH program.

**MTH 711 Measure Theory (3-0-3).** Covers measure spaces, outer measure, Borel measures, integration, modes of convergence, convergence theorems of Lebesgue integral, differentiation, and theory of  $L_p$ -Spaces and distribution functions. Prerequisite: MTH 710.

**MTH 715 Operator Theory (3-0-3).** Covers operators on Hilbert space, compact operators, Schatten  $p$ -classes, Hilbert-Schmidt operators, trace class operators, spectral theorem for normal operators, and spectral decomposition for compact normal operators. Includes shift operators, operator equations, commutators and norm inequalities for Hilbert space operators. Prerequisite: MTH 710.

**MTH 733 Commutative Algebra (3-0-3).** Covers prime ideals and their generalizations, integral elements, modules and matrices over commutative rings, exact sequence, primary decomposition, and Noetherian and Artinian rings. Prerequisite: admission to the PhD-MTH program.

**MTH 735 Nonlinear Algebra (3-0-3).** Focuses on topics from computational algebraic geometry and their applications. Covers Groebner bases,

resultants, solving systems of multivariate polynomials, tropical algebra, toric varieties, tensors. Introduces representation theory, invariant theory and semidefinite programming. Prerequisite: MTH 733.

**MTH 736 Multiplicative ideal theory (3-0-3).** Covers Bezout rings, valuation rings, pseudo-valuation rings, Prüfer rings, Dedekind rings, Gaussian rings, Marot rings,  $D + M$  construction, integral closure of Noetherian rings, Krull dimension, and polynomial rings:  $R[x]$ ,  $R\langle x \rangle$ , and  $R(x)$ . Prerequisite: MTH 733.

**MTH 741 Dynamical Systems and Chaos (3-0-3).** Covers stability analysis and bifurcation theory in both continuous and discrete dynamical systems. Discusses and proves center and stable manifold theorems in both continuous and discrete dynamical systems. Explores periodic solutions and their stability, forcing between periodic solutions, invariant sets, local attractors and basin of attraction, and notion of chaos theory. Prerequisite: MTH 705.

**MTH 751 Algebraic Coding Theory (3-0-3).** Covers linear codes, bounds on codes, algebraic structure of cyclic, BCH and Reed-Solomon codes, dual codes, quadratic residue codes, idempotent generators of cyclic codes, encoding and decoding algorithms of different types of codes. Employs the theory of rings and finite fields. Prerequisite: MTH 733.

**MTH 761 Algebraic Topology (3-0-3).** Introduces the field of algebraic topology through its two most basic invariants: homotopy and homology. Covers homotopy, fundamental group, functorial constructions, axioms of homology, simplicial and cellular homology, elements of homological algebra, manifolds and duality, and gives applications. Prerequisite: admission to the PhD-MTH program.

**MTH 762 Applied Topology (3-0-3).** Develops applications of algebraic topology to various fields of mathematics. Covers fundamentals of topological data analysis, like mapper and persistence homology, Morse theory, simplicial complexes, manifold theory and manifold reconstruction, as well as sheaf theory in data structures. Use computer software can be required. Prerequisite: admission to the PhD-MTH program.

**MTH 775 Computational Differential Equations (3-0-3).** Discusses numerical methods for boundary value problems and for partial differential equations. Describes the concept of differential equation and its relevance to real-life problems using a programming language or math software. Covers different schemes such as finite difference and finite element to

discretize elliptic, parabolic, and hyperbolic differential equations. Prerequisite: MTH 705.

**MTH 790 Qualifying Examination (0-0-0).** Includes written examination to test breadth of knowledge, understanding of fundamentals, and ability to perform independent research work in a specialized area of mathematics. Can only be repeated once with approval of the VPGS. Graded as Pass/Fail. Prerequisites: successful completion of at least 12 credit hours of course work, good academic standing and approval of the program coordinator

**MTH 795 Doctoral Seminar (1-0-0).** Explores planning, realizing and presenting research projects. Provides a unique forum for the students to discuss mathematical research and interact with the faculty. Covers a wide variety of contemporary topics from different research areas in mathematics and statistics. Discusses the requirements for preparing and writing a PhD dissertation. Graded as Pass/Fail. Prerequisite: admission to the PhD-MTH program.

**MTH 799 Dissertation (a minimum of 30 credit hours).** Includes the preparation, presentation and defense of the research proposal, as well as the write-up, presentation and defense of the dissertation. Graded as Pass/No Pass. Prerequisites: MTH 790, DAC appointment and approval of the program coordinator; prerequisite/concurrent: MTH 795.

## STA Statistics

**STA 501 Advanced data mining: theory and applications (3-0-3).** Covers foundation and theory of supervised and unsupervised machine learning methods including linear and logistic regressions, regularization, neural networks, support vector machines, decision trees, ensembling, k-means and hierarchical clustering, principal component analysis, Naive Bayes. Covers some related recent research topics. Requires Knowledge of probability theory and statistical inference and basic programming skills Prerequisite: approval of department head.

## TRA English/Arabic/ English Translation and Interpreting

**TRA 500 Principles and Strategies of Translation (3-0-3).** Provides advanced training in principles and strategies of translation from English to Arabic and vice versa. A variety of text types are covered, ranging from legal to journalistic genres.

**TRA 503 Theoretical Models of Translation (3-0-3).** Provides a conceptual map of translation studies and outlines the various theoretical approaches and trends that impact the practice of translation. Introduces the range of factors that govern the process of translation and the theoretical underpinnings that have motivated different attitudes to translating and translations. Requires functional knowledge of Arabic and English.

**TRA 505 Interpreting and the Profession I: Consecutive Interpreting (3-0-3).** Provides high-level training in those interpreting skills most relevant to the translator at work. Provides advanced training in liaison and consecutive interpreting with a focus on professional standards and community needs. Presents theoretical insights into the process of interpreting and places them within an overall, practice-driven model of the process.

**TRA 509 Interpreting and the Profession II: Simultaneous Interpreting (3-0-3).** Builds on TRA 505 and provides high-level training in those skills most relevant to Simultaneous Interpreting (SI), including professional standards and international conventions as well as equipment simultaneous interpreters use. Theoretical insights into the process of interpreting are presented and placed within an overall, practice-driven model of the process. Prerequisite: TRA 505.

**TRA 510 Research Methods and Academic Writing (3-0-3).** Examines academic writing conventions and research methods. Addresses quantitative and qualitative research approaches. Deals with the requirements of preparing/writing MA theses.

**TRA 512 Terminology, Arabization and the Translator (3-0-3).** Introduces the field of terminology and reviews it within the work of the translator. Explains term formation, standardization, term banks and coordination, among others. Reviews the process and problems of Arabization and its impact on translation into Arabic. Demonstrates the application of theoretical framework of terminology and Arabization on translation work.

**TRA 557 Translation of Administrative and Legal Documents (3-0-3).** Addresses the practical translation of administrative and legal documents such as contracts, certificates, court and police documents, laws, and more. Analyzes specialized and idiomatic language of administrative and legal documents in the context of translation and market requirements. Prerequisite: TRA 500.

**TRA 558 Contrastive Linguistics and Translation (3-0-3).** Deals with how English and Arabic compare and contrast at various levels of linguistic organization: phonology, morphology, syntax and semantics. Promotes a discourse pragmatic perspective, together with a functional approach to the lexico-grammar to look at the way texts are organized functionally. Requires functional knowledge of Arabic and English.

**TRA 560 Audiovisual Translation (3-0-3).** Introduces different genres of audiovisual translation. Includes the semiotic, linguistic and cultural issues involved in multimedia productions and their translation. Covers translating scripts of various cinema and TV productions into and out of Arabic and English and deals with the linguistic and cultural problems of audiovisual translation. Introduces research areas in audiovisual translation. Prerequisite: TRA 500.

**TRA 580 Translating Quranic Pragmatics (3-0-3).** Pursues three major lines of enquiry: pragmatics from a textual perspective, Arabic rhetoric (*balagha*) from a pragmatic perspective, and translation studies from the perspective of preserving textual pragmatics in translating the Holy Quran into English. Emphasizes the practical aspects and hands-on experience in dealing with sacred sensitive texts in general and the Quranic text in particular. Prerequisite: TRA 500.

**TRA 610 Intercultural Communication and Translation (3-0-3).** Addresses the interface between culture and translation in intercultural communication between Arabic and English. Examines macro and micro culture and the translational strategies used in cross-cultural communication through translation. Prerequisite: approval of department head.

**TRA 630 Practicum (0-0-0).** Provides the opportunity for practical hands-on experience in translation and/or interpreting. Involves working within a translation and/or interpreting organization and reporting back weekly to the practicum supervisor over a period of four weeks. Graded as Pass/No Pass. Prerequisite: approval of department head.

**TRA 699 Master's Thesis (6 credit hours).** Requires completion of an extended piece of individual research on a topic within translation/interpreting studies, or an extended translation (c. 5,000 words) and a commentary, chosen in consultation with the thesis faculty supervisor. Emphasis is placed on the theoretical and practical aspects of translating or interpreting. The thesis must be completed within two

consecutive academic semesters. An extension may be allowed if a candidate presents acceptable mitigating circumstances. The thesis is defended to the satisfaction of a committee. Graded as Pass/No Pass. Prerequisites: TRA 500, TRA 510, good academic standing and approval of department head.

## Special Topic Courses

### **Special Topic (1 to 4 credit hours).**

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 594 or 694 courses. The three-letter course prefix reflects the field of study of the course.

Descriptions of particular special topic courses are made available in the college during registration.

# College of Engineering

*Courses with titles in italic are available to undergraduate students in the Accelerated Master's Program (AMP). Course prerequisites must be met. For full details on the AMP, refer to the Accelerated Master's Program section of the AUS Undergraduate Catalog or [www.aus.edu/amp](http://www.aus.edu/amp).*

## **BME**      Biomedical Engineering

***BME 511 Human Anatomy and Physiology (3-0-3)***. Provides an overview of the human body structures and their functions. Covers the basic structure of cells, tissues, anatomical body organization, and several organ systems including the cardiovascular, nervous, sensory, digestive, skeletal, muscular and urinary systems. Highlights the structure-function relationships and how abnormalities in structure and/or function of tissues and organs lead to diseases. Presents engineering approaches for the diagnosis and prevention/treatment of various diseases. Prerequisite: admission to the MSBME program.

***BME 533 Microfluidics and Lab-on-a-Chip Devices (3-0-3)***. Covers liquid manipulation on the microscale and introduces the field of Lab-on-a-Chip. Includes the following topics: laminar flow inside microchannels, hydraulic circuit analysis, electric double layer, electroosmotic flow, electrowetting on dielectric and digital microfluidics. Introduces microfabrication techniques including thin film deposition, photolithography and softlithography. Prerequisite: admission to the MSBME or MSME program.

***BME 541 Biomedical Measurements and Devices (3-0-3)***. Covers biomedical sensors and transducers, signal acquisition, amplifiers and real-time biomedical signal processing, measurement of biopotentials, blood flow and pressure, chemical biosensors and clinical laboratory instrumentation. Prerequisite: admission to the MSBME program.

***BME 543 Biomedical Imaging Technologies (3-0-3)***. Introduces several medical imaging modalities, including X-ray imaging, computerized tomography, magnetic resonance imaging, ultrasound imaging and positron emission tomography. Explores the clinical applications for the medical imaging modalities. Prerequisite: admission to the MSBME program or admission to the MSCoE program.

***BME 544 Neuroengineering (3-0-3)***. Covers field potential generation, data acquisition design and electrophysiological neuroimaging. Introduces signal analysis and processing used in seizure detection

and prediction of epilepsy, quantitative assessment of brain injury and spinal cord injury. Includes prosthetics and brain machine interface. Requires basic knowledge in electronics, signals and systems. Prerequisite: admission to the MSBME program.

***BME 552 Drug Delivery (3-0-3)***. Discusses cells signaling mechanisms. Introduces the calculations of drug dosages, drug clearance and receptor binding kinetics. Explains the various ways a drug can be administered to the body, and discusses various types of drug delivery administration paths including ingestion, inhalation, surgical implantation, transdermal, intravenous injection, peritoneal, pulmonary and targeted routes. Researches different targeting techniques and drug delivery carriers. Models pharmacokinetics in the human body. Requires undergraduate-level knowledge in organic chemistry. Prerequisite: admission to the MSBME program.

***BME 561 Healthcare Operations Management (3-0-3)***. Covers topics in the application of quantitative and operations research techniques to healthcare planning, control and decision. Includes scheduling, productivity, decision making, quality management, project management, supply chain and inventory management, and financial performance. Prerequisite: admission to the MSBME program or MSSEM program.

***BME 562 Healthcare Planning and Risk Management (3-0-3)***. Covers how to plan for new or existing health services, programs or facilities. Presents role of health planner, managers, providers and governing boards. Introduces the concept of risk management in health. Provides a historical perspective on the development of healthcare risk management, the role of the healthcare risk manager, the principles of healthcare risk management and the connection between risk management, quality improvement and corporate compliance in various healthcare settings. Covers practical approaches to healthcare problems using case analysis of actual healthcare projects and programs. Requires basic knowledge in math and management. Prerequisite: approval of the program coordinator.

***BME 571 Biomechanics Engineering (3-0-3)***. Provides an overview of

musculoskeletal anatomy, the mechanical properties and structural behavior of biological tissues, and biodynamics. Includes application of stress and strain analysis to biological tissues, analysis of forces in human function and movement, energy and power in human activity, and introduces modeling viscoelasticity of tissues. Covers classification and bulk properties of implantable materials. Prerequisite: admission to the MSBME program.

***BME 572 Biomaterials Engineering (3-0-3)***. Gives students the background concepts in biology, biochemistry and medicine relating to biomaterials. Covers the fundamental classes of materials used in medicine, foreign body reactions to biopolymers, and bioceramics. Discusses the degradation of materials in a biological environment, and outlines methods used for biomaterial testing and implant sterilization. Prerequisite: admission to the MSBME program.

***BME 581 Biomedical Informatics (3-0-3)***. Presents the core concepts and methods of biomedical informatics and discusses its role in the healthcare process. Emphasizes the organization of information using computational approaches, and the impact of such approaches on patient care and biomedical research. Includes a final project that requires an in-depth examination, critique and presentation of a specific topic in biomedical informatics. Prerequisite: admission to the MSBME program or MSCoE program.

***BME 594/BME 694 Special Topic in Biomedical Engineering (1 to 4 credit hours)***. 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.

***BME 695 Seminar (1-0-0)***. Introduces research methodologies. Explores the planning and realization of research projects. Examines current research issues in engineering using case studies that emphasize the utilization of applied research in designing engineering systems. Addresses ethical issues in biomedical engineering. Graded as Pass/Fail. Prerequisite: admission to the MSBME program.

***BME 699 Master's Thesis (9 credit hours)***. Requires completion

of original research work in the field of study. Requires the thesis to be completed under the supervision of a faculty member serving as thesis advisor, and a final defense to the examining committee. Graded as Pass/No Pass. Prerequisites: approval of the program coordinator; prerequisite/concurrent: BME 695.

## BSE                      Biosciences and Bioengineering

**BSE 701 Advanced Statistical Methods (3-0-3).** Reviews univariate inferential statistics, linear, multiple and logistic regression analysis. Addresses multivariate data analysis including multivariate analysis of variance, multivariate regression analysis, principal components analysis, factor analysis, cluster analysis, discriminant analysis and structural equation modeling. Utilizes commonly used statistical software for data analysis. Requires basic knowledge in statistics. Prerequisite: approval of the program coordinator.

**BSE 703 Research Methods (2-3-3).** Reviews the tenets of research, knowledge, methods and success in research. Covers qualitative and quantitative research methods. Includes problem formulation, literature review, hypotheses formulation, proposal preparation and empirical testing techniques. Examines empirical research using experimental or descriptive research approaches. Discusses through case studies the ethical issues in biosciences and bioengineering research. Introduces active research groups working in biosciences and bioengineering. Requires basic knowledge in biology. Prerequisite: approval of the program coordinator. Lab/Tech fee rate A applies.

**BSE 711 Cell and Molecular Biology Techniques (2-3-3).** Emphasizes hands-on training in cell and molecular biology techniques used commonly in bioscience research. Practices the current methodologies in biosciences. Produce regular laboratory reports and attend research seminars presented by faculty and contribute in the form of questions/discussion. Requires basic knowledge in biology. Prerequisite: approval of the program coordinator. Lab/Tech fee rate A applies.

**BSE 712 Advanced Biological Systems Modeling (3-0-3).** Reviews physiological functions. Applies engineering concepts to the transport and kinetic processes in the body, such as blood viscosity, heat transfer, drug concentration and biological

membranes. Details mathematical models used to design artificial kidneys and lungs. Requires knowledge in anatomy and physiology. Prerequisite: approval of the program coordinator.

**BSE 713 Biomicrofluidics (3-0-3).** Provides an overview of the field of biomicrofluidics and Lab on a Chip devices. Introduces microfabrication and fluid manipulation on the microscale. Covers advantages of microfluidics and its biological applications including assisted reproduction technology, point of care diagnostics, tissue engineering and organ on a chip, single cell analysis, and cellular mechanobiology. Requires basic knowledge in human anatomy and physiology. Prerequisite: approval of the program coordinator.

**BSE 714 Directed Readings and Academic Presentation (3-0-3).** Introduces various research areas in biosciences and bioengineering. Covers scientific paper readings. Critiques current research on varied disciplinary in biosciences and bioengineering. Stimulates peer discussions in the form of seminars, journal clubs, and poster and oral presentations. Requires basic knowledge in biology. Prerequisite: approval of the program coordinator.

**BSE 721 Medical Biotechnology (3-0-3).** Provides skills in biomedical science and medical biotechnology with the overall aim of understanding, treating and curing human disease. Combines skills of legislation, regulation and quality control systems for the respective industries. Covers biotechnology as it applies to medicine and medical research, molecular mechanisms underlying diseases. Emphasizes research and medical-related biotechnology methods and laboratory procedures. Requires basic knowledge in human anatomy and physiology. Prerequisite: approval of the program coordinator.

**BSE 722 Advanced Immunology (3-0-3).** Covers advanced topics in immunology such as the molecular basis of immune recognition, regulation of the immune response, mechanisms of host response against infectious pathogenic agents, immunologic tolerance, transplantation, vaccine design, autoimmunity, immunodeficiency and cancer immunology. Focuses on immunological concepts and techniques applicable to research in immunology and related fields. Requires basic knowledge in biology. Prerequisite: approval of the program coordinator.

**BSE 723 Current Issues in Biomedical Sciences (3-0-3).** Introduces current issues in biomedical science and the mechanisms by which they are communicated within the

scientific community. Covers literature searching, analyzing and evaluating published journal articles and web-based material. Offers an opportunity to attend research seminars presented by faculty. Encourages participation by critiquing presented literature. Basic knowledge in anatomy and physiology. Prerequisite: approval of the program coordinator.

**BSE 724 Human Molecular Genetics (3-0-3).** Emphasizes the structure of genomes and genes and the function of their products at a molecular level. Deals with the impact of mutations on the aetiology of various human genetic disorders. Examines how classical genetics and molecular biology have been applied to understanding inherited human disorders. Provides an advanced understanding of the genetic basis of human disease. Covers genetic engineering and DNA technologies including DNA amplification by PCR, nucleic acid hybridization and DNA sequencing. Requires basic knowledge in biology. Prerequisite: approval of the program coordinator.

**BSE 725 Advanced Neuroscience (3-0-3).** Provides in depth theoretical knowledge about contemporary neuroscience at the cellular and systems level, as well as exposure to modern neuroscience methods. Covers different neuronal cell types and their functional significance, electrical and biophysical properties of membranes and receptors, synaptic transmission, sensory perception, and movement. Focuses on physiological and anatomical studies of the mammalian nervous system as well as behavioral studies of animals and humans. Requires basic knowledge in anatomy and physiology. Prerequisite: approval of the program coordinator.

**BSE 726 Human Parasitology (3-0-3).** Covers the full spectrum of medical parasitology including topics such as biology of pathogens, epidemiology, routes of infection, life cycles, symptoms, diseases, differential diagnostics, laboratory diagnostics and treatments. Focuses on the medical relevance of parasites, including risks of infection, travel medicinal aspects and microscopy. Requires basic knowledge in biology. Prerequisite: approval of the program coordinator.

**BSE 731 Artificial Intelligence in Medicine (3-0-3).** Introduces the use of artificial intelligence and machine learning techniques in biosciences and medicine. Covers the following topics: linear regression, logistic regression, support vector machines, neural networks, deep neural networks, autoencoders, denoising autoencoders, recurrent networks and clustering. Requires a background in



programming, linear algebra and statistics. Prerequisite: approval of the program coordinator.

**BSE 732 Biorobotics and Medical Devices (3-0-3).** Focuses on bioinspired robotics. Presents the models of the human brain, human intelligence, muscle-skeletal systems, and perceptual systems that are relevant in biorobotics. Introduces the principles and design tools of bioinspiration and biomimetics in robotics. Covers fundamental concepts, muscle-skeleton mechanics and neural control, and examples of bio-inspiration in robots and rehabilitation devices. Requires basic knowledge in anatomy and physics. Prerequisite: approval of the program coordinator.

**BSE 733 Advanced Biomaterials and Synthetic Biology (3-0-3).** Covers state of the art molecular tools to redesign biological systems using engineering tools. Describes the systems-level understanding of cellular networks. Explores applications of synthetic biology towards the development of advanced biomaterials. Covers current molecular techniques used in synthetic biology. Focuses on applications of synthetic biology in the development of bio-based materials. Develops skills to formulate systems-based hypotheses and write scientific research proposals. Requires basic knowledge in biology, chemistry and physics. Prerequisite: approval of the program coordinator.

**BSE 734 Human Augmentation (3-0-3).** Covers alternative human augmentation for treating certain diseases and for the enhancing performance of healthy people. Includes brain-computer interface, electroceuticals and stimulation, cognitive enhancement and contemporary research topics on human augmentation. Requires basic knowledge in anatomy, physiology and linear algebra. Prerequisite: approval of the program coordinator.

**BSE 735 Advanced Biomedical Signal and Image Processing (3-0-3).** Covers advanced biomedical signal and image processing techniques including data acquisition, filtering, reconstruction, segmentation, registration, and multimodal data fusion on different biomedical signals and imaging modalities including electroencephalogram (EEG), electrocardiography (ECG), and imaging modalities. Provides practical experience using software toolboxes in processing biomedical signals and images with examples from clinical applications. Requires basic knowledge in biology. Prerequisite: approval of the program coordinator.

**BSE 736 Healthcare Technology Innovation, Management and Transfer (3-0-3).** Covers leading and emerging topics in healthcare management and technology to respond to ongoing growth and implications for future innovations. Topics include recent trends in healthcare, innovation, leadership, technology transfer strategies, value in healthcare, data analytics, healthcare efficiency and sustainability in healthcare. Requires basic knowledge in calculus. Prerequisite: approval of the program coordinator.

**BSE 790 Qualifying Examination (0-0-0).** Includes written and oral parts to test breadth of knowledge, understanding of fundamentals, and ability to perform independent research work in biosciences and bioengineering. Can only be repeated once with approval of the VPRGS. Graded as Pass/Fail. Prerequisites: completion of 12 credit hours including BSE 701 and BSE 703, good academic standing and approval of the program coordinator.

**BSE 794 Special Topics in Biosciences and Bioengineering (3-0-3).** Presents a theoretical or practical topic proposed by the faculty beyond what is offered in existing courses. Prerequisites: approval of the program coordinator and topic specific. Lab/Tech fee may apply.

**BSE 795 Doctoral Seminar (1-0-0).** Provides a unique discussion forum for all doctoral students to interact with a diverse group of faculty from different departments and with outside presenters. Encompass a wide variety of pertinent topics from different biosciences and bioengineering research areas. Graded as Pass/Fail. Prerequisite: approval of the program coordinator.

**BSE 799 Dissertation (a minimum of 30 credit hours).** Includes the preparation, presentation and defense of the research proposal, as well as the write-up, presentation and defense of the dissertation. Graded as Pass/No Pass. Prerequisites: BSE 790, DAC appointment and approval of the program coordinator.

## CHE

## Chemical Engineering

**CHE 510 Transport Phenomena (3-0-3).** Covers mechanisms of molecular transport; momentum, heat and mass transport analyses; shell balances and the equations of change; mathematical solutions using separation of variables, Laplace transform and similarity solutions for solving PDEs; dimensional analysis; flow of inviscid fluids and potential flow of heat in solids; boundary-layer theory. Requires background in chemical engineering. Prerequisite: approval of the department head.

**CHE 511 Advanced Chemical Engineering Thermodynamics (3-0-3).** Investigates advanced concepts in thermodynamics. Includes in-depth study of the following topics: fundamental laws of thermodynamics, equations of state, property relations for pure materials and mixtures, phase equilibria and intermolecular forces. Requires background in engineering thermodynamics. Prerequisite: approval of the department head.

**CHE 512 Advanced Kinetics and Reactor Design (3-0-3).** Covers the following principles of chemical reaction and reactor analysis and design: non-elementary reaction kinetics, deviations from ideal reactor performance, fundamentals of catalytic chemical reactions, coupled chemical kinetics and transport phenomena in fluid-solid reaction systems, heterogeneous non-isothermal reactor design, design and analysis of multiphase chemical reactors, dynamics and stability of heterogeneous chemical reaction systems. Requires background in undergraduate reaction engineering. Prerequisite: approval of the department head.

**CHE 594/CHE 694 Special Topic in Chemical Engineering (1 to 4 credit hours).** 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.

**CHE 610 Catalysis and Reaction Engineering (3-0-3).** Introduces the fundamental concepts underlying catalytic processes and their application in reactor design. Covers the following topics: molecular theories of adsorption and surface reactions on catalysts; catalyst characterization techniques; transport in catalysts and shape selective catalysts; and applications in fixed-bed catalytic reactors, fluidized bed reactors and multiphase reactors. Prerequisite: admission to the MSChE program.

**CHE 611 Biomedical Engineering and Biotechnology (3-0-3).** Explores chemical engineering concepts related to the human body. Covers the following topics: body material balances, blood properties and rheology, circulatory dynamics, neuroprosthetics, body heat exchange, body thermoregulation, heat transfer in tumors, pharmacokinetic models, non-invasive imaging, orthopedics, biomaterials, membrane transport, tissue engineering and drug delivery systems. Assumes a basic understanding of physiological functions. Prerequisite/concurrent: CHE 510.

**CHE 613 Advanced Materials Science (3-0-3).** Introduces advanced materials for engineers, emphasizing process-structure-property relations and strengthening of materials, phase transformations and mechanical properties. Covers concepts in materials science, engineering and technology dealing with traditional and advanced materials, surface science and engineering, fabrications and processing of engineering materials, evaluation and standards. Requires undergraduate background in material science. Prerequisite: approval of the department head.

**CHE 614 Environmental Engineering (3-0-3).** Provides a review of fundamentals, applied knowledge and recent advances in environmental engineering. Covers the following topics: causes of environmental pollution; environmental regulations; mass and energy balance for environmental systems under steady state and transient conditions; and contaminant transport in air, water and solids. Focuses on microbiology and reaction kinetics related to the environment and the application of environmental principles to water and wastewater treatment, air pollution control and solid waste management. Prerequisite: admission to the MSChE program.

**CHE 615 Particle Technology and Fluidization (3-0-3).** Covers advanced topics in particle technology and fluidization. Includes the following topics: particle processing technology and characterization, design of fluidized beds, unit operations used to process powders and particles, and operations to modify particle properties. Requires background in fluid flow. Prerequisite: approval of the department head.

**CHE 695 Seminar (1-0-0).** Introduces research methodologies. Explores the planning and realization of research projects. Examines current research issues in engineering using case studies that emphasize the utilization of applied research in designing engineering systems. Graded

as Pass/Fail. Prerequisite: admission to the MSChE program.

**CHE 698 Professional Project (3 credit hours).** Requires an approved professional project on selected area of chemical engineering for completion of the MS degree. Includes development of the project concept, investigation of needs, initial data collection and assembly of written and field materials necessary to conduct a professional project, as well as exploration of alternative means to conduct the project. Requires a report and final presentation to the examining committee. Graded as Pass/No Pass. Prerequisites: good academic standing and approval of the department head; prerequisite/concurrent: CHE 695.

**CHE 699 Master's Thesis (9 credit hours).** Requires completion of original research work in the field of study. Requires the thesis to be completed under the supervision of a faculty member serving as thesis advisor, and a final defense to the examining committee. Graded as Pass/No Pass. Prerequisites: good academic standing and approval of the department head; prerequisite/concurrent: CHE 695.

## CMT Construction Management

**CMT 500 Management of Construction Projects (3-0-3).** Covers both the fundamental concepts and the contemporary applications of construction management. Covers construction contracts, bidding, delivery methods, construction funding, changes, claims, disputes, productivity, ethics and safety. Covers the development of project execution plans. Utilizes digital data communication tools and software to manage construction projects. Provides the opportunity to simulate real-life construction management problems and apply acquired skills in their solution through case studies and team projects. Prerequisite: admission to the MSCM program.

**CMT 510 Construction Automation (3-0-3).** Introduces automation technology in construction and the built environment, including all stages of the construction project life cycle, design, construction, operation and maintenance. Reviews computer aided engineering and design tools. Evaluates robot-oriented design and smart systems integration, assesses modular construction and efficiency techniques, and building management systems. Project-based learning (PBL) techniques are used. Prerequisite: admission to the MSCM program.

**CMT 520 Advanced Construction Scheduling (3-0-3).** Covers the application of planning, scheduling and control techniques critical to the success of construction projects, resource allocation and leveling, time-cost optimization, project monitoring, updating and control, stochastic scheduling, contractual implications of construction schedules, analysis of time-related change orders and delays, schedule diagnostics, and advanced use of construction planning and scheduling software. Employs case studies from the construction industry. Prerequisite: admission to the MSCM program or MSCE program.

**CMT 600 Cost Analysis and Control (3-0-3).** Discusses different types of estimating techniques in relation to various stages in a construction project. Covers productivity analysis, measurement of progress and techniques of cost control; responsibilities of different personnel in different aspects of cost control; the relationship between the degrees of accuracy of an estimate and the different stages of the construction project; and cost control, starting from the conceptual stage through the end of construction. Uses case studies to demonstrate the key concepts of cost analysis and control. Prerequisite: admission to the MSCM program.

**CMT 610 Building Information Modeling (3-0-3).** Provides a thorough review of the concept of BIM and the development of digital programs principles and processes. Explores benefits, costs, risks and currently unsolved challenges in the area of BIM for developing client-facing integrated project information systems. Introduces Revit Architecture, BIM clash detections, basic technical product modelling and interoperability issues. Explores BIM as a driving force for innovation and sustainability. Prerequisite: admission to the MSCM program.

**CMT 620 Construction Project Risk Management (3-0-3).** Covers the application of project risk and procurement planning, monitoring and control techniques critical to the success of construction projects, risk management strategy, risk identification, risk qualitative assessment, risk quantitative assessment, procurement planning, risk response planning, risk and procurement execution process, risk monitoring and control, procurement monitoring and control, closing risk and procurement, and use of risk analysis software. Employs case studies from the construction industry. Prerequisite: admission to the MSCM program.

**CMT 630 Construction Contracting (3-0-3).** Covers the set of skills, knowledge and conceptual tools needed to successfully own or manage a construction company, as well as to undertake construction projects. Covers construction company ownership and organization, the bid process, bid documents, construction contracts, bonds and insurance, business methods, project management and administration, and construction ethics. Employs case studies from the construction industry. Prerequisite: admission to the MSCM program.

**CMT 640 International Construction (3-0-3).** Covers various topics in international construction, including contracts, financial issues, financing options, cultural differences, legal considerations, negotiation strategies, international trade agreements, and project delivery systems. Uses case studies to supplement the course materials. Prerequisite: admission to the MSCM program.

**CMT 650 Sustainable Infrastructure Management (3-0-3).** Covers the following topics: sustainable infrastructure, planning for sustainable infrastructure projects, environmental and social impact assessment, life cycle assessment, economic and financial analysis, design and construction, asset management, operation and maintenance for infrastructure, smart technologies for infrastructure, risk management and disaster preparedness for critical infrastructure. Prerequisite: admission to the MSCM program.

**CMT 660 Sustainable Development and Construction (3-0-3).** Discusses the construction industry within its multinational component. Analyzes the impact of construction activity worldwide and bridges the knowledge gap with sustainable development concepts and national economic indicators. Explains the difference between economic growth and economic development. Addresses the nature of construction projects and its influence on industry. Examines national competitiveness, human capital, labor markets, environmental outlook and future policies. Introduces the industry's importance in improving the human condition. Prerequisite: admission to the MSCM program.

**CMT 665 Construction Safety Management (3-0-3).** Covers safety and health concerns in the construction worksite. Concentrates on safety process development and management in construction. Provides a comprehensive background in worksite hazard assessment, safety and health program development, and risk management in the construction

industry. Prerequisite: admission to the MSCM program.

**CMT 670 Construction Equipment Management (3-0-3).** Covers both the conceptual and quantitative methods in selecting and managing construction equipment. Analyzes various types of construction equipment including earthmoving equipment, lifting and loading equipment, equipment used in concrete and asphalt construction. Covers equipment selection, economic analysis, ownership and operating costs, depreciation, replacement studies. Includes use of simulation to optimize equipment selection. Prerequisite: admission to the MSCM program.

**CMT 698 Professional Project (3 credit hours).** Requires completion of an approved professional project on a selected area of construction management. Requires demonstration of the ability to integrate the information and skills accumulated through rigorous written and oral communication. Requires a report and final presentation to the examining committee. Graded as Pass/No Pass. Prerequisites: good academic standing and approval of the program coordinator.

**CMT 699 Master's Thesis (9 credit hours).** Requires completion of original research work in the field of study. Requires the thesis to be completed under the supervision of a faculty member serving as thesis advisor, and a final defense to the examining committee. Graded as Pass/No Pass. Prerequisite: good academic standing and approval of the program coordinator.

## COE Computer Engineering

**COE 505 Cloud Computing Infrastructure (3-0-3).** Presents the theoretical and practical aspects of cloud computing. Covers key topics including web services, large-scale infrastructure management, business continuity and security. Examines frameworks, techniques and existing solutions that support the key characteristics of cloud computing such as elasticity, resource pooling and on-demand self-service. Studies recent research challenges in cloud computing infrastructure such as scheduling, fault tolerance and security. Requires undergraduate-level knowledge of object-oriented programming. Prerequisites: admission to the MSCoE program and approval of the department head.

**COE 530 Advanced Computer Networks (3-0-3).** Focuses on advanced topics in computer networking and performance modeling. Covers the following: performance modeling and simulation, congestion control and quality of service (QoS) techniques, overview of computer networks security, and recent advances in computer networks. Requires undergraduate-level knowledge of computer networks. Prerequisites: admission to the MSCoE program and approval of the department head.

**COE 533 Advanced Computer Architecture (3-0-3).** Covers techniques of quantitative analysis and evaluation of modern computing systems. Emphasizes the major component subsystems of high-performance computers: pipelining, instruction level parallelism, memory hierarchies, input/output and network-oriented interconnections. Requires an undergraduate course in computer architecture. Prerequisites: admission to the MSCoE program and approval of the department head.

**COE 545 Modeling and Testing in Software Engineering (3-0-3).** Explores the modelling of system requirements using formal specification techniques and languages. Covers finite state automata, extended, timed and untimed state machines, labeled transition systems, and Petri nets. Covers advanced software and system testing methods focusing on black-box and white-box testing, and test derivation and optimization using reinforcement learning, genetic algorithms and simulated annealing. Explores current research trends in selected topics from incremental testing, smart-space testing, machine learning algorithms for testing and/or fault diagnosis. Requires undergraduate-level knowledge of software engineering, design and testing. Prerequisite: approval of the department head.

**COE 555 Cyber Security (3-0-3).** Covers advanced topics in cyber security, including information security and risk management, disaster recovery planning, operations security, access control, applied cryptography and public key infrastructure, network security, and laws and regulations in computer security. Requires an undergraduate course in networking and computer security. Prerequisites: admission to the MSCoE program and approval of the department head.

**COE 570 Big Data and Analytics (3-0-3).** Covers the end-to-end process for big data analytics including Extract-Transform-and-Load (ETL), descriptive analytics, supervised and un-supervised learning methods, deep

learning, and big data storage and clustering ecosystems. Includes model evaluation techniques. Requires undergraduate-level knowledge of statistics and programming Prerequisite: approval of the department head.

**COE 594/COE 694 Special Topic in Computer Engineering (1 to 4 credit hours).** 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.

**COE 630 Wireless Networks (3-0-3).** Explores advanced concepts in wireless networking and mobile communications. Covers recent technologies and trends in signal propagation, wireless local area networks, cellular networks, vehicular networks, sensor networks, wireless personal-area networks, low-power wide-area networks, Internet of Things, cognitive radio and mobility management. Requires undergraduate-level knowledge of computer networks. Prerequisite: approval of the department head.

**COE 632 Advanced Database Systems (3-0-3).** Covers the following advanced topics in database systems: file structures, indexing techniques, query processing and optimization, concurrency control and backup and recovery Extensible Markup Language (XML) databases and languages, and mobile databases and data mining. Covers advanced database concepts such as parallel and distributed databases, transaction management, commit protocols and replicated databases. Requires an undergraduate course in database systems. Prerequisites: admission to the MSCoE program and approval of the department head.

**COE 636 Advanced Multicore and GPU Computing (3-0-3).** Covers software development on multicore systems and many-core systems, including CPUs, GPUs and hybrid systems. Covers performance metrics and performance prediction of parallel algorithms. Examines models of parallel computation and associated software architectures such as master-worker, pipelining, data-flow and streaming. Studies advanced load-balancing mathematical models and algorithms. Uses selected applications as case-studies as well as state-of-the-art software tools such as CUDA and OpenCL. Requires operating systems background and basic Linux/Unix experience. Prerequisites: admission to the MSCoE program and approval of the department head.

**COE 637 Advanced Machine Learning and Data Mining (3-0-3).** Presents the principles of machine

learning and data mining. Covers key topics including data preparation and visualization, supervised and unsupervised learning, experimental validation and model interpretation. Examines various techniques from decision trees and rule induction to probabilistic methods and regression as well as association mining and clustering. Studies examples of data mining applications using state-of-the-art software such as R or Weka. Requires undergraduate-level knowledge of statistics and programming. Prerequisites: admission to the MSCoE program and approval of the department head.

**COE 639 Digital Video Compression (3-0-3).** Covers the theory and applications of digital video compression. Introduces lossless and lossy compression algorithms. Covers transform coding. Introduces international compression standards such as JPEG and MPEG. Examines digital video transcoding and error resiliency. Requires undergraduate-level courses in statistics and probabilities, and C/C++ programming. Prerequisites: admission to the MSCoE program and approval of the department head.

**COE 695 Seminar (1-0-0).** Introduces research methodologies. Explores the planning and realization of research projects. Examines current research issues in engineering using case studies that emphasize the utilization of applied research in designing engineering systems. Graded as Pass/Fail. Prerequisite: admission to the MSCoE program.

**COE 698 Professional Project (3 credit hours).** Requires an approved professional project on selected area of computer engineering for completion of the MS degree. Includes development of the project concept, investigation of needs, initial data collection and assembly of written and field materials necessary to conduct a professional project, as well as exploration of alternative means to conduct the project. Requires a report and final presentation to the examining committee. Graded as Pass/No Pass. Prerequisites: good academic standing and approval of the department head; prerequisite/concurrent: COE 695.

**COE 699 Master's Thesis (9 credit hours).** Requires completion of complete original research work in the field of study. Requires the thesis to be completed under the supervision of a faculty member serving as thesis advisor, and a final defense to the examining committee. Graded as Pass/No Pass. Prerequisites: good academic standing and approval of the

department head;  
prerequisite/concurrent: COE 695.

## CVE Civil Engineering

**CVE 520 Sustainable Construction and Methods (3-0-3).** Covers several emerging sustainable constructions that have impact on new and existing infrastructures. Introduces design concepts related to advanced composites by combining two or more new materials including advanced concrete material, fiber reinforced material and advanced steel. Covers principles and applications of building and heavy construction methods including safe formwork, sustainable/green concrete and methods for the built environment. Requires an undergraduate course on reinforced concrete design or equivalent course. Prerequisites: admission to the MSCE program or MSCM program, and approval of the department head.

**CVE 521 Finite Element Method for Solids and Structures (3-0-3).** Introduces the theory and application of modern structural analysis. Emphasizes finite element formulations for truss, frame, plane stress, plane strain and axisymmetric problems. Covers variational principles and isoparametric formulation. Introduces fundamentals of nonlinear analysis concepts. Covers computer modeling and practical analysis of large structural systems. Requires undergraduate courses on theory of structures or mechanical design or equivalent. Prerequisites: admission to the MSCE program and approval of the department head.

**CVE 522 Advanced Water Resources Engineering (3-0-3).** Presents advanced hydrologic and hydraulic principles in planning, modeling and designing storage, irrigation, drainage, flood control and related water resource facilities. Covers the following topics: unsteady and non-uniform flow, conveyance channels and spillways, control and diversion structures, outlet works, energy dissipation, hydraulic machinery, flow measurements and reservoir hydraulics. Employs applicable case studies. Requires background in water resources engineering. Prerequisite: admission to the MSCE program and approval of the department head.

**CVE 524 Design of Strengthened Concrete Structures (3-0-3).** Covers basic mechanics of composites. Introduces different strengthening methods for existing reinforced and prestressed concrete structures. Covers general design philosophies using relevant codes; strengthening of structural elements in flexure, shear, axial and combined loadings;

emphasizes the use of computers in the analysis and design of concrete structures strengthened with composites. Requires an undergraduate course on reinforced concrete design. Prerequisites: admission to the MSCE program and approval of the department head.

**CVE 525 Structural Earthquake Engineering (3-0-3).** Introduces structural dynamics of single and multi-degree-of-freedom (SDOF/MDOF) systems. Provides an overview of how earthquake causes and effects are traced from source to structure, as well as features and representations of strong ground motion. Presents pseudo-static and dynamic nonlinear analyses for quantifying the response of structural systems and components. Explores estimating structural damage and hysteretic damping from inelastic deformations and rotations. Covers assessments of structural integrity and stability during seismic events. Introduces performance-based earthquake engineering (PBEE), incremental dynamic analysis (IDA) and structural fragility relationships. Requires background in dynamics, structural analysis and ODE. Prerequisites: admission to the MSCE program and approval of the department head.

**CVE 526 Advanced Structural Steel Design (3-0-3).** Covers behavior and design of connections and members used in steel and composite structures including bolted and welded connections under shear and combined forces; simple shear connections, partially restrained and fully restrained moment connections; composite beams, composite columns, and built-up plate girders. Introduce seismic provisions for design of steel structures. Requires background in structural steel design. Prerequisites: admission to the MSCE program and approval of the department head.

**CVE 527 Optimization Techniques for Civil Engineering Systems (3-0-3).** Introduces operations research (OR) techniques and their applications in civil engineering systems. Focuses on network problem, transportation models, formulation of standard assignment problems, and shortest path models. Includes the use of software packages for solving Operations Research problems. Prerequisite: admission to the MSCE program.

**CVE 531 Dynamics of Machine Foundations (3-0-3).** Introduces industrial machines, dynamic loads on foundations and types of foundations for industrial machines. Reviews major laboratory and field tests for evaluation

of dynamic properties of soils. Introduces calculation of stiffness and damping coefficients for vertical, horizontal and coupled modes of vibrations. Covers design of shallow and deep foundations of vibrating machines and shock producing machines, and base isolation systems. Prerequisite: admission to the MSCE program.

**CVE 551 Wastewater Treatment (3-0-3).** Covers wastewater characterization; different stages in wastewater treatment; preliminary, primary, secondary and tertiary treatment of wastewater; sludge treatment and disposal; small wastewater treatment systems; ecological wastewater treatment systems; and site visits to wastewater treatment plant(s). Prerequisite: admission to the MSCE program.

**CVE 572 Satellite Remote Sensing (3-0-3).** Covers the concepts of satellite remote sensing, spectral reflectance, electromagnetic radiation, aerial photography, image interpretation and analysis, image enhancement, land observation satellite systems, filtering, image rectification, land use/land cover mapping, and examples of case studies in civil engineering and urban planning. Prerequisite: admission to the MSCE or MSCM or MUP programs.

**CVE 594/CVE 694 Special Topic in Civil Engineering (1 to 4 credit hours).** 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.

**CVE 621 Analysis and Design of Tall Buildings (3-0-3).** Develops design strategies for tall buildings. Covers the following topics: structural analysis of tall buildings subjected to gravity and lateral loads; wind and earthquake loads determination based on design codes; differential shortening effects and column length corrections; stability of tall buildings and P-Delta effects. Introduces wind-tunnel techniques, progressive collapse resistance design and structural fire resistance design. Emphasizes the use of computer methods and modeling techniques for tall buildings. Requires background in reinforced concrete and structural steel design. Prerequisites: admission to the MSCE program and approval of the department head.

**CVE 622 Physical and Chemical Processes in Water Treatment (3-0-3).** Explores theoretical and engineering aspects of chemical and physical phenomena and processes applicable to the removal of impurities from water. Includes advanced analysis

and design of water treatment processes. Covers the following topics: mixing, mass transfer, chemical kinetics, oxidation-reduction, separation processes, disinfection, emerging contaminants and water reuse. Requires background in environmental engineering including water treatment. Prerequisites: admission to the MSCE program and approval of the department head.

**CVE 624 Advanced Geotechnical Engineering (3-0-3).** Covers advanced field investigation techniques and their use in geotechnical engineering problems. Includes topics of excavation support and retention systems, advanced cases of shallow and deep foundation, foundation for special cases, and tests for deep foundation under static vertical and lateral loads. Requires undergraduate courses in soil mechanics and foundation engineering. Prerequisites: admission to the MSCE program and approval of the department head.

**CVE 625 Highway Bridge Design (3-0-3).** Presents a modern approach to highway bridge design based on the American Association of State Highway and Transportation Officials (AASHTO), load factor resistance design (LRFD), and bridge design specifications. Covers identification of bridge components, classification of bridges, bridge loading, structural analysis, influence lines and envelopes, deck slab design, composite steel girder design and prestressed concrete girder design. Requires background in reinforced concrete and structural steel design. Prerequisites: admission to the MSCE program and approval of the department head.

**CVE 626 Bridge Management Systems (3-0-3).** Presents an approach to performance-based assessment of highway bridges for planning, programming and overall management of a transportation network. Course topics include bridge management modules with emphasis on inspection, structure condition assessment, load rating and decision-making process. Requires background in reinforced concrete and structural steel design. Prerequisites: admission to the MSCE program and approval of the department head.

**CVE 630 Designing with Geosynthetics (3-0-3).** Addresses various types of geosynthetics for geotechnical engineering. Covers physical and engineering properties of the geosynthetic materials, their applications and testing methods. Includes design of reinforced soil retaining walls and slopes, embankments on reinforced soft soils, geosynthetics applications in foundations, reinforced base and

subgrade support, and applications in drainage and filtration. Requires undergraduate-level knowledge of soil mechanics. Prerequisites: admission to the MSCE program and approval of the department head.

**CVE 651 Biological Treatment Process Control (3-0-3).** Presents bacterial growth kinetics in wastewater, biochemical oxygen demand (BOD) tests for wastewater treatment; design and control of activated sludge with nitrification process; determination of wastewater treatment process performance criteria and monitoring methods; nutrient removal and recovery; and aeration in water. Includes evaluation of wastewater treatment plant efficiency through sampling and testing of process parameters. Introduces the use of software in modeling wastewater treatment plant. Requires undergraduate course(s) on wastewater treatment or equivalent course(s). Prerequisites: admission to the MSCE program and approval of the department head.

**CVE 695 Seminar (1-0-0).** Introduces research methodologies. Explores the planning and realization of research projects. Examines current research issues in engineering using case studies that emphasize the utilization of applied research in designing engineering systems. Graded as Pass/Fail. Prerequisite: admission to the MSCE program.

**CVE 698 Professional Project (3 credit hours).** Requires an approved professional project on selected area of civil engineering for completion of the MS degree. Includes development of the project concept, investigation of needs, initial data collection and assembly of written and field materials necessary to conduct a professional project, as well as exploration of alternative means to conduct the project. Requires a report and final presentation to the examining committee. Graded as Pass/No Pass. Prerequisites: good academic standing and approval of the department head; prerequisite/concurrent: CVE 695.

**CVE 699 Master's Thesis (9 credit hours).** Requires completion of original research work in the field of study. Requires the thesis to be completed under the supervision of a faculty member serving as thesis advisor, and a final defense to the examining committee. Graded as Pass/No Pass. Prerequisites: good academic standing and approval of the department head; prerequisite/concurrent: CVE 695.

## ELE Electrical Engineering

**ELE 540 Principles of Digital Communications (3-0-3).** Reviews probability concepts and random processes. Covers representation of bandpass signals and systems, baseband and bandpass digital modulation schemes, memory-less and memory-based modulation schemes, power spectral density calculations, optimum receiver design and performance analysis over AWGN, and optimum detection in presence of uncertainty. Prerequisites: admission to the MSEE program and approval of the department head.

**ELE 542 Applied Electromagnetics (3-0-3).** Explores concepts and applications of Maxwell's equations for electromagnetism. Topics covered include Maxwell's equations, boundary conditions, power flow, wave equation and its solutions, plane wave propagation and polarization, reflection and transmission, auxiliary potentials, theorems of field calculations (uniqueness, image, reciprocity, duality and equivalence), transmission lines, waveguides, and antennas and radiation. Prerequisite: admission to the MSEE program.

**ELE 543 Analog Integrated Circuits Design (3-0-3).** Covers analysis and design of advanced integrated circuits. Explores topics such as device modeling, circuit layout, current mirrors, amplifiers design, noise analysis, bandgap voltage reference, opamp and OTA design, and filter circuits. Requires undergraduate-level knowledge in the area of electronic circuits. Prerequisites: admission to the MSEE program and approval of the department head.

**ELE 544 Advanced Signal Processing (3-0-3).** Explores topics such as signal representation and system response, signal sampling and reconstruction, convolution, transfer function and system characteristics, digital filter design and realization, adaptive filters, spectral analysis, multirate signal processing, MMSE filters and array signal processing. Prerequisite: admission to the MSEE or MSBME or MSMTR programs.

**ELE 545 Power System Operation and Control (3-0-3).** Introduces economic operation, and unit commitment of power systems. Covers modeling of system components and control equipment, automatic control of generation and frequency regulation, and aspects of interconnected operation. Prerequisite: admission to the MSEE program.

**ELE 547 Distributed Energy Resources in Smart Grids (3-0-3).** Covers operation, modeling, economics, and planning of different distributed energy resources such as dispatchable generation systems, photovoltaic energy systems, wind energy systems, energy storage systems, and electric vehicles. Includes introduction to smart grid, microgrids, and demand response concepts. Prerequisite: admission to the MSEE program.

**ELE 548 Photovoltaic Energy Systems (3-0-3).** Covers the following topics: physical and technological principles of photovoltaic (PV) energy systems, solar energy resources, assessment and measurement techniques for available insolation, components of on-grid and off-grid PV systems, power electronics converters for PV systems and cost assessment of PV systems. Requires undergraduate-level background in electronics and power. Prerequisites: admission to the MSEE program and approval of the department head.

**ELE 549 Optimization in Electrical Engineering (3-0-3).** Covers principles of building optimization models for real world engineering applications; methods for solving linear and nonlinear programming optimization problems in different electrical engineering fields; theory and methods for the solution of integer and mixed-integer programming optimization problems applied to electrical power and communication applications; sensitivity analysis; and introduction to heuristic optimization applications to electrical engineering. Requires undergraduate-level knowledge of calculus and linear algebra. Prerequisites: admission to the MSEE program and approval of the department head.

**ELE 594/ELE 694 Special Topic in Electrical Engineering (1 to 4 credit hours).** Presents a theoretical or practical topic proposed by the faculty beyond what is offered in existing courses. Can be repeated for credit. Prerequisites: admission to the MSEE program and topic specific. Lab/Tech fee may apply.

**ELE 641 Advanced Microwave Engineering (3-0-3).** Explores concepts related to microwave engineering and its applications. Topics covered include transmission-line theory, microstrip lines, Smith charts, impedance matching, microwave network analysis, microwave amplifiers, microwave filters, power dividers, radar systems and microwave radiometry, microwave measurements and calibration, and simulations using CAD tools. Requires an undergraduate course in electromagnetics.

Prerequisites: admission to the MSEE program and approval of the department head.

**ELE 644 Dynamics and Control of Electrical Drives (3-0-3).** Covers dynamic models of DC and AC machines, torque and speed control of DC motors, PWM inverters, scalar control, field-oriented control, and direct flux/torque control of induction motors. Prerequisite: admission to the MSEE program.

**ELE 645 High Voltage Engineering (3-0-3).** Covers the following topics: destructive and non-destructive testing of power system components; breakdown mechanism of gas, liquid and solid insulating materials; generation and measurement of high-voltage AC; and DC and impulse voltages and non-destructive testing such as surface and internal discharges, capacitance and loss factor. Prerequisite: admission to the MSEE program.

**ELE 646 Radio Frequency Integrated Circuits (3-0-3).** Covers design of advanced radio frequency integrated circuits as it applies to contemporary electronic systems. Includes RFIC systems and architectures, low-voltage MOS, transceiver complex circuits, RF signal processing, RF power amplifiers and linearization, PLL topologies, frequency synthesizers, phase noise analysis, layout considerations, packaging of RF circuits and design case studies. Use of software tools and analytical techniques for circuit design and simulations. Prerequisite: admission to the MSEE program.

**ELE 647 Digital Protection of Power Systems (3-0-3).** Covers digital relay hardware, phasor computations, frequency estimation techniques, digital protection algorithms, fault location techniques, signal processing and artificial intelligence for relays, relay testing, relay modeling and simulation. Prerequisite: admission to the MSEE program.

**ELE 648 Pattern Classification (3-0-3).** Covers description of the elements of pattern recognition systems, Bayesian decision theory and parameter estimation, maximum likelihood estimation, linear discriminant analysis, dimensionality reduction techniques, neural networks, clustering techniques, and Gaussian Mixture Models. Provides a description of decision trees, support vector machines and Hidden Markov Models. Prerequisites: admission to the MSEE program or to the MSBME or to the MSMTR, and approval of the department head.

**ELE 650 Deep Learning (3-0-3).** Explores the following topics: basics of machine learning, neural networks, deep convolutional neural networks, long short-term memory networks, autoencoders, convolutional autoencoders, variational autoencoders, Generative Adversarial Networks, Siamese networks, and recent developments in deep learning. Involves implementation of several projects and hence, practical training in the subject. Requires undergraduate-level knowledge of linear algebra and computer programming. Prerequisites: admission to the MSEE program and approval of the department head

**ELE 660 RF Power Amplifiers for Wireless and Satellite Communications (3-0-3).** Introduces the theory and design principles of power amplifiers for modern wireless and satellite applications; circuit level design of linear and switching mode amplifiers; and system level design of advanced amplifier structures including load and bias modulations techniques. Covers power amplifiers characterization, modeling and linearization techniques. Requires undergraduate-level knowledge in electronics. Prerequisites: admission to the MSEE program and approval of the department head.

**ELE 695 Seminar (1-0-0).** Introduces research methodologies. Explores the planning and realization of research projects. Examines current research issues in engineering using case studies that emphasize the utilization of applied research in designing engineering systems. Graded as Pass/Fail. Prerequisite: admission to the MSEE program.

**ELE 698 Professional Project (3 credit hours).** Requires an approved professional project on selected area of electrical engineering for completion of the MS degree. Includes development of the project concept, investigation of needs, initial data collection and assembly of written and field materials necessary to conduct a professional project, as well as exploration of alternative means to conduct the project. Requires a report and final presentation to the examining committee. Graded as Pass/No Pass. Prerequisites: good academic standing and approval of the department head; prerequisite/concurrent: ELE 695.

**ELE 699 Master's Thesis (9 credit hours).** Requires completion of original research work in the field of study. Requires the thesis to be completed under the supervision of a faculty member serving as thesis examining, and a final defense to the advisory committee. Graded as Pass/No Pass. Prerequisites: good academic

standing and approval of the department head; prerequisite/concurrent: ELE 695.

## ESM Engineering Systems Management

**ESM 520 Management for Engineers (3-0-3).** (Blended learning mode). Explores a full range of integrated topics for individuals in both public and private sector organizations who coordinate and manage engineering projects, personnel, resources and systems. Covers human resources, communication skills, leadership styles, team building, the basics of marketing management and financial management, and the management needs in multicultural and multinational environments. Integrates the core management principles with engineering experiences using case studies and applications. Prerequisite: admission to the MSEM program or MSCM program.

**ESM 535 Introduction to Management Science (3-0-3).** Introduces deterministic and stochastic operations research methods including formulation and applications of linear network and integer problems. Covers basic probability concepts, distributions, forecasting methods, Markov chains and simulation. Emphasizes problem formulation, solution methods using suitable software and interpretation of results. Uses various optimization, statistics, and simulation software to solve problems and case studies. Prerequisite: admission to the MSEM program.

**ESM 570 Project Management (3-0-3).** (Blended learning mode). Covers the elements of project management critical to the success of engineering projects: project management framework, strategic management and project selection, scope management, time management, cost management, time-constrained scheduling, resource-constrained scheduling, risk management, and project monitoring and control. Integrates and clarifies the principles and tools through case studies from a variety of disciplines. Prerequisites: admission to the MSEM program and approval of the department head.

**ESM 575 Advanced Engineering Economy (3-0-3).** (Blended learning mode). Covers the theory and application of advanced engineering economy principles and methods. Studies the effects of inflation, depreciation and taxes, cost estimation, sensitivity analysis, risk and uncertainty, capital budgeting, multi-attribute decision making, advanced asset replacement analysis and real

option analysis. Includes case studies and a term project related to the topic. Prerequisites: admission to the MSEM program and approval of the department head.

**ESM 594/ESM 694/ESM 794 Special Topic in Engineering Systems Management (1 to 4 credit hours).**

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.

**ESM 600 Research Methodology (3-0-3).** (Blended learning mode).

Introduces the methodology of scientific research including research problem formulation and justification, critical literature review, definition and formulation of research questions, and selection research tools and methods. Covers quantitative, qualitative and mixed research methods; internal and external construct validity and reliability issues; introduction to quasi-experimental design and case study methodologies; effective academic writing using various style guidelines; delineation of research directions for the future, ethics, academic fraud and plagiarism. Requires basic management knowledge. Prerequisite: admission to the MSEM program.

**ESM 615 Big Data and Business Analytics (3-0-3).**

Introduces application of descriptive analytics, data mining and predictive analytical methods to address business problems. Covers analytical methods including nearest neighbor, classification trees, naïve Bayes, linear regression, logistic regression, support vector machines, and TFIDF. Shows how to apply model evaluation techniques including cross-validation, attribute selection and tree pruning, and profit and AUC curves. Discusses alignment of data science applications to corporate strategy. Requires undergraduate statistics course and approval of the department head.

**ESM 625 Enterprise Resource Planning Systems (3-0-3).** (Blended learning mode).

Provides an overview of ERP systems and their implementation in practice. Covers various applications within the enterprise framework such as procurement, orders fulfillment, production, inventory management and material planning. Includes real examples on ERP implementation and hands-on experience using an ERP software. Prerequisite: admission to the MSEM program.

**ESM 630 Quality Engineering and Management (3-0-3).**

Covers the techniques and applications of quality control and management. Includes total quality management, quality award models, service quality, statistical

process control charts, process capability analysis, Taguchi methods, and six sigma. Includes case studies from both the service and industrial sectors. Requires undergraduate statistics course and approval of the department head.

**ESM 636 Human Resources Management for Engineers (3-0-3).**

Covers human resource planning processes, tools and techniques, job specification and methods of job analysis for engineering organizations. Describes the requirements and ethical context of HRM methods of recruitment, evaluation, career training and development programs, salary systems and employee benefits, HR information systems and international HR issues. Integrates HR management practices and methodologies with engineering experiences. Prerequisite: ESM 520.

**ESM 638 Decision Analysis (3-0-3).**

Covers the theory and practice of analyzing decisions in the public and private sectors. Covers multiple objectives, influence diagrams, decision trees, sensitivity analysis, probability assessment, multi-attribute utility and human biases. Describes practical applications through real-world systems model building. Uses decision analysis software and spreadsheets to solve real-life problems through case studies. Prerequisite: ESM 535.

**ESM 640 Supply Chain Management (3-0-3).**

Explores key issues related to the design, planning and operation of supply chains. Covers supply chain structure, supply chain performance metrics, network design and facility location in a supply chain. Discusses aggregate planning, planning and managing inventory in a supply chain, transportation, pricing and revenue management, green supply chain and supply chain risk management. Requires undergraduate statistics course and approval of the department head.

**ESM 644 Financial Management for Engineers (3-0-3).**

Provides engineers with financial management knowledge necessary for value-added decision making. Covers structure and analysis of financial statements, corporate valuation, capital structure, securities analysis and financial markets, and forecasting financial markets. Includes practical financial management case studies in technical organizations. Prerequisite: ESM 575.

**ESM 670 Risk Management (3-0-3).**

Discusses how to implement enterprise risk management across any organization. Focuses on the process of risk management including strategy and objective definition, event identification, risk assessment, risk response, communication and monitoring. Covers the tools and

techniques for managing risks strategically from the perspective of the entire firm or organization. Provides guidance on key risk categories including financial, operational reputational and strategic areas and how to handle risks that overlap. Requires undergraduate-level knowledge in statistics. Prerequisite: approval of the department head.

**ESM 675 Procurement Management (3-0-3).**

Covers elements of structured procurements, including procurement planning, competitive solicitations, negotiations, legal considerations of procurement, contract management and administration, dispute resolution and procurement ethics. Discusses the standards of ISO 20400: sustainable procurement and ISO 44001: collaborative business relationship management systems. Provides students with an in-depth understanding of the roles of procurement professionals in the organization. Requires undergraduate-level knowledge in statistics. Prerequisite: approval of the department head.

**ESM 685 Capstone Course in Engineering Systems Management (3-0-3).**

Presents an opportunity to showcase accumulated theoretical and the practical knowledge in ESM. The general intent of the engineering capstone is to demonstrate knowledge of the integrative aspects of ESM tools through rigorous written and oral communication of case analysis and a team project. Uses case studies to demonstrate the integrative aspects of ESM applications. Prerequisite: ESM 600.

**ESM 695 Seminar (1-0-0).**

Introduces research methodologies. Explores the planning and realization of research projects. Examines current research issues in engineering using case studies that emphasize the utilization of applied research in designing engineering systems. Graded as Pass/Fail. Prerequisites: admission to the MSEM program and approval of the department head.

**ESM 699 Master's Thesis (9 credit hours).**

Requires completion of original research work in a multidisciplinary area in engineering systems management. Requires demonstration of the ability to integrate the information and the skills accumulated through rigorous written and oral communication. The thesis is completed under the supervision of a faculty member serving as the thesis advisor, and a final defense to the examining committee is required. Graded as Pass/No Pass. Prerequisites: good academic standing and approval of the department head; prerequisite/concurrent: ESM 695.



**ESM 701 Research Methods**

**(3-0-3).** Equips PhD students with a good understanding of qualitative and quantitative research methods at both conceptual and applied levels to prepare them to undertake substantiated and rigorous scholarly research work, particularly dissertation and research papers. Familiarizes students with basic tenets of research, knowledge, methods, and success in research. Includes problem formulation, literature review, hypotheses formulation, proposal preparation, and empirical testing techniques. Enables students to formulate empirical research using experimental or descriptive research approaches. Utilizes commonly used statistical models such as nonparametric association and correlation measures and Analysis of Variance to analyze and interpret actual data. Prerequisites: admission to the PhD-ESM program and approval of the program coordinator.

**ESM 702 Multivariate Data Analysis (3-0-3).**

Discusses techniques for analyzing multivariate experimental and observational data. Provides a working knowledge of several multivariate data analysis techniques to conduct empirical research. Covers exploratory multivariate data analysis, multivariate analysis of variance, multivariate regression analysis, principal components analysis, factor analysis, clustering analysis, and structural equation modeling. Utilizes commonly used statistical software for data analysis, such as Minitab, STATA, and the R free open-source package. Prerequisites: admission to the PhD-ESM program and approval of the program coordinator.

**ESM 710 Advanced Decision Making Analysis (3-0-3).**

Provides the necessary theoretical knowledge towards analyzing and making decisions. Covers multiple objectives, influence diagrams, decision trees, risk assessment and quantification, single and multi-attribute utility, techniques for multi-criteria decision making (MCDM) and game theory. Prerequisite: consent of the instructor.

**ESM 711 Deterministic Optimization Techniques (3-0-3).**

Covers deterministic operations research techniques and their underlying theory. Includes advanced topics in large scale optimization, integer programming, non-linear programming, and meta-heuristic optimization techniques. Prerequisites: admission to the PhD-ESM program and consent of the instructor.

**ESM 712 Advanced Supply Chain Management (3-0-3).**

Covers leading edge topics in global supply chain management including latest supply

chain strategies, strategic sourcing, technological advances in supply chain management, supply chain risk management approaches, sustainable supply chain, ethical issues in supply chain management, and humanitarian supply chain. Prerequisites: ESM 702 and consent of the instructor.

**ESM 720 Sustainable Development for Engineers (3-0-3).**

Covers both the rudimentary and radical concepts of sustainable development and economic growth in a social and environmental context. Discusses, analyzes and evaluates patterns of development. Investigates the impacts of engineering projects in local and international communities via well-structured research questions utilizing theoretical and empirical research techniques. Evaluates contemporary trends in sustainable technology in relation to the different project settings. Prerequisite: consent of the instructor.

**ESM 721 Sustainable Development and Global Competitiveness (3-0-3).**

Introduces students with technical backgrounds to the macro realm of sustainable development, international economics, and urban planning and regeneration. Highlights the role of multinational corporations and mega projects in global competitiveness. Presents the subtle overlap between design patterns, development, and regulations in sustainable development projects. Deliberates the latest UN sustainable development goals and their expected aftermath in the international setting. Uses case studies and research workgroups to demonstrate the comprehensive link between economic growth and social progress. Prerequisite: consent of the instructor.

**ESM 722 Sustainable Analytics and Resource Management (3-0-3).**

Focuses on sustainability data analyses and covers current and innovative methodologies in optimal energy and water resource management in construction projects. Explores data-driven resource management techniques during design, construction, and operation. Utilizes regression analysis, economic impact analysis, and feasibility studies in answering research questions through a series of case studies and projects. Prerequisite: consent of the instructor.

**ESM 723 The Living Building (3-0-3).**

Focuses on the Living Building Challenge performance areas. Introduces the "beyond regenerative" concept of an organic, living building envelope for commercial and residential construction. Explains the core construction practices in relation to net zero energy and net zero water techniques. Presents traditional and

renewable grid balance techniques through a series of projects and seminars. Prerequisite: consent of the instructor.

**ESM 724 Sustainable Ecosystems (3-0-3).**

Covers integrated ecological planning and sustainable land management in coastal ecosystems. Discusses fundamental concepts and practical quantitative problem-solving techniques dealing with contamination, environmental toxicology, and ecosystem turbulence due to manmade construction projects. Prerequisite: consent of the instructor.

**ESM 725 Programs and Portfolio Management (3-0-3).**

Presents a view of managing projects from an organizational perspective. Discusses strategic alignment, project and program selection techniques, the role of effectively managing organizational assets through an enterprise project management office as a governance entity, portfolio management and program management. Covers schedule integration, resource management and portfolio risk management. Covers tools such as Analytic Hierarchy Process, Earned Value Management and Monte Carlo Simulation. Uses specific examples and case studies to explore and apply practices to create and manage portfolios of programs and projects to efficiently leverage organizational assets. Prerequisite: consent of the instructor.

**ESM 730 Tools for Big Data (3-0-3).**

Covers software tools for manipulating, storing and analyzing Big Data in various formats like sensor and web logs, videos, speech recordings, images, emails, tweets, etc. Covers the use of data science software tools for Big Data manipulation, analytics and machine learning. Explains the use of MapReduce/Hadoop for scalable data processing in conjunction with Hive/Pig. Introduces NoSQL databases like MongoDB and CouchDB. Includes techniques for processing streaming real-time data. Discusses tools for visualizing large data and integration strategies for various Big Data tools. Prerequisite: ESM 702.

**ESM 732 Networking Architectures for Smart Cities (3-0-3).**

Introduces communication networks for smart cities. Discusses architectures, models, protocols and the emerging new Internet of Things (IoT) paradigm. Addresses the principles of flow and congestion control, addressing, signaling switching and routing, multiple access approaches, convergence sublayer solutions and standards, physical layer technologies, and network security. Prerequisites: admission to the PhD-ESM program and consent of the instructor.

**ESM 740 Advanced Quality Engineering (3-0-3).** Covers emerging issues with quality engineering and management such as innovation, happiness, and process re-engineering with a focus on both quantitative and qualitative analytical skills essential to conducting research. Examines organizational development and deployment of service management systems utilized in achieving service quality. Includes analysis of business case, enablers, and detractors of Six Sigma and quality awards deployment in both manufacturing and service sectors through critical articles reviews. Prerequisites: ESM 702 and consent of instructor.

**ESM 741 Organizational Performance Management (3-0-3).** Explores traditional and contemporary Performance Management (PM) frameworks and models at the organization level, unit level, and the individual level. Focuses on designing PM systems that integrate strategy, execution, methodologies, and risk. Details the design of the added-value PM systems including goals and objectives, the operational process, support process, evaluation and control, and organization behavior. Covers PM measurements system's design and analysis using the various Key Performance Indicators, Key Risk Indicators, and Key Control Indicators. Includes PM implementation pitfalls and Critical Success Factors. Prerequisite: ESM 701.

**ESM 742 Strategic Human Resources Management (3-0-3).** Explores how Human Resources Management (HRM) policies and procedures can add value to an organization. Covers state-of-the-art HRM approaches to become a strategic partner in improving resource utilization and help companies achieve their goals. Includes the processes of developing and implementing human resources (HR) strategies to promote a healthy social and psychological environment for the workforce. Discusses the link between HRM and outcomes at the firm and individual level; the roles and capabilities of the HR department and of individual HR professionals; and HRM in multinational corporations, comparative HRM, and global mobility. Examines the particularities of HRM in the public sector and in the GCC countries. Prerequisites: ESM 701 and consent of the instructor.

**ESM 743 Strategic Management (3-0-3).** Covers analysis of internal and external environments of an organization. Explores the development of appropriate strategies, objectives, and key performance indicators (KPIs). Prerequisites: ESM 701 and consent of the instructor.

**ESM 790 Qualifying Examination (0-0-0).** Includes written and oral parts to test breadth of knowledge, understanding of fundamentals, and ability to perform independent research work in an engineering systems management specific area. Can only be repeated once with approval of the VPRGS. Graded as Pass/Fail. Prerequisites: completion of 12 credit hours including ESM 701 and ESM 702, good academic standing and approval of the program coordinator.

**ESM 795 Doctoral Seminar (1-0-0).** Provides a unique discussion forum for interaction with a diverse group of faculty from the different departments of the College of Engineering, as well as outside presenters. Encompasses a wide variety of pertinent topics from different ESM research areas. Graded as Pass/Fail. Prerequisite: admission to the PhD-ESM program.

**ESM 799 Dissertation (a minimum of 24 credit hours).** Includes the preparation, presentation and defense of the research proposal, as well as the write-up, presentation and defense of the dissertation. Graded as Pass/No Pass. Prerequisites: ESM 790, DAC appointment and approval of the program coordinator.

## MCE Mechanical Engineering

**MCE 540 Advanced Dynamics (3-0-3).** Covers the following topics: kinematics and kinetics of three-dimensional rigid bodies and multibody systems, momentum and energy methods, and holonomic and non-holonomic constraints. Introduces Hamilton's principle for holonomic systems, Lagrange's equations, relativistic dynamics, central force motion, Euler equations of motion, Hamilton's equations and phase space, and the Hamilton-Jacobi equation. Requires undergraduate background in dynamics. Prerequisite: admission to the MSME program and approval of the department head.

**MCE 551 Advanced Materials Science and Engineering (3-0-3).** Explores advanced topics in materials science. Covers the following topics: fatigue, fracture, experimental techniques, nondestructive evaluation, inelastic behavior, and the effect of processing and environmental conditions on mechanical properties. Requires undergraduate background in materials science or equivalent. Prerequisites: admission to the MSME program and approval of the department head.

**MCE 553 Advanced Thermodynamics (3-0-3).** Explores advanced thermodynamics used in engineering applications. Covers phase transition and stability, multi-component and multi-phase systems, chemical and kinetics. Explains the essential concepts of quantum mechanics, classical statistical mechanics, potentials of statistical thermodynamics, micro-states and macro-states, entropy-generation minimization and the equilibrium particle distribution, corrected Maxwell-Boltzmann statistics, ideal monatomic and diatomic gases, imperfect gases, quantum analysis of internal energy modes, and statistical modeling of thermodynamics. Prerequisite: admission to the MSME program.

**MCE 554 Advanced Fluid Dynamics (3-0-3).** Examines the conservation equations for viscous fluids and Navier-Stokes equations. Covers advanced topics such as Stokesian flow, boundary layer concept, laminar boundary layer equations and methods of solutions, theory of stability of laminar flows and introduction to turbulent flow. Prerequisite: admission to the MSME program; prerequisite/concurrent: NGN 500.

**MCE 562 Modeling and Simulation of MEMS (3-0-3).** Addresses micro-electromechanical systems (MEMS), their genesis and unique features, and some of their modeling and simulation challenges and needs. Examines the common sensing and actuation methods deployed in MEMS. Covers basic principles of nonlinear dynamics and stability analysis as applied to MEMS. Discusses concepts of mechanics and electric circuits necessary to develop effective lumped-parameter and distributed-parameter multi-physics models needed to simulate the behavior of MEMS devices and microstructures. Requires background in modeling of dynamic system and mechanical vibrations. Prerequisites: approval of the department head.

**MCE 563 Computational Mechanics (3-0-3).** Presents finite difference and finite element methods for solving ODES and PDEs in mechanics, heat transfer, and dynamic problems. Covers convergence, explicit and implicit time integrations, effect of shape functions, and weak and variational formulation. Emphasizes numerical implementation of finite difference and finite element methods. Requires undergraduate background in linear algebra and differential equations. Prerequisite: approval of the department head.

**MCE 594/MCE 694 Special Topic in Mechanical Engineering (1 to 4 credit hours).** Presents a theoretical or practical topic proposed

by the faculty beyond what is offered in existing courses. Can be repeated for credit. Prerequisites: admission to the MSME program and topic specific. Lab/Tech fee may apply.

**MCE 653 HVAC Systems Design (3-0-3).** Aims at developing a solid background in the practical design and analysis of HVAC systems. Covers building load using transfer functions and energy estimation methods, renewable energy technologies (solar, wind, geothermal, photovoltaics) and their applications on HVAC systems, solar thermal energy and wind energy conversion systems, passive design strategies, HVAC system controls, thermal energy storage, absorption chillers, energy efficiency for buildings, and design of large commercial and industrial HVAC systems w/without renewable energy.

**MCE 656 Advanced Fuel Cell Systems (3-0-3).** Covers advanced modern-day fuel cell technologies and their application. Examines contemporary topics such as thermodynamics, transport phenomena, electrochemistry and performance characterization of various fuel cell types such as proton exchange membrane, solid oxide and direct methanol fuel cells. Requires undergraduate-level knowledge of thermochemistry and electrochemistry. Prerequisite: approval of the department head.

**MCE 695 Seminar (1-0-0).** Introduces research methodologies. Explores the planning and realization of research projects. Examines current research issues in engineering using case studies that emphasize the utilization of applied research in designing engineering systems. Graded as Pass/Fail. Prerequisite: admission to the MSME program.

**MCE 698 Professional Project (3 credit hours).** Requires an approved professional project on selected area of mechanical engineering for completion of the MS degree. Includes development of the project concept, investigation of needs, initial data collection and assembly of written and field materials necessary to conduct a professional project, as well as exploration of alternative means to conduct the project. Requires a report and final presentation to the examining committee. Graded as Pass/No Pass. Prerequisites: good academic standing and approval of the department head; prerequisite/concurrent: MCE 695.

**MCE 699 Master's Thesis (9 credit hours).** Requires completion of original research work in the field of study. Requires the thesis to be completed under the supervision of a faculty member serving as thesis

advisor, and a final defense to the examining committee. Graded as Pass/No Pass. Prerequisites: good academic standing and approval of the department head; prerequisite/concurrent: MCE 695.

## MLR

**MLR 503 Data Mining and Knowledge Discovery (3-0-3).** Presents the principles of data mining and knowledge discovery. Covers key topics including data transformation and visualization, pattern recognition, experimental validation and model interpretation. Examines various techniques from decision trees and rule induction to probabilistic methods and association mining, lazy learning and clustering. Studies examples of data mining applications using state-of-the-art software such as RapidMiner or Weka. Requires undergraduate knowledge of statistics and programming. Prerequisite: approval of the department head.

**MLR 506 Hardware Architectures for Machine Learning (3-0-3).** Covers the basics of machine learning (ML) algorithms. Introduces the design and implementation of hardware architectures for efficient processing of ML algorithms. Covers the topics of ML on programmable platforms, deep learning accelerators, design alternatives and optimization for ML algorithms, training for deep learning. Discusses the characteristics, advantages and disadvantages of popular hardware platforms including CPUs, GPUs and FPGAs in designing efficient learning networks. Requires undergraduate course in computer architecture. Prerequisite: approval of the department head.

**MLR 508 Cognitive Robotics (3-0-3).** Introduces the fundamental concepts and algorithms of cognitive robotics. Studies cognitive functions and architectures, from biological inspiration to computational models. Covers robot perception, learning and action in the physical world, as applied to localization, mapping, manipulation and motion planning. Examines selected advanced topics such as approximate reasoning, autonomous exploration, deep learning and social cognition. Requires: undergraduate knowledge of artificial intelligence and programming. Prerequisite: approval of the department head.

**MLR 510 Generative Deep Learning (3-0-3).** Covers foundations and learning algorithms for deep generative models. Covers variational autoencoders, energy-based models, diffusion, autoregressive models,

## Machine Learning

normalizing flow models and generative adversarial networks (GAN). Discusses application areas including computer vision, audio and natural language processing. Covers ethics for generative AI. Requires basic knowledge about machine learning and working knowledge of Python. Prerequisite: approval of the department head.

**MLR 511 Mobile Application Development with Machine Learning (3-0-3).** Covers advanced mobile application development including fragments, fragment navigations and view models; live data and databases; downloading and parsing data asynchronously; analyzing images on mobile devices with general-purpose machine learning models; building customized machine learning models for on-device processing. Requires programming skills and undergraduate knowledge of object-oriented programming. Prerequisite: approval of the department head.

**MLR 512 Advanced Computer Vision (3-0-3).** Introduces the fundamental concepts and algorithms for computer vision. Covers key topics including camera model, multi-view geometry, image representation and filtering, visual perception and edge detection, and feature extraction. Examines advanced applications such as keypoint detection, object tracking, 3D reconstruction, image segmentation, face detection and recognition. Studies examples of computer vision applications using state-of-the-art software tools. Requires undergraduate knowledge of linear algebra and programming. Prerequisite: approval of the department head.

**MLR 513 Advanced Natural Language Processing (3-0-3).** Introduces the fundamental concepts and algorithms for natural language processing (NLP). Covers text classification, language modeling, vector semantics, word embedding, sequence labeling, language grammars, constituency parsing and dependency parsing. Examines advanced applications such as information extraction, sentiment analysis, conversational agents, machine translation and text generation. Requires undergraduate level knowledge of programming and language grammars. Prerequisite: approval of the department head.

**MLR 555 Advanced Artificial Intelligence (3-0-3).** Introduces the fundamental concepts, techniques, architectures and ethics of AI. Studies advanced search algorithms, heuristics, constraint satisfaction models, adversarial search and stochastic search techniques. Covers knowledge representations, reasoning and

planning, probabilistic and fuzzy logic, causal and decision networks, uncertain reasoning over time, and Markov models, including ethical concerns for each technique. Examines reinforcement learning and its applications. Requires undergraduate knowledge of artificial intelligence and programming. Prerequisite: approval of the department head.

**MLR 570 Advanced Machine Learning (3-0-3).** Introduces machine learning concepts and data pre-processing techniques including aggregation, dimensionality reduction, feature selection, and measures of data similarity and dissimilarity. Covers supervised learning methods including Naïve Bayes, SVM, Feedforward, convolutional and LSTM neural networks. Examines semi-supervised learning including GANs and consistency regularization algorithms, as well as unsupervised learning methods including K-Medoids, Gaussian mixtures methods and autoencoders. Covers ensemble learning methods including bagging and boosting, and model evaluation techniques. Requires undergraduate knowledge of statistics and programming. Prerequisite: approval of the department head.

**MLR 695 Seminar (1-0-0).** Introduces research methodologies. Explores the planning and realization of research projects. Examines current research issues in machine learning using case studies that emphasize the utilization of applied research in the field. Graded as Pass/Fail. Prerequisite: approval of the department head.

**MLR 699 Master's Thesis (9 credit hours).** Requires completion of complete original research work in the field of study. Requires the thesis to be completed under the supervision of a faculty member serving as thesis advisor, and a final defense to the examining committee. Graded as Pass/No Pass. Prerequisites: MLR 555, MLR 570, good academic standing, approval of the department head and composition of the thesis committee; prerequisite/concurrent: MLR 695.

## MTR Mechatronics Engineering

**MTR 501 Introduction to Mechatronics (2-3-3).** Covers applied mechanical and electrical engineering principles used in mechatronics products. Introduces the modeling and analysis of electromechanical systems, hydraulic systems, signal processing and conditioning, power amplifiers and switches. Develops design skills in system integration using mechanisms, electronic devices, CAD tools, and information technology in order to

create, test and verify mechatronics systems. Includes laboratory projects. Graded as Pass/Fail. Prerequisite: admission to the MSMTR program.

**MTR 520 Embedded Systems for Mechatronics (2-3-3).** Explores microprocessor and microcontroller hardware and software architectures, microcontroller programming and interfacing with real-time mechatronic systems. Introduces new microcontroller-based devices and design of stand-alone embedded systems for mechatronics products. Includes labs and course projects. Requires basic background knowledge of C programming and digital electronics. Prerequisite: admission to the MSMTR program and approval of the program coordinator.

**MTR 540 Advanced Control Systems (3-0-3).** Covers state variable models, design of control systems in state space, full state observers, reduced order observers, digital compensator design, servomechanism identification and design, and design of continuous and digital control systems using modern analytic and computer design. Requires undergraduate background in linear control systems or equivalent. Prerequisites: admission to the MSMTR or MSEE or MSME program, and approval of the program coordinator.

**MTR 550 Robotic Systems (2-3-3).** Covers homogenous coordinates and transform representations, kinematic chains, Forward and Inverse Kinematics, differential kinematics: Jacobian computation, singular configurations, Motion planning in robotics, and robot control strategies. Prerequisite: admission to the MSMTR program.

**MTR 594/MTR 694 Special Topic in Mechatronics Engineering (1 to 4 credit hours).** Presents a theoretical or practical topic proposed by the faculty beyond what is offered in existing courses. Can be repeated for credit. Prerequisites: admission to the MSMTR program and topic specific. Lab/Tech fee may apply.

**MTR 610 Automated Manufacturing Systems (3-0-3).** Describes and demonstrates automated machine tools and machining cells. Covers machining center configuration and operation, machine tool controller, machining code generation, in-process sensing and control, cell controllers and system simulation. Prerequisite: admission to the MSMTR program.

**MTR 615 Artificial Intelligent Systems for Mechatronics (3-0-3).** Covers artificial intelligent systems for mechatronics engineering, concepts of expert and fuzzy logic decision-making systems, fuzzy logic modeling and control, artificial neural networks,

genetic algorithms, decision trees and applications. Prerequisite: admission to MSMTR program.

**MTR 644 Electric Drives for Mechatronics Systems (3-0-3).** Provides an overview of modern electrical machines in terms of their dynamic and steady-state performance. Covers power electronic conversion and modulation principles, magnetic systems, dynamic models of AC and DC machines, and pulse-width modulated power electronic converters. Includes case studies with practical current control techniques. Prerequisite: MTR 501.

**MTR 650 Applied Linear Estimation (3-0-3).** Introduces linear algebra and presents a review of probability and stochastic processes. Introduces deterministic and stochastic least squares estimators. Defines the innovation process and its properties. Introduces state space models, Weiner-Kalman filters for scalar and vector processes as well as smoothed estimators, and non-linear parameter estimation. Introduces fast array algorithms. Includes a project that applies the estimation algorithms on mechatronics application case studies. Prerequisite: admission to the MSMTR program.

**MTR 670 Adaptive Control Systems (3-0-3).** Reviews state space modeling of dynamic systems. Discusses linear time invariant (LTI) system stability, solving for system trajectory, observability, controllability and state feedback control. Introduces stability and solution of linear time-varying (LTV) systems. Covers Lyapunov stability theory, concepts of invariant sets, stability of non-autonomous systems, LaSalle extensions and Barbalat's lemma. Covers direct and indirect model reference adaptive control (MRAC). Explores robustness of MRAC and disturbance rejection. Requires basic background knowledge of control systems. Prerequisites: admission to the MSMTR program and approval of the program coordinator.

**MTR 690 Mechatronics Design (2-3-3).** Covers actuators and sensors modeling and presents different types of modeling and simulation of mechatronic systems. Requires individual and team projects involving the development and integration of hardware and software into a smart system, which includes sensing, processing and controlling functions. Prerequisite: MTR 520; prerequisite/concurrent: MTR 695.

**MTR 695 Mechatronics Seminar (1-0-0).** Explores project planning development and realization, case studies of engineering systems design and realization, and current research

topics in mechatronics engineering, including areas such signal processing, image processing, control, robotics, intelligent systems, computer vision and MEMS. Graded as Pass/Fail.

Prerequisites: admission to the MSMTR program and approval of the program coordinator.

#### **MTR 699 Master's Thesis**

**(9 credit hours).** Requires completion of extended and original research work on a topic related to elements of computing, mechanics, electronics and intelligence. Graded as Pass/No Pass. Prerequisites: good academic standing and approval of the program coordinator; prerequisite/concurrent: MTR 695.

Special topic courses are numbered as 594 or 694 courses. The three-letter course prefix reflects the field of study of the course.

Descriptions of particular special topic courses are made available in the college during registration.

## **NGN**                      Engineering

### **NGN 500 Advanced Engineering**

**Mathematics (3-0-3).** Covers analysis of linear and nonlinear physical systems described by ODEs and PDEs, Sturm-Liouville problems, partial differential equations of mathematical physics (wave, diffusion, Laplace, Poisson Equations), transform and integral methods for solving boundary and initial value problems for ordinary and partial differential equations.

Prerequisite: admission to the MSBME or MSChE or MSCE or MSCoE or MSEE or MSME or MSMTR programs.

### **NGN 505 Random Variables and Stochastic Processes (3-0-3).**

Covers the following topics: random variables, transformation of functions of random variables, vectors of random variables, random processes:

correlation and power spectral density, LTI systems with stochastic signals, Markov chains and queuing theory.

Prerequisite: admission to the MSBME or MSCE or MSCoE or MSEE or MSME programs.

### **NGN 509 Computational Methods for Engineers (3-0-3).**

Covers numerical error analysis; solving system of linear and nonlinear algebraic equations; nonlinear regression and optimization techniques; numerical solutions of ordinary and partial differential equations; applications of numerical methods for engineering problems using MATLAB. Prerequisite: admission to the MSBME or MSChE or MSCE or MSCoE or MSEE or MSME programs.

## Special Topic Courses

### **Special Topic (1 to 4 credit hours).**

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.

# School of Business Administration

*Courses with titles in italic are available to undergraduate students in the Accelerated Master's Program (AMP). Course prerequisites must be met. For full details on the AMP, refer to the Accelerated Master's Program section of the AUS Undergraduate Catalog or [www.aus.edu/amp](http://www.aus.edu/amp).*

## ACC

## Accounting

**ACC 510 Financial Accounting for Managers (3-0-3).** Focuses on the meaning, analysis and interpretation of financial statements for the purpose of making important managerial and investment decisions. Emphasizes the importance of communication and leadership for the practice of accounting. Graded as Pass/Fail. Prerequisite: admission to the MSA program.

**ACC 520 Managerial Accounting (3-0-3).** Explains the role of accounting information in facilitating the functions of management. Covers decision making, planning, performance evaluation, budgeting and international transfer prices. Graded as Pass/Fail. Prerequisite: admission to the MSA program.

**ACC 530 Auditing for Managers (3-0-3).** Introduces external and internal auditing concepts and practices that are relevant to managers as part of the entity's corporate governance apparatus; suitable for those have no background in accounting and auditing. Graded as Pass/Fail. Prerequisite: admission to the MSA program.

**ACC 610 Topics in Financial Accounting (3-0-3).** Focuses on contemporary financial reporting issues, including development of the conceptual framework as presented by the Financial Accounting Standards Board (FASB), contemporary accounting research and recent financial accounting pronouncements. Examines theories relevant for financial accounting and reporting. Restricted to MSA students who matriculated into the major. Prerequisite: ACC 510.

**ACC 611 Auditing and Attestation (3-0-3).** Focuses on current developments in auditing and attestation standards as promulgated by the American Institute of Certified Public Accountants (AICPA). Covers international auditing standards promulgated by the International Federation of Accountants (IFAC) as well. Provides preparation for the CPA exam section on Auditing and Attestation. Restricted to MSA students who matriculated into the major. Prerequisite: ACC 530.

**ACC 612 Advanced Topics in Managerial and Cost Accounting (3-0-3).** Addresses advanced issues in cost allocation and pricing strategies.

Considers the various management control systems used by companies for strategy implementation and evaluation by applying financial and nonfinancial measurements. Restricted to MSA students who matriculated into the major. Prerequisite: ACC 520.

**ACC 614 Regulatory Environment in Accounting (3-0-3).** Examines the sources, rules, regulations and laws covering business transactions including leases, contracts, loans, contingencies, commitments and purchases. Evaluates authoritative regulations and standards issued by the Securities and Exchange Commission (SEC) and AICPA. Emphasizes development of procedures for identifying applicable accounting issues and locating appropriate laws/standards. Restricted to MSA students who matriculated into the major.

**ACC 615 Enterprise Database Systems and Analytics (3-0-3).** Focuses on building information systems that meet multiple needs for transaction-level processing, control specification and financial statement preparation, while simultaneously supporting the needs of a variety of other decision-makers in finance, management, marketing and supply chain logistics. Emphasizes the design and use of conceptually modeled databases. Applies data analytics tools and techniques to enhance the decision-making process and improve internal and external audits. Restricted to MSA students who matriculated into the major.

**ACC 616 Advanced Topics in Financial Reporting (3-0-3).** Focuses on principles and elements associated with financial statements. Covers income measurement, valuation of assets and equities, long-term liabilities, stockholders equity, cash flow analysis and financial statements. Restricted to MSA students who matriculated into the major. Prerequisite: ACC 510.

**ACC 620 Forensic Accounting and Fraud Examination (3-0-3).** Considers fraud as a cost for businesses and society as a whole. Focuses on examining fraud committed by corporate crime. Addresses questions of why and how fraud is committed and identifies red flags that may indicate the presence of fraud. Examines methods for deterring, investigating and uncovering fraud schemes.

Discusses empirical surveys on the extent and nature of occupational fraud worldwide, considering real-life cases in which managers are caught manipulating company records and committing widespread fraud. Restricted to MSA students who matriculated into the major.

**ACC 622 Internal Auditing (3-0-3).** Focuses on the theory and practice of internal auditing. Addresses the role of internal auditing in strengthening the corporate governance system in business and nonbusiness organizations. Provides a foundation for accounting and auditing students to be objective professionals. Provides students with knowledge of the relationship between internal audit and corporate governance. Covers planning and performing the internal auditing engagement process. Restricted to MSA students who matriculated into the major. Prerequisite: ACC 530.

**ACC 623 Financial Statement Reporting and Analysis (3-0-3).** Emphasizes the analysis of financial statements and related footnotes from the standpoint of the different users of financial reporting. Covers assessment of financial statements for fairness and completeness in reporting. Develops skills in using tools and in analysis and interpretation of financial reports for assessing financial performance of firms in relation to investment, lending and other financial decisions in a variety of business contexts. Restricted to MSA students who matriculated into the major. Prerequisite: ACC 510.

**ACC 628 Fraudulent Financial Reporting (3-0-3).** Focuses on financial reporting schemes utilized to mislead investors and influence investment actions. Covers accounting methods employed to provide misleading information, as well as accounting standards used to induce fraudulent financial reporting behavior. Examines landmark fraudulent cases and their impact on society. Restricted to MSA students who matriculated into the major. Prerequisite: ACC 530.

**ACC 695 Seminar (1-0-0).** Covers the requirement for planning, conceptualizing and executing a professional research project. Provides a unique forum for exploring and discussing business research and its application to professional practice in a range of business fields. Familiarizes students with a range of contemporary

research topics and relevant research methodologies through interaction with faculty in a seminar-based setting. Graded as Pass/Fail. Restricted to MSA students who matriculated into the major.

**ACC 699 Professional Research Project (6-0-6).** Requires completion of original professional research work in the field of study. Requires the professional research project to be completed under the supervision of a faculty member from the accounting department serving as a professional research project advisor, and a final defense to the examining committee. Graded as Pass/Fail. Prerequisite: ACC 610, good academic standing and approval of department head; prerequisite/concurrent ACC 695.

## **BUS** Business

**BUS 506 Introduction to Finance and Econometrics (3-0-3).** Covers financial statements analysis, risk and return, stock and bond valuation, and evaluation of capital projects. Introduces both cross section and time series, regression estimation and inference. Discusses data properties, detection and remedies of model violations, in addition to forecasting techniques. Graded as Pass/Fail. Restricted to MSF and PhD-BA Finance concentration students.

**BUS 507 Quantitative Analysis for Business Decisions (3-0-3).** Examines the decision-aiding tools that can be applied by managers to gain insight into decision-making problems, ranging from simple graphic displays of data to sophisticated statistical tests. Uses real-world data sets and PC-based software to describe sets of measurements, construct probability distributions, estimate numerical descriptive measures and build multiple regression models. Restricted to MBA students.

**BUS 701 Philosophical Foundations of Business Research (3-0-3).** Covers the philosophical foundations of social science research. Explores the different stages of the research process, including the formulation of a research problem, writing and publishing the research results. Presents key differences in qualitative and quantitative research and explains the relationship between theory and practice. Restricted to PhD-BA students who matriculated into the major.

**BUS 702 Seminar in Business Administration (3-0-3).** Covers the different sub-areas of business administration including accounting, finance, management and marketing from a researcher's perspective.

Introduces students to the different theories, literature reviews and research areas in their respective fields. Uses an interactive seminar-based forum for students to gain knowledge of the main research challenges in, and across, these disciplines. Restricted to PhD-BA students who matriculated into the major.

**BUS 703 Advanced Applied Econometrics (3-0-3).** (Equivalent to ECO 606). Builds a range of quantitative research skills using tools required to do empirical research. Covers a variety of methods commonly employed in empirical business research, including panel data, discriminant analysis, non-parametric methods, and introduction to GMM estimation techniques. Requires a strong background in quantitative methods. Restricted to PhD-BA students who matriculated into the major.

**BUS 704 Applied Time Series Analysis (3-0-3).** (Equivalent to ECO 605). Examines the characteristics of time series data, moving average models and partial autocorrelation as foundations for analysis of time series data. Draws on the use of exploratory data analysis techniques to explore trends in time series data, forecast using time series data, implement ARMA and ARIMA time series models, and identify and interpret various patterns for intervention effects. Incorporates ARCH and AR models in multivariate time series contexts. Requires a strong background in quantitative methods. Restricted to PhD-BA students who matriculated into the major.

**BUS 790 Qualifying Examination (0-0-0).** Includes written and oral parts to test breadth of knowledge, understanding of fundamentals and ability to perform independent research work in business administration area relevant to the PhD-BA program. Graded as Pass/Fail. Can be repeated once with approval of the Vice Provost of Research and Graduate Studies. Prerequisite: completion of 18 credit hours of coursework, including six credit hours from the required concentration.

**BUS 791 Comprehensive Examination (0-0-0).** Includes written and oral parts to make sure that each doctoral student exhibits sufficient depth of knowledge and comprehends the broadest context of the finance field. Graded as Pass/Fail. Not repeatable. Prerequisites: completion of all the coursework for the PhD-BA program, good academic standing, passing the qualifying examination and approval of the PhD-BA program coordinator.

**BUS 799 Dissertation (a minimum of 27 credit hours).** Includes the preparation, presentation and defense of the research proposal, as well as the write-up, presentation and defense of the dissertation. Graded as Pass/No Pass. Prerequisite/concurrent: BUS 791.

## **ECO** Economics

**ECO 601 Microeconomics (3-0-3).** Covers consumer demand, production, and market structure. Includes utility and profit maximization, duality, choice under uncertainty, general equilibrium, game theory and economics of information. Prerequisite: admission to the MSEP program.

**ECO 602 Macroeconomics (3-0-3).** Covers static and dynamic macro models, with applications in output, consumption, investment, money, and labor markets, with and without real or nominal frictions, in addition to stabilization and growth-promoting policies. Prerequisite: admission to the MSEP program.

**ECO 603 Applied Econometrics I (3-0-3).** (Equivalent to FIN 683). Discusses the classical linear regression model and its limitations. Introduces instrumental variables, models for discrete choice analysis, time series methods, and panel data techniques. Provides the necessary knowledge and skills to conduct empirical research using economic data. Prerequisite/concurrent: ECO 601 and ECO 602.

**ECO 604 Contemporary Issues and Economic Policy (3-0-3).** Examines key economic issues and policy responses in a global and regional (MENA/GCC/UAE) context, including inflation, unemployment, fiscal and monetary policy, public debt, exchange rate management, climate change, sustainability, innovation, trade, poverty, and inequality. Prerequisites: ECO 601, ECO 602 and ECO 603.

**ECO 605 Time Series Analysis and Forecasting (3-0-3).** (Equivalent to BUS 704). Focuses on advanced econometric theory and methods for macroeconomic data. Covers univariate and multivariate time series with topics including ARIMA models, volatility models, unit roots, linear filters, spurious regression, cointegration, VAR models and Granger Causality. Includes estimation, extrapolation, and the evaluation of forecasts. Prerequisite: ECO 603.

**ECO 606 Applied Econometrics II (3-0-3).** (Equivalent to BUS 703). Focuses on advanced econometric theory and methods for microeconomic data. Includes regression discontinuity, difference in differences, Monte Carlo

simulation, quantile regression, systems of equations, maximum likelihood, generalized method of moments and advanced panel data techniques. Prerequisite: ECO 603.

**ECO 607 Behavioral Economics and Policy Design (3-0-3).** Incorporates insights from psychology into the study of human behavior. Includes decision heuristics and biases, choice under risk and uncertainty, limits to self-control, time inconsistency, and context-dependent decision making. Explains the role of behavioral economics in public policy design and implementation. Prerequisites: ECO 601, ECO 602 and ECO 603.

**ECO 608 Money, Banking and Financial Markets (3-0-3).** Develops theoretical, empirical, and policy aspects of money, credit, banking, and financial markets. Includes alternative views of demand and supply of money and financial assets. Covers analytical theories of monetary policy, problems in the exercise of monetary policy, and asset pricing and portfolio choice theory. Prerequisites: ECO 601 and ECO 602.

**ECO 609 Market Power and Competition Policy (3-0-3).** Studies the economics of imperfectly competitive markets and their welfare implications, with applications to the GCC and MENA regions. Includes industry concentration measures, strategic behavior, economies of scale, network effects, mergers and acquisitions, market entry and exit dynamics, research and development, and government policy to limit market power and promote innovation. Prerequisite: ECO 601.

**ECO 610 Poverty, Inequality and Development (3-0-3).** Provides an in-depth analysis of major growth theories and development models with empirical evidence to understand the factors that promote development under a varied set of environments and institutions. Covers topics such as inequality and poverty measures, health and education, gender discrimination, intra-household decisions, labor and migration, the role of technology, the markets for credit and savings, and how public finance affects outcomes, with evidence and case studies from MENA and the GCC regions. Prerequisites: ECO 601, ECO 602 and ECO 603.

**ECO 611 Economics of Sustainability and Resource Use (3-0-3).** Applies economic principles to examine environmental sustainability in global, MENA, and GCC contexts, and considering the broader ecosystem. Includes the management of natural resources under a variety of regimes, institutional governance, energy use,

biodiversity conservation, climate change, sustainable growth, and the effectiveness and impact of policies. Prerequisites: ECO 601 and ECO 603.

**ECO 612 Economics of Agglomeration, Urban Development and Real Estate (3-0-3).** Presents models of agglomeration and clustering of economic activities and population to explain how cities start and grow. Includes how the economics of location affect and land-use patterns, the determinants of housing prices in the urban real estate market, housing policies, and the integration of communication and information technology in the city, with applications to the UAE and MENA. Prerequisites: ECO 601, ECO 602 and ECO 603.

**ECO 699 Master's Thesis in Economics (6-0-6).** Requires completion of original research work in economics under the supervision of a faculty member from the Economics department, and a final defense to the examining committee. Graded as Pass/Fail. Prerequisites/concurrent: ECO 604 and ECO 606.

## FIN

## Finance

**FIN 681 Advanced Financial Statements Analysis (3-0-3).** Provides a rigorous exposure to modern financial analysis and applications to business challenges in valuation, risk analysis, corporate investment decisions, and basic securities analysis and investment management. Covers earnings management models. Prepares for CFA Level 2. Requires background in business courses, including finance. Restricted to MSF students who matriculated into the major.

**FIN 682 Advanced Corporate Finance (3-6-3).** Covers advanced topics in corporate finance along three dimensions: investment, financing and corporate governance. Emphasizes the empirical evidence in the field of corporate finance, as well as the most recent developments in the field. Requires background in business courses, including finance. Restricted to MSF students who matriculated into the major.

**FIN 683 Applied Econometrics Methods (3-0-3).** (Equivalent to ECO 603). Covers the evaluation of quantitative information and how to use data to answer quantitative questions in the financial economics field. Focuses on econometric techniques, including cross sectional and panel techniques, financial forecasting techniques and time series analysis. Builds competency in the use of various modeling

procedures, including structural equation modeling (SEM), and ARCH and GARCH models. Requires background in business courses, including finance. Restricted to MSF students who matriculated into the major.

**FIN 684 Investment Analysis and Portfolio Management (3-0-3).** Covers quantitative techniques relating to financial market structure and financial asset valuation. Emphasizes key aspects of investment analysis and portfolio management, including arbitrage, portfolio selection and portfolio theory, equilibrium asset pricing (CAPM), fixed income securities and derivative pricing. Requires background in business courses, including finance. Restricted to MSF students who matriculated into the major and MBA students approved by department head.

**FIN 685 Advanced Asset Valuation (3-0-3).** Provides a rigorous exposure to different company valuation models, from fundamentals, to multiples, to cash flow valuation models. Covers cost of capital calculation techniques, and applies these concepts to different situations, including acquisitions, private firms, public firms, financial distress and IPO. Includes material relevant to CFA Levels I, II and III. Prerequisite: FIN 681.

**FIN 686 Pricing and Hedging of Financial Derivatives (3-0-3).** Places emphasis on market operations and the valuations of forward, futures, swaps, and options contracts and their interrelations. Covers topics of trading strategies include hedging, arbitrage and speculation, and of market operations on stock index, interest rate instruments, and foreign currencies. Addresses binomial and Black-Sholes option pricing models, as well as recent innovations in derivative markets. Prerequisite: FIN 684.

**FIN 687 Financial Markets and Institutions (3-0-3).** Emphasizes the understanding of financial institutions, markets and instruments. Includes commercial banking, expansion process of money, central banking and other financial institutions, as well as the types of financial markets and instruments, and interest rates. Requires background in business courses, including finance. Restricted to MSF students who matriculated into the major.

**FIN 688 Private Equity and Venture Capital (3-0-3).** Provides a framework for understanding the venture capital and private equity industry in today's finance. Explores the evolution of this asset class, its players and the



characteristics that contributed to its success. Analyzes the risk and return, analysis and valuation of high growth companies and the capital structure specific to venture backed companies. Prerequisite: FIN 681.

**FIN 689 Risk Management (3-0-3).**

Covers risk management practices in the corporate world with special attention to financial institutions. Covers different topics in market risk and credit risk, as well as various types of risk faced by corporations, such as operational and liquidity risks. Prerequisite: FIN 684 (concurrency requires the approval of department head).

**FIN 691 International Financial Management (3-0-3).**

Provides an overview of topics in international finance in the context of globalization and international trade and finance. Builds on the basic theories of exchange rate determination and how arbitrage leads to purchasing power and interest rate parity. Emphasizes the financial management activities of the multinational firm. Prerequisite: FIN 684.

**FIN 692 Islamic Finance (3-0-3).**

Provides a critical understanding of Islamic finance and banking, including the foundation of traditional Islamic financial tools and practices and the development of modern Islamic banking and financial instruments and institutions. Relates the theory of Islamic finance to current development in Islamic banking and the finance industry. Examines the compliance of various financial products with Islamic (Sharia'a) law and considers the risk factors associated with the Islamic banking and finance industry. Requires background in business courses, including finance. Restricted to MSF students who matriculated into the major.

**FIN 699 Master's Thesis (6-0-6).**

Requires completion of original research work in the field of study. Requires the thesis to be completed under the supervision of a faculty member serving as thesis advisor, and a final defense to the examining committee. Graded as Pass/Fail. Prerequisites: good academic standing and approval of department head.

**FIN 711 Finance Theory (3-0-3).**

Develops a firm foundation in financial theory and covers fundamental and complex issues in both asset pricing and corporate finance. Develops skills in the appraisal of finance theory and the critical assessment of key issues in finance. Restricted to PhD-BA students with a concentration in finance who matriculated into the major.

**FIN 712 Contemporary Issues in Financial Research (3-0-3).**

Examines a range of research areas in finance while focusing on empirical approaches to addressing research questions. Covers the event study approach, long-term returns calculations, cross sectional and panel approaches applied to areas such as capital structure, board of directors, IPOs and SEOS, agency problems, financial constraints and payout policies. Restricted to PhD-BA students with a concentration in finance who matriculated into the major. Prerequisite: BUS 702.

**FIN 713 Advanced Topics in Financial Markets and Institutions (3-0-3).**

Covers several recent developments in banking and financial markets research that include financial crises, bank regulation, bank liquidity creation and monetary policy, and bank governance and efficiency. Restricted to PhD-BA students with a concentration in finance who matriculated into the major. Prerequisite: BUS 703.

**FIN 714 Empirical Research Methods in Finance: Asset Pricing (3-0-3).**

Covers topics related to asset pricing including return predictability, testing traditional and modern asset pricing models, liquidity, short-selling, microstructure and portfolio evaluation. Restricted to PhD-BA students with a concentration in finance who matriculated into the major. Prerequisite: BUS 703.

**FIN 715 Advanced Corporate Finance Research (3-0-3).**

Builds an integrated framework for understanding the issues in corporate finance. Introduces theoretical and conceptual scholarship on a given topic with a focus on identifying empirically testable hypotheses. Presents extant empirical work on issues related to capital structure, payout policies, agency theory, bankruptcy and financial distress, mergers and acquisitions, executive compensation, IPOs and corporate governance and control. Restricted to PhD-BA students with a concentration in finance who matriculated into the major. Prerequisite: BUS 704.

**FIN 721 Seminar in International Finance (3-0-3).**

Introduces topics related to international finance and international business. Focuses on multinational corporations' risk management, corporate international diversification, foreign exchange markets, global portfolio flows, financial development issues and determinants, and foreign investments determinants. Prerequisites: FIN 711 and FIN 712.

**FIN 722 Corporate Restructuring and Reorganization (3-0-3).**

Surveys leading academic research in the areas

of corporate restructuring with a focus on the evaluation of the determinants and outcomes of corporate restructurings including mergers, acquisitions, divestitures, financial distress and recapitalizations. Prerequisite: FIN 711.

**FIN 723 Advanced Topics in Corporate Governance and Compensation (3-0-3).**

Covers advanced topics in corporate governance and executive compensation. Particular emphasis is on the ownership structure of corporations, the role of institutional investors, the board of directors, incentive structures and executive compensation determinants, structure and outcomes. Prerequisite: FIN 711.

**MBA**

**Business Administration**

**MBA 601 Economics for Managers (3-0-3).**

(Online learning mode). Provides managers with a toolbox to analyze the micro and macroeconomic environments in which a firm operates, to facilitate informed decisions with or without uncertainty. Raises awareness of the importance of making sound business decisions compatible with the behavior of all economic agents (namely, households, firms, government and the rest of the world) where markets provide a mechanism to achieve reconciliation among such agents. Addresses the need for choice implied by the scarcity of resources in relation to wants. Restricted to MBA program, excluding Pre-MBA students.

**MBA 602 Organizational Theory and Behavior (3-0-3).**

Applies management theory to factors that influence individual and group performance while incorporating current management theory and research. Emphasizes the total organization and its subsystems with topics including structure and design, organizational culture, communication, individual and group dynamics, teamwork, power and influence, decision-making, and the role of leadership. Restricted to MBA program, excluding Pre-MBA students.

**MBA 603 Introduction to Business Analytics (3-0-3).**

(Online learning mode). Presents an approach to data-driven decision-making. Emphasizes the business analytics life cycle of understanding the business problem, collecting and integrating data, preprocessing data, exploring and visualizing data, choosing modeling techniques and algorithms, evaluating the model, reporting to stakeholders, and deploying the model in an operational environment. Includes theoretical and conceptual explanation as well as practical instruction using

business analytics software packages. Restricted to MBA program, excluding Pre-MBA students.

**MBA 605 Financial Management (3-0-3).** Covers financial theory and techniques of analysis, including valuation theory, theories of risk measurement, managing a firm's investment decisions and capital structure, sources of financing for a firm, and financial planning and analysis.

**MBA 609 Operations and Supply Chain Management (3-0-3).** (Online learning mode). Takes an analytical approach to solving problems in production and operations management. Explores basic principles, functions and concepts involved in the design, operation and control of operations in contemporary organizations as well as key elements of supply chain management. Covers development of operations strategy, the application of linear programming, quality management, supply chain design and procurement, inventory management, lean production, and introduces basic concepts of logistics and supply chain management ranging from supplier selection and collaboration, performance measurement along the supply chain, strategic outsourcing, just-in-time partnership and distribution, customer relationship management, logistics, procurement, inventory and warehousing strategies, and service supply chains. Restricted to MBA program excluding Pre-MBA students.

**MBA 610 Financial Statement Analysis and Capital Budgeting (3-0-3).** (Online learning mode). Introduces financial statement analysis and capital budgeting, including analysis of the balance sheet and shareholders' equity; analysis of the income statement; analysis of the cash flows statement; analysis of growth and sustainable earnings; time value of money; discounted cash flow; risk and return; cost of capital; and capital budgeting. Restricted to MBA program, excluding Pre-MBA students.

**MBA 613 Managerial Accounting (3-0-3).** Explains the role of accounting information in facilitating the functions of management. Covers decision making, planning, performance evaluation, budgeting, cost control and international transfer prices. Restricted to the MBA program, excluding Pre-MBA students.

**MBA 614 Marketing in the 21st Century (3-0-3).** Introduces current marketing management techniques and tools necessary for effective marketing decision-making. Provides global perspectives on marketing management and international

marketing issues. Interactive learning techniques include the case method and active class participation. Incorporates issues such as ethics, minorities and the ecological environment. Restricted to MBA program, excluding Pre-MBA students.

**MBA 618 Strategic Management (3-0-3).** Focuses on developing and applying strategic management to successfully position organizations in a competitive global environment. Integrates previous course experiences to hone decision-making, analysis, and oral and written communication skills. Requires work in small teams to analyze a real company's external environment, perform an internal corporate audit and build detailed action plans including implementation issues and financial forecasting. Normally taken during the last semester in the MBA program. Prerequisite: completion of a minimum of four core MBA courses.

**MBA 640 Leadership and Change Management (3-0-3).** Investigates the role of leadership in the context of global change. Gives particular attention to leadership issues as they pertain to organizational development, culture and the dynamics of change. Restricted to MBA program excluding Pre-MBA students.

**MBA 641 Innovation and Entrepreneurship (3-0-3).** (Formerly MBA 615). Introduces business innovation and explores the entrepreneurial process through which new ideas become the basis for viable enterprises. Considers the development of a product or concept, assessment of technical and commercial feasibility, preparation of a business plan, and the need for funding. Requires the completion of an interdisciplinary, team-based project whereby students will develop a proposal for the prospective commercialization of a product, process or other business concept. Exposes the constant interplay between innovation and risk, feasibility and function, ownership and financing, marketing and delivery. Restricted to MBA and MSA programs, excluding Pre-MBA students.

**MBA 642 Knowledge Management (3-0-3).** Evaluates the different theories, constructs, methodologies and practices related to knowledge management and its role in organizations. Areas covered include communities of practice, knowledge space, epistemologies of possession and practices, and related constructs such as organizational learning, forgetting, and memory. Uses a combination of articles and cases for students to gain knowledge about organizational challenges and

opportunities within the area of knowledge management. Restricted to MBA program, excluding Pre-MBA students.

**MBA 661 Strategic Human Resources Management (3-0-3).** Focuses on the strategic role of HRM, i.e., the role of HRM in strategy formulation, strategy implementation and measuring and improving HRM effectiveness. Examines how to align HRM practices with organizational business goals, using job analysis and design, HR planning, recruitment and selection, training and development, performance management and compensation practices. Also addresses the special topics of Emiratization and diversity issues, talent management, the role of HR in mergers and acquisitions, and high commitment practices. Restricted to MBA and MSA programs, excluding Pre-MBA students.

**MBA 680 Project Management (3-0-3).** Examines the concepts and techniques associated with managing projects in business organizations. Considers project design, planning, scheduling, systems engineering, cost estimation and control. Explores the relationship between innovation and risk. Restricted to MBA program, excluding Pre-MBA students. Prerequisite: MBA 603.

**MBA 681 Technology Innovation and Digital Strategy (3-0-3).** Takes an analytical approach to assessing the latest trends in information technology (IT) and information systems (IS), and determining competitive digital strategies. Explores the relationship between innovation and IT. Builds capabilities for evaluating strategies to achieve competitive advantages for organizations. Presents topics such as cloud computing, AI, e-commerce, business analytics and virtual reality from case studies to highlight key concepts and emphasize best practices. Includes concepts and theories of technology and innovation, as well as practical skills that can be applied to real-world business problems. Restricted to MBA and MSA programs, excluding Pre-MBA students.

**MBA 695 Seminar (1-0-0).** Covers the requirement for planning, conceptualizing and executing a professional research project. Provides a unique forum for the students to explore and discuss business research and its application to professional practice. Familiarizes students with a range of contemporary research topics and relevant research methodologies through interaction with faculty in a seminar-based setting. Graded as Pass/Fail. Restricted to MBA and MSA programs, excluding Pre-MBA students.

**MBA 697 Business Co-op (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 one semester of on-the-job experience with an approved sponsor organization. Graded as Pass/No Pass. Restricted to MBA and MSA programs, excluding Pre-MBA students. Prerequisites: good standing and the permission of the MBA program coordinator.

**MBA 699 Professional Research**

**Project (6-0-6).** Covers the application of substantive skills across one or more organizational areas. Focuses on the comprehensive analysis of an organizational problem or new initiative, involving problem formulation, fieldwork and data collection, and hands-on analysis/application. Emphasizes the application of appropriate methods for addressing the various components of the project. Addresses the identification of organizational problems or potential for new initiatives, based on the analysis of existing conditions and future trends. Involves the review of relevant information to justify the exploration of the organizational problem or initiative; collection and analysis of data, using appropriate methods; drawing of conclusions; and development of soundly justified recommendations culminating in a written professional research project report and oral presentation. Graded as Pass/Fail. Restricted to MBA program, excluding Pre-MBA students. Prerequisite: good academic standing and the permission of the MBA program coordinator; prerequisite/concurrent: MBA 695.

## Special Topic Courses

**Special Topic (1 to 4 credit hours).**

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 694 or 794 courses. The three-letter course prefix reflects the field of study of the course.

Descriptions of particular special topic courses are made available in the school during registration.

# Full-Time Faculty

The following pages list the full-time AUS faculty members with their terminal degrees, the conferring institution, the AUS department they are members of, as well as administrative positions they hold in addition to their faculty title. This information is also available at [www.aus.edu/faculty-hub](http://www.aus.edu/faculty-hub).

For details on the research achievements, research interests and experience of full-time AUS faculty members, visit [www.aus.edu/research/impact/faculty-research](http://www.aus.edu/research/impact/faculty-research).

- A**
- Abandah, Gheith**, PhD, University of Michigan, 1998; Visiting Professor in Computer Science and Engineering
- Abdalla, Jamaeldin**, PhD, University of California at Berkeley, 1989; Professor in Civil Engineering
- Abdallah, Abed Al-Nasser**, PhD, University of Lancaster, 2004; Professor in Accounting and Head, Department of Accounting
- Abdelfatah, Akmal**, PhD, University of Texas at Austin, 1999; Professor in Civil Engineering
- Abdelgawad, Mohamed**, PhD, University of Toronto, 2009; Associate Professor in Mechanical Engineering
- Abdel-Hafez, Mamoun**, PhD, University of California at Los Angeles, 2003; Professor in Mechanical Engineering; Head, Department of Mechanical Engineering and MTR Program Academic Coordinator
- Abdel-Jabbar, Nabil**, PhD, University of Michigan, 1996; Professor in Chemical and Biological Engineering
- Abdel Naby, Shahin**, PhD, Western Michigan University, 2010; Assistant Professor in Physics
- Abed, Farid**, PhD, Louisiana State University, 2005; Professor in Civil Engineering
- Abouleish, Mohamed Yehia**, PhD, Tennessee Technological University, 2003; Professor in Biology, Chemistry and Environmental Sciences
- Abu Al-Foul, Bassam**, PhD, University of Utah, 1994; Professor in Economics
- Abualrub, Taher**, PhD, University of Iowa, 1998; Professor in Mathematics and Statistics
- Abujarour, Safa'a**, PhD, University of Potsdam, 2021; Assistant Professor in Marketing and Information Systems
- Abukhaled, Marwan**, PhD, Texas Tech University, 1995; Professor in Mathematics and Statistics
- Abulbasal, Rana**, PhD, Utah State University, 2023; Assistant Professor in International Studies
- Abu-Nabah, Bassam**, PhD, University of Cincinnati, 2007; Associate Professor in Mechanical Engineering
- Aburas, Reham**, PhD, Purdue University, 2024; Assistant Professor in Computer Science and Engineering
- Abu-Rukba, Ra'afat**, PhD, Western University, 2013; Associate Professor in Computer Science and Engineering
- Abusalim, Alaanoud**, MA, Southern Illinois University, Carbondale, 2006; Senior Instructor in English
- Abu-Yousef, Imad**, PhD, McGill University, 1996; Professor in Biology, Chemistry and Environmental Sciences
- Abuzaid, Wael**, PhD, University of Illinois, 2012; Associate Professor in Mechanical Engineering
- Agha, Albert**, C. Phil, University of California, Los Angeles, 2017; Assistant Professor in Performing Arts and Interim Academic Coordinator, Performing Arts Program
- Aghasi, Maya**, PhD, University of Wisconsin Madison, 2012; Associate Professor in English
- Aguir, Iness**, PhD, University of Texas at San Antonio, 2013; Associate Professor in Finance
- Ahmad, Norita**, PhD, Rensselaer Polytechnic Institute, 2001; Professor in Marketing and Information Systems, Director, Center for Innovation in Teaching and Learning
- Ahmed, Khawlah**, PhD, State University of New York at Buffalo, 1998; Professor in English
- Ahmed, Vian**, PhD, Loughborough University, 2000; Professor in Industrial Engineering
- Ajčić, Adnan**, PhD, Northern Arizona University, 2015; Associate Professor in English
- Aklson, Alex**, PhD, University of Toronto, 2016; Visiting Assistant Professor in Computer Science and Engineering
- Al-Ali, Abdul-Rahman**, PhD, Vanderbilt University, 1990; Professor in Computer Science and Engineering
- Al-Asheh, Sameer**, PhD, University of Ottawa, 1997; Professor in Chemical and Biological Engineering; Head, Department of Chemical and Biological Engineering and MSBME Academic Coordinator
- Al-Assadi, Wesam**, MA, American University of Sharjah, 2004; Instructor in Arabic and Translation Studies
- Al-Attar, Mariam**, PhD, University of Leeds, 2008; Senior Lecturer in Arabic and Translation Studies
- Albasha, Lutfi**, PhD, University of Leeds, 1995; Professor in Electrical Engineering
- Alhajri, Mohamed**, PhD, Massachusetts Institute of Technology, 2023; Assistant Professor in Computer Science and Engineering
- AlHamaydeh, Mohamed**, PhD, University of Southern California, 2005; Professor in Civil Engineering
- Ali, Ahmed**, PhD, University of Durham, 1999; Professor in Arabic and Translation Studies; Head, Department of Arabic and Translation Studies and MATI Program Academic Coordinator
- Ali, Rami**, PhD, Kansas State University, 1993; Visiting Professor in Physics
- Ali, Tarig**, PhD, The Ohio State University, 2003; Professor in Civil Engineering
- Al-Issa, Ahmad**, PhD, Indiana University of Pennsylvania, 1998; Professor in English and Associate Dean for Undergraduate Affairs, College of Arts and Sciences
- Alkaabneh, Faisal**, PhD, Cornell University, 2020; Assistant Professor in Industrial Engineering
- Al-Kaisi, Meis**, PhD, University of London, 2006; Associate Professor in Arabic and Translation Studies
- Al-Khader, Maen**, PhD, Illinois Institute of Technology, 2008; Professor in Mechanical Engineering
- AlKhazali, Osamah**, PhD, University of Memphis, 1997; Professor in Finance and Head, Department of Finance
- Al Majali, Anas**, PhD, University of Southern California, 2014; Visiting Associate Professor in Computer Science and Engineering
- Al-Najjar, Abeer**, PhD, University of Edinburgh, 2003; Associate Professor in Media Communication
- Alnaser, Ali Sami**, PhD, Western Michigan University, 2002; Professor in Physics; Director, Materials Research Center and PhD MSE Program Academic Coordinator
- Al-Nashash, Hasan**, PhD, Kent University, 1988; Professor in Electrical Engineering, and PhD-BSBE Program Academic Coordinator
- Alobaidi, Ghada**, PhD, University of Western Ontario, 2000; Associate Professor in Mathematics and Statistics
- Alotaibi, Eid**, PhD, Rutgers University, 2021; Assistant Professor in Accounting
- Al-Othman, Amani**, PhD, University of Ottawa, 2012; Associate Professor in Chemical and Biological Engineering and Petrofac Research Chair in Renewable Energy
- Aloul, Fadi**, PhD, University of Michigan, 2003; Professor in Computer Science and Engineering and Dean, College of Engineering
- Al-Sayah, Mohamed**, PhD, University of Alberta, 2002; Professor in Biology, Chemistry and Environmental Sciences

**Al Shaar, Nuha**, PhD, University of Cambridge, 2010; Professor in Arabic and Translation Studies

**Alshraideh, Hussam**, PhD, The Pennsylvania State University, 2011; Professor in Industrial Engineering

**Al-Tamimi, Adil**, PhD, Strathclyde University, 1990; Professor in Civil Engineering

**Alzaatreh, Ayman**, PhD, Central Michigan University, 2011; Associate Professor in Mathematics and Statistics

**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; Associate Professor in Marketing and Information Systems

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