AMERICAN UNIVERSITY OF BAHRAIN

Academic Catalog

AUBH 2025-2026

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Our Vision

The American University of Bahrain will be internationally recognized for quality and innovation in learning, the success of the leaders it graduates, and its positive impact on social and economic transformation.

Our Mission

Our mission is to provide transformative, flexible, and innovative learning opportunities to position graduates to launch and sustain satisfying and successful careers. We will foster learner success by promoting interdisciplinarity and entrepreneurial endeavors, providing analytical and technical skills necessary to thrive in the digital economy, and engaging with our communities to foster respect, positive impact, and social responsibility.

Our Values (AUBH CARES)

- ✓ **Creativity & Innovation:** We are committed to providing our community members with opportunities to challenge the status quo and pursue new experiences. We encourage original thinking, problem-solving, and positive change, not only in teaching but also in our operations.

- ✓ **Accessibility & Openness:** We believe that education should be accessible to all qualified individuals, irrespective of their socioeconomic status, religion, nationality, gender, or any other factor. We are committed to ensuring that education remains open and available to all who seek it.

- ✓ **Respect & Care:** We integrate respect and care into every facet of our university's operations and culture. We recognize the inherent value of human dignity and care about the individual needs and ambitions of our students and staff. Together, we build a supportive and caring professional and learning community.

- ✓ **Excellence:** At AUBH, we are dedicated to achieving excellence within our campus community by offering rigorous and high- quality education to all students and fostering achievements in research and community engagement. We cultivate an environment that promotes lifelong learning, civic and social responsibility, leadership development, and individual and career growth.

- ✓ **Student-Centric:** We prioritize the needs and success of students at the core of all decision-making and operations. We strive to create an environment where students feel supported, heard, and empowered in their learning journey.

Graduate Attributes

- ✓ **Problem-solving:** AUBH graduates critically analyze problems or complex situations and work out solutions to overcome them, capitalizing on available resources and logical thinking.
- ✓ **Leadership:** AUBH graduates are willing to take ownership, influence and support others around them, and inspire change.
- ✓ **Social Responsibility:** AUBH graduates take responsible actions that are in the best interest of other individuals, the environment, and society.
- ✓ **Global Awareness:** AUBH graduates understand their role in the world in relation to the global context.
- ✓ **Entrepreneurial Mindset:** AUBH graduates can challenge the status quo and adapt to changing circumstances.
- ✓ **Life-long Learning:** AUBH graduates use self-reflection to identify their weaknesses, develop new skills and knowledge, and transfer the acquired skills and knowledge to new contexts.

College of
Business & Management (CBM)

CBM Overview

College Mission & Objectives

The mission of the College of Business and Management is to transform students into effective decision-makers who are ready to compete in a dynamic business environment by being socially responsible, ethically focused, and globally oriented. In support of the mission of American University of Bahrain, the fundamental objectives of the College of Business and Management are as follows:

✓ Demonstrate specialized knowledge in a particular field of study such as accounting, marketing, management, finance, and economics, and general understanding of the core business concepts and theories.

✓ Demonstrate an ability to apply common quantitative and qualitative analysis with the aid of analytical tools in the field of business studies.

✓ Critically analyze business related issues, constructing viable solutions to solve real life problems.

✓ Demonstrate effective oral and written communication skills, including the ability to develop sound and coherent arguments in the context of business through formal or informal presentations and/ or other forms of written communication.

✓ Demonstrate the ability to work professionally, ethically, and effectively individually as well as in a team in familiar and unfamiliar contexts to achieve specific outcomes.

Dean's Message

Dear Students,

It is my great pleasure to welcome you to the College of Business at the American University of Bahrain (AUBH). Beginning your academic journey with us is the start of an exciting chapter filled with discovery, growth, and opportunities that will shape both your professional and personal future.

At the College of Business, we are committed to fostering critical thinking, innovation, collaboration, and leadership. We encourage you to question, analyze, and explore new perspectives—skills that are essential for thriving in today's dynamic business world. Beyond the classroom, I invite you to immerse yourself in the vibrant academic and social community at AUBH, where you will have opportunities to engage with peers, faculty, and industry professionals.

Our programs are designed to provide you with a strong foundation in business knowledge while also equipping you with practical skills through experiential learning, case studies, and real-world projects. However, your success depends not only on what we offer, but also on the initiative and responsibility you take in shaping your own learning journey.

I wish you a rewarding and successful journey at the College of Business and look forward to seeing the great things you will accomplish.

Dr. Fatema Alaali

Associate Professor,
Dean of the College of Business and Management

CBM Overview

Faculty Directory

The faculty of the College of Business at AUBH are accomplished academics and industry professionals who bring a powerful combination of scholarly expertise and practical business experience to the classroom. With diverse international backgrounds and extensive knowledge in fields such as management, finance, accounting, marketing, and entrepreneurship, our faculty are committed to equipping students with the skills and mindset needed to succeed in today's global economy. The table below provides key information about our full-time faculty members.

Dean
Dr. Fatema Alaali

MGMT Program Coordinator	FINC Program Coordinator	DMSM Program Coordinator	HRMT Program Coordinator	PG Program Coordinator
Dr. Amal Ahmadi	Dr. Ahmed Alhayki	Dr. Maryam Almahdi	Dr. Maryam Hashem	Dr. Miriam Allily
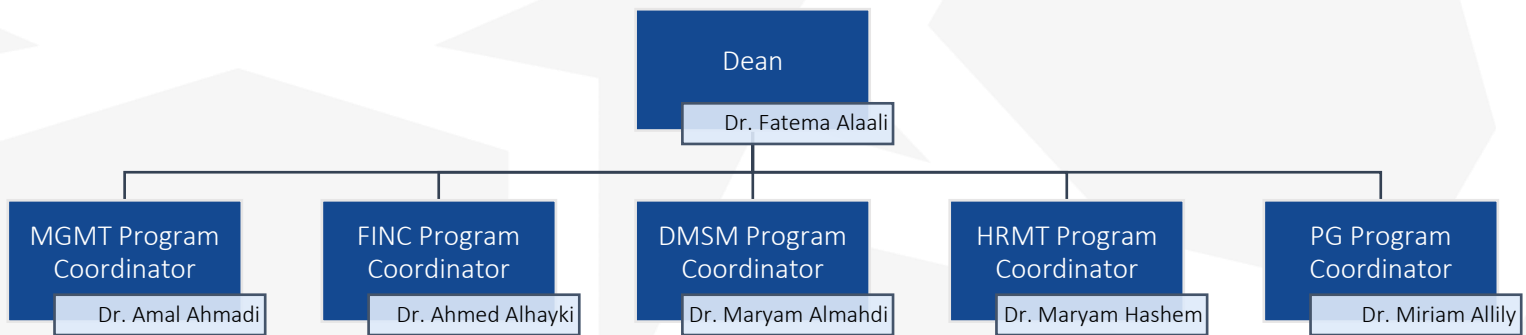
Name	Title	Office Location	Email
Dr. Fatema Alaali	Dean	201	fatema.alaali@aubh.edu.bh
Dr. Ahmed Alhayki	Associate Professor in FINC	204	ahmad.alhaiki@aubh.edu.bh
Dr. Alex Mari	Associate Professor in DMSM	210 (Bridge)	alex.mari@aubh.edu.bh
Dr. Guiseppe Cantafio	Associate Professor in MGMT	209 (Bridge)	giuseppe.cantafio@aubh.edu.bh
Dr. Amal Ahmadi	Associate Professor in MGMT	208 (Bridge)	amal.ahmadi@aubh.edu.bh
Dr. Maryam Al Mahdi	Assistant Professor of DMSM	206	maryam.almahdi@aubh.edu
Dr. Miriam Allily	Assistant Professor of FINC	207	miriam.allily@aubh.edu.bh
Dr. Maryam Hashem	Assistant Professor of HRMT	205	maryam.hashem@aubh.edu.bh
Dr. Layla Mohammed	Assistant Professor in MGMT	203	layla.mohammed@aubh.edu.bh
Ms. Amina Al Hawaj	Lecturer of Business	202I	amina.alhawaj@aubh.edu.bh
Ms. Israa Abdulla	Lecturer in Management	202J	israa.abdulla@aubh.edu.bh
Ms. Nancy El Ghoul	Lecturer in Management	202H	nancy.elghoul@aubh.edu.bh

CBM Undergraduate Programs

Bachelor of Business Administration in Finance

The Bachelor of Business Administration in Finance is a 4-year undergraduate curriculum that prepares students for careers in industry, public accounting, government, and nonprofit organizations, as well as for advanced study. The goal of the Bachelor of Business Administration in Finance is to provide students with a foundation in business with an emphasis in finance. The use of problem analysis, critical thinking, communication skills, and technological skills is emphasized to analyze ambiguous situations and provide relevant business alternatives. Graduates of the Bachelor of Business Administration in Finance can pursue a wide range of activities including auditing, accounting, financial planning, budgeting, and management consulting.

Program Learning Outcomes (PLOs)

Graduates of the BBA in Finance program are expected to achieve the following knowledge, skills, and professional competencies:

- ✓ Demonstrate critical theoretical and practical knowledge of practices, concepts, and theories in the business field with a focus on finance.

- ✓ Effectively apply the concepts and principles of business to practical applications that may include – but are not limited to- financial analysis, budgeting, forecasting, investment management, capital budgeting, and risk management.

- ✓ Critically synthesize complex information into meaningful business perspectives that facilitate actionable solutions.

- ✓ Develop ability to utilize relevant software and technological aids to analyze data with specific applications in finance.

- ✓ Demonstrate effective oral and written communication skills, including the ability to develop sound and coherent arguments in the context of business through formal or informal presentations and/ or other forms of written communication.

- ✓ Demonstrate the ability to work professionally, ethically, and effectively individually as well as in a team in familiar and unfamiliar contexts to achieve specific outcomes.

Program Structure

All students pursuing the Bachelor of Business Administration in Finance must complete a minimum of 125 credits with a cumulative GPA of 2.0 or better. Specifically, the requirements are as follows:

- o A minimum of 38 credits of general education requirements
- o A minimum of 39 credits of business core requirements
- o A minimum of 33 credits of major requirements
- o A minimum of 9 credits of major electives
- o A minimum of 6 credits of professional elective options

CBM Undergraduate Programs

Curriculum Plan – BBA in Finance

Course Code	Course Title	CH	Pre-requisites
General Education Requirements	Total Credits	38	
National Requirements	Total Credits	7	
ARHG 104/ARHG 101	Arabic for Arabic Speakers/Arabic for Non-Arabic Speakers	3	
ARHG 106	Modern History of Bahrain	2	
ARHG 107	Human Rights	2	
English Requirements	Total Credits	6	
ENGL 101	Composition I	3	
ENGL 102	Composition II	3	ENGL 101
Mathematics Requirements	Total Credits	6	
MATH 115	Introduction to Probability and Statistics	3	
MATH 130	College Algebra	3	
MATH 131	Finite Math with Calculus	3	
*Students can be exempted from these courses if they successfully completed any 100 level (NQF level 5) math course.			
**Students must choose between MATH 130 or MATH 131.			
ICT Requirements	Total Credits	3	
COSC 101	Introduction to Computing	3	
Lifelong Learning Requirements	Total Credits	1	
UNSS 101	University Success	1	
Social and Behavioral Science Requirements	Total Credits	3	
ENGL 205	Business Communication	3	
Natural Science Requirements	Total Credits	4	
Students should complete a minimum of 4 credits, including at least 1 credit lab from the Natural Science list of the general Education tabulated below.			
Arts and Humanities Requirements	Total Credits	3	
Students should complete a minimum of 3 credits from the Arts and Humanities list of the general Education tabulated below			
Free General Education Electives	Total Credits	5	
A minimum of 5 credits can be taken from any of the General Education courses (Free General Education Electives) listed below.			
Mathematics List			
MATH 153	Calculus I	4	
MATH 154	Calculus II	4	MATH 153
MATH 252	Calculus III	4	MATH 154
MATH 203	Discrete Mathematics	3	MATH 153
MATH 255	Introduction to Linear Algebra	3	MATH 153
MATH 260	Probability and Statistics	4	MATH 154
Arts and Humanities List			
ANTH 152	Introduction to Cultural Anthropology	3	
HUMS 101	Forms and Ideas in the Humanities	3	
HIST 201	World History	3	
TURK 101	Turkish for Beginners	3	
CCHN 101	Spoken Mandarin	3	
COMS 356	Intercultural Communication	3	ENGL 101
PHIL 101	Introduction to Philosophy	3	
PHIL 201	Oriental and Islamic Philosophy	3	
ENGL 103	Public Speaking	3	
CULT 101	Cultural Criticism	2	ENGL 101
MUSC 101	Music Appreciation	2	
Natural Sciences List			
BIOL 101	Principles of Biology I	3	co-requisite BIOL 101L
BIOL 101L	Principles of Biology I Laboratory	1	co-requisite BIOL 101
CHEM 101	Introductory Chemistry	3	co-requisite of CHEM 101L
CHEM 101L	Introductory Chemistry Laboratory	1	co-requisite of CHEM 101
CHEM 103	General Chemistry	3	co-requisite of CHEM 103L
CHEM 103L	General Chemistry Laboratory	1	co-requisite of CHEM 103
PHYS 101	Principles of Physics I	3	co-requisite of PHYS 101L
PHYS 101L	Principles of Physics I Laboratory	1	co-requisite of PHYS 101
PHYS 102	Principles of Physics II	3	PHYS 101, PHYS 101L, MATH 153, co-requisite: PHYS 102L
PHYS 102L	Principles of Physics II Laboratory	1	PHYS 101, PHYS 101L, MATH 153, co-requisite: PHYS 102
ASTR 352	Current Developments in Astronomy	3	co-requisite of ASTR 352L
ASTR 352L	Current Developments in Astronomy Laboratory	1	co-requisite of ASTR 352
ENVS 201	Environmental Science	3	co-requisite of ENVS 201L
ENVS 201L	Environmental Science Laboratory	1	co-requisite of ENVS 201
Social and Behavioral Sciences List			
PSYC 101	Introduction to Psychology	3	
SOCS 101	Introduction to Sociology	3	
SUST 101	Principles of Sustainability	3	
POLS 321	Comparative Political Ideologies	3	
PSYC 202	Mind Matters: A Practical Exploration	3	
MDIA 101	New Media and Society	2	

CBM Undergraduate Programs
Curriculum Plan – BBA in Finance

Program Core Requirments	Total Credits	39	
ACCT 201	Introduction to Financial Accounting	3	
ACCT 202	Introduction to Managerial Accounting	3	ACCT 201
BUSN 101	Introduction to Business	3	
BUSN 301	Business Law	3	Minimum of 60 credits
ECON 201	Principles of Microeconomics	3	
ECON 202	Principles of Macroeconomics	3	ECON 201
FINC 201	Essentials of Financial Analysis	3	ACCT 201
MGMT 101	Principles of Management	3	
MGMT 205	Organizational Behavior	3	MGMT 101
MGMT 350	Business Ethics	3	If CBM Student: MGMT 205,co-requisite: ENGL 205If CEC Student: ENGR 100, ENGR 205
MGMT 410	Business Policy and Strategic Management	3	If CBM Student: MGMT 101, minimum 75 credits If CEC Student: ENGR 401, Passing 75 Credits
MRKG 101	Principles of Marketing	3	
MSYS 201	Principles of Management Information Systems	3	
Program Major Requirements	**Total Credits**	**33**	
FINC 221	Banking	3	FINC 201
FINC 231	Managerial Finance	3	FINC 201
ACCT 311	Intermediate Accounting	3	ACCT 201
FINC 311	Corporate Finance	3	FINC 231
FINC 312	International Finance	3	FINC 231, ECON 202
FINC 411	Investments and Portfolio Management	3	FINC 231
FINC 421	Alternative Investments	3	FINC 411
BUSN 401	Business Research Methods	3	MATH 115, minimum 70 credits
FINC 499	Capstone Project	6	BUSN 401, 90 credits, CGPA of 2.00
FINC 480	Finance Internship	3	Minimum 90 credits, CGPA of 2.00, MRKG 101, MGMT 101, FINC 201
Program Major Electives Options	**Total Credits**	**9**	
Students pursuing BBA in Finance must complete a minimum of nine major elective credits.			
FINC 451	Starting a New Business	3	FINC 231
FINC 461	Mergers and Acquisition	3	FINC 311
FINC 371	Financial Markets and Institutions	3	FINC 201
FINC 410	Data Mining and Machine Learning	3	FINC 231
FINC 412	Data driven Financial Analysis	3	FINC 231
FINC 414	Islamic Banking and Finance	3	FINC 231
BUSN 410	Artificial Intelligence for Business	3	MATH 115 or MATH 153, ENGL 102, COSC 101 or MSYS 201, Minimum of 60 Credits
Professional Elective Options	**Total Credits**	**6**	
Students pursuing a BBA in Finance must complete a minimum of 6 Professional Elective credits. Professional Elective credits may be earned via any course offered at or above the 200 level.			
Program Total Credits		**125**	

CBM Undergraduate Programs

Proposed Study Plan (BBA in FINC) - AY 2025 - 2026

First Year

1st Semester

Course Code	Course Title	CH	Pre-requisites
ENGL 101	Composition I	3	
ARHG 104/ARHG 101	Arabic for Arabic Speakers/Arabic for Non-Arabic Speakers	3	
MATH XXX	Math Requirement*	3	
UNSS 101	University Success	1	
XXXX	Arts and Humanities Requirements	3	
XXXX	Free General Education Elective l	3	
TOTAL		16	

2nd Semester

Course Code	Course Title	CH	Pre-requisites
ENGL 102	Composition II	3	ENGL 101
ARHG 106	Modern History of Bahrain	2	
ARHG 107	Human Rights	2	
COSC 101	Introduction to Computing	3	
XXXX	Natural Science Requirement	3	
XXXX	Natural Science Lab Requirement	1	
MATH 115	Introduction to Probability and Statistics	3	
TOTAL		17	

Second Year

3rd Semester

Course Code	Course Title	CH	Pre-requisites
ACCT 201	Introduction to Financial Accounting	3	
BUSN 101	Introduction to Business	3	
ECON 201	Principles of Microeconomics	3	
MGMT 101	Principles of Management	3	
MRKG 101	Principles of Marketing	3	
TOTAL		15	

4th Semester

Course Code	Course Title	CH	Pre-requisites
FINC 201	Essentials of Financial Analysis	3	ACCT 201
ACCT 202	Introduction to Managerial Accounting	3	ACCT 201
MSYS 201	Principles of Management Information Systems	3	
XXXX	Free General Education Elective II	2	
ENGL 205	Business Communication	3	
ECON 202	Principles of Macroeconomics	3	ECON 201
TOTAL		17	

Third Year

5th Semester

Course Code	Course Title	CH	Pre-requisites
FINC 221	Banking	3	FINC 201
MGMT 205	Organizational Behavior	3	MGMT 101
FINC 231	Managerial Finance	3	FINC 201
ACCT 311	Intermediate Accounting	3	ACCT 201
XXXX	Professional Elective l	3	
TOTAL		15	

6th Semester

Course Code	Course Title	CH	Pre-requisites
BUSN 301	Business Law	3	Minimum of 60 credits
MGMT 350	Business Ethics	3	205, co-requisite: ENGL 205If CEC Students
FINC 312	International Finance	3	FINC 231, ECON 202
FINC 411	Investments and Portfolio Management	3	FINC 231
XXXX	Professional Elective ll	3	
TOTAL		15	

Summer Semester

Course Code	Course Title	CH	Pre-requisites
FINC 480	Finance Internship	3	Minimum 90 credits, CGPA of 2.00, MRKG 101, MGMT 101, FINC 201
TOTAL		3	

Fourth Year

7th Semester

Course Code	Course Title	CH	Pre-requisites
FINC 311	Corporate Finance	3	FINC 231
BUSN 401	Business Research Methods	3	MATH 115, minimum 70 credits
MGMT 410	Business Policy and Strategic Management	3	1, minimum 75 credits If CEC Student: ENGR
FINC 421	Alternative Investments	3	FINC 411
XXXX	Major Elective l	3	
TOTAL		15	

8th Semester

Course Code	Course Title	CH	Pre-requisites
XXXX	Major Elective II	3	
XXXX	Major Elective lll	3	
FINC 499	Capstone Project	6	BUSN 401, 90 credits, CGPA of 2.00
TOTAL		12	

CBM Undergraduate Programs

Bachelor of Business Administration in Management

The Bachelor of Business Administration in Management is a 4-year undergraduate curriculum designed to provide students with the necessary knowledge and leadership skills to succeed in managerial functions. The Bachelor of Business Administration in Management prepares students for careers in industry, government, and nonprofit organizations, as well as for advanced study. The goal of the Bachelor of Business Administration in Management is to provide students with a foundation in business with an emphasis in management. The use of problem analysis, critical thinking, communication skills, and technological skills is emphasized to analyze ambiguous situations and provide relevant business alternatives.

Program Learning Outcomes (PLOs)

Graduates of the BBA in Management program are expected to achieve the following knowledge, skills, and professional competencies:

- ✓ Demonstrate critical knowledge and understanding of a range of contemporary business and management concepts, theories, and issues in the global business environment.

- ✓ Demonstrate critical thinking with the ability to assess the policies and actions of an organization against best practice.

- ✓ Use qualitative and quantitative methods to analyze current and potential problems facing an organization and recommend possible solutions.

- ✓ Demonstrate effective oral and written communication skills, including the ability to develop sound and coherent arguments in the context of business through formal or informal presentations and/ or other forms of written communication.

- ✓ Demonstrate the ability to work professionally, ethically, and effectively individually as well as in a team in familiar and unfamiliar contexts to achieve specific outcomes.

- ✓ 6. Demonstrate the ability to collaborate with managers from other core business functions to address organizational needs.

Program Structure

All students pursuing the Bachelor of Business Administration in Management must complete a minimum of 125 credits with a cumulative GPA of 2.0 or better. Specifically, the requirements are as follows:

- o A minimum of 38 credits of general education requirements
- o A minimum of 39 credits of business core requirements
- o A minimum of 30 credits of major requirements
- o A minimum of 9 credits of major electives
- o A minimum of 9 credits of professional elective options

CBM Undergraduate Programs

Curriculum Plan – BBA in Management

Course Code	Course Title	CH	Pre-requisites
General Education Requirements	**Total Credits**	**38**	
National Requirements	**Total Credits**	**7**	
ARHG 104/ARHG 101	Arabic for Arabic Speakers/Arabic for Non-Arabic Speakers	3	
ARHG 106	Modern History of Bahrain	2	
ARHG 107	Human Rights	2	
English Requirements	**Total Credits**	**6**	
ENGL 101	Composition I	3	
ENGL 102	Composition II	3	ENGL 101
Mathematics Requirements	**Total Credits**	**6**	
MATH 115	Introduction to Probability and Statistics	3	
MATH 130	College Algebra	3	
MATH 131	Finite Math with Calculus	3	
*Students can be exempted from these courses if they successfully completed any 100 level (NQF level 5) math course.			
**Students must choose between MATH 130 or MATH 131.			
ICT Requirements	**Total Credits**	**3**	
COSC 101	Introduction to Computing	3	
Lifelong Learning Requirements	**Total Credits**	**1**	
UNSS 101	University Success	1	
Social and Behavioral Science Requirements	**Total Credits**	**3**	
ENGL 205	Business Communication	3	
Natural Science Requirements	**Total Credits**	**4**	
Students should complete a minimum of 4 credits, including at least 1 credit lab from the Natural Science list of the general Education tabulated below.			
Arts and Humanities Requirements	**Total Credits**	**3**	
Students should complete a minimum of 3 credits from the Arts and Humanities list of the general Education tabulated below			
Free General Education Electives	**Total Credits**	**5**	
A minimum of 5 credits can be taken from any of the General Education courses (Free General Education Electives) listed below.			
Mathematics List			
MATH 153	Calculus I	4	
MATH 154	Calculus II	4	MATH 153
MATH 252	Calculus III	4	MATH 154
MATH 203	Discrete Mathematics	3	MATH 153
MATH 255	Introduction to Linear Algebra	3	MATH 153
MATH 260	Probability and Statistics	4	MATH 154
Arts and Humanities List			
ANTH 152	Introduction to Cultural Anthropology	3	
HUMS 101	Forms and Ideas in the Humanities	3	
HIST 201	World History	3	
TURK 101	Turkish for Beginners	3	
CCHN 101	Spoken Mandarin	3	
COMS 356	Intercultural Communication	3	ENGL 101
PHIL 101	Introduction to Philosophy	3	
PHIL 201	Oriental and Islamic Philosophy	3	
ENGL 103	Public Speaking	3	
CULT 101	Cultural Criticism	2	ENGL 101
MUSC 101	Music Appreciation	2	
Natural Sciences List			
BIOL 101	Principles of Biology I	3	co-requisite BIOL 101L
BIOL 101L	Principles of Biology I Laboratory	1	co-requisite BIOL 101
CHEM 101	Introductory Chemistry	3	co-requisite of CHEM 101L
CHEM 101L	Introductory Chemistry Laboratory	1	co-requisite of CHEM 101
CHEM 103	General Chemistry	3	co-requisite of CHEM 103L
CHEM 103L	General Chemistry Laboratory	1	co-requisite of CHEM 103
PHYS 101	Principles of Physics I	3	co-requisite of PHYS 101L
PHYS 101L	Principles of Physics I Laboratory	1	co-requisite of PHYS 101
PHYS 102	Principles of Physics II	3	PHYS 101, PHYS 101L, MATH 153, co-requisite: PHYS 102L
PHYS 102L	Principles of Physics II Laboratory	1	PHYS 101, PHYS 101L, MATH 153, co-requisite: PHYS 102
ASTR 352	Current Developments in Astronomy	3	co-requisite of ASTR 352L
ASTR 352L	Current Developments in Astronomy Laboratory	1	co-requisite of ASTR 352
ENVS 201	Environmental Science	3	co-requisite of ENVS 201L
ENVS 201L	Environmental Science Laboratory	1	co-requisite of ENVS 201
Social and Behavioral Sciences List			
PSYC 101	Introduction to Psychology	3	
SOCS 101	Introduction to Sociology	3	
SUST 101	Principles of Sustainability	3	
POLS 321	Comparative Political Ideologies	3	
PSYC 202	Mind Matters: A Practical Exploration	3	
MDIA 101	New Media and Society	2	

CBM Undergraduate Programs

Curriculum Plan – BBA in Management

Program Core Requirments	Total Credits	39	
ACCT 101	Introduction to Financial Accounting	3	
ACCT 102	Introduction to Managerial Accounting	3	ACCT 101
BUSN 101	Introduction to Business	3	
BUSN 301	Business Law	3	Minimum 60 credits
ECON 101	Principles of Microeconomics	3	
ECON 102	Principles of Macroeconomics	3	ECON 101
FINC 101	Essentials of Financial Analysis	3	ACCT 101
MGMT 101	Principles of Management	3	
MGMT 205	Organizational Behavior	3	MGMT 101
MGMT 350	Business Ethics	3	MGMT 205 co-requisite ENGL 205
MGMT 410	Business Policy and Strategic Management	3	MGMT 101 + Minimum 75 credits
MRKG 101	Principles of Marketing	3	
MSYS 101	Principles of Management Information Systems	3	
Program Major Requirements	Total Credits	30	
MGMT 301	Operations Management	3	MGMT 101, MATH 115
MGMT 302	Managing Human Resources	3	MGMT 101
MGMT 303	Management and Leadership Development	3	MGMT 101
MGMT 305	International Business	3	MGMT 205, ECON 102
MGMT 306	Cross-Cultural Management	3	MGMT 205
MGMT 380	Project Management	3	FINC 101, ACCT 102, ENGL 205, and MGMT 301
BUSN 401	Business Research Methods	3	MATH 115, Min 70 credits
BUSN 402	Case study, project or dissertation	6	BUSN 401, 90 credits
MGMT 401	Internship	3	minimum of 90 credits and a CGPA of 2.00 , Business senior standing, MGMT 101, FINC 101, MRKG 101
Program Major Electives Options	Total Credits	9	
Students pursuing BBA in Management must complete a minimum of nine major elective credits.			
MGMT 310	Fundamentals of Family Business	3	MGMT 101 and ACCT 102
MGMT 312	Negotiations and Conflict Management	3	MGMT 101, Minimum of 60 credits
MGMT 313	Managing Change and Innovation	3	MGMT 205
MGMT 314	Management Intervention and Consultation	3	MGMT 301
MGMT 403	Entrepreneurship	3	MGMT 101 + min of 60 credits
Professional Elective Options	Total Credits	9	
Students pursuing a BBA in Management must complete a minimum of 9 Professional Elective credits. Professional Elective credits may be earned via any course offered at or above the 200 level.			
Program Total Credits		125	

CBM Undergraduate Programs

Proposed Study Plan (BBA in MGMT) - AY 2025 - 2026

First Year

1st Semester

Course Code	Course Title	CH	Pre-requisites
ENGL 101	Composition I	3	
ARHG 104/ARHG 101	Arabic for Arabic Speakers/Arabic for Non-Arabic Speakers	3	
MATH XXX	Math Requirement*	3	
UNSS 101	University Success	1	
XXXX	Arts and Humanities Requirements	3	
XXXX	Free General Education Elective l	3	
TOTAL		**16**	

2nd Semester

Course Code	Course Title	CH	Pre-requisites
ENGL 102	Composition II	3	ENGL 101
ARHG 106	Modern History of Bahrain	2	
ARHG 107	Human Rights	2	
COSC 101	Introduction to Computing	3	
XXXX	Natural Science Requirement	3	
XXXX	Natural Science Lab Requirement	1	
MATH 115	Introduction to Probability and Statistics	3	
TOTAL		**17**	

Second Year

3rd Semester

Course Code	Course Title	CH	Pre-requisites
ACCT 101	Introduction to Financial Accounting	3	
BUSN 101	Introduction to Business	3	
ECON 101	Principles of Microeconomics	3	
MGMT 101	Principles of Management	3	
MRKG 101	Principles of Marketing	3	
TOTAL		**15**	

4th Semester

Course Code	Course Title	CH	Pre-requisites
ECON 102	Principles of Macroeconomics	3	ECON 101
ACCT 102	Introduction to Managerial Accounting	3	ACCT 101
MSYS 101	Principles of Management Information Systems	3	
XXXX	Free General Education Elective	2	
ENGL 205	Business Communication	3	
TOTAL		**14**	

Third Year

5th Semester

Course Code	Course Title	CH	Pre-requisites
FINC 101	Essentials of Financial Analysis	3	ACCT 101
MGMT 302	Managing Human Resources	3	MGMT 101
MGMT 205	Organizational Behavior	3	MGMT 101
MGMT 303	Management and Leadership Development	3	MGMT 101
XXXX	Professional Elective l	3	
XXXX	Major Elective l	3	
TOTAL		**18**	

6th Semester

Course Code	Course Title	CH	Pre-requisites
BUSN 301	Business Law	3	Minimum of 60 credits
MGMT 350	Business Ethics	3	MGMT 205, co-requisite: ENGL 205
MGMT 301	Operations Management	3	MGMT 101, MATH 115
MGMT 305	International Business	3	If CBM Student: MGMT 205 , ECON 202 If CEC Student: ENGR 100, ENGR 342
XXXX	Professional Elective II	3	
TOTAL		**15**	

Summer Semester

Course Code	Course Title	CH	Pre-requisites
MGMT 401	Internship	3	minimum of 90 credits and a CGPA of 2.00 , Business senior standing, MGMT 101, FINC 101, MRKG 101
TOTAL		**3**	

Fourth Year

7th Semester

Course Code	Course Title	CH	Pre-requisites
BUSN 401	Business Research Methods	3	MATH 115, minimum 70 credits
MGMT 410	Business Policy and Strategic Management	3	If CBM Student: MGMT 101, minimum 75 credits If CEC Student: ENGR 401, Passing 75 Credits
MGMT 306	Cross-Cultural Management	3	MGMT 205
MGMT 380	Project Management	3	FINC 101, ACCT 102, ENGL 205, and MGMT 301
XXXX	Professional Elective III	3	
TOTAL		**15**	

8th Semester

Course Code	Course Title	CH	Pre-requisites
XXXX	Major Elective ll	3	
XXXX	Major Elective lll	3	
BUSN 402	Case study, project or dissertation	6	BUSN 401, 90 credits
TOTAL		**12**	

CBM Undergraduate Programs

Bachelor of Business Administration in Digital Marketing and Social Media

The BBA in Digital Marketing and Social Media at the American University of Bahrain is a 4-year undergraduate curriculum that prepares students for careers in industry, marketing companies, and social media platforms, as well as for advanced study. The goal of the Bachelor of Digital Marketing and Social Media is to prepare students to comprehensively manage and solve marketing tasks and to connect marketing with other fields. Moreover, the concentration in marketing and social media allows students to apply the gained knowledge of popular social channels in the context of growing business. Graduates of the Bachelor of Digital Marketing and Social Media can pursue a wide range of activities such as social media coordinators, marketing directors, social media managers, marketing communications managers, video/audio producer and web developer.

Program Learning Outcomes (PLOs)

Graduates of the BBA in Digital Marketing and Social Media program are expected to achieve the following knowledge, skills, and professional competencies:

- ✓ Demonstrate critical understanding of the principles and concepts of business, marketing, and digital marketing, including relevant theories in associated fields of knowledge.

- ✓ Apply appropriate methods of business, marketing, and digital marketing research and practice and create effective content, materials, and campaigns using industry standard software and tools.

- ✓ Use qualitative and quantitative methods to analyze current and potential marketing and business-related problems facing an organization and recommend solutions.

- ✓ Demonstrate effective oral and written communication skills, including the ability to develop coherent arguments in the context of the business, marketing, and digital marketing environment.

- ✓ Demonstrate the ability to work individually and collaboratively with team members and managers from other core business functions to address marketing and business needs.

- ✓ Demonstrate creativity and innovation in the planning, creation, and implementation of business and marketing strategies.

Program Structure

All students pursuing the Bachelor of Business Administration in Digital Marketing and Social Media must complete a minimum of 125 credits with a cumulative GPA of 2.0 or better. Specifically, the requirements are as follows:

- o   A minimum of 38 credits of general education requirements
- o   A minimum of 39 credits of business core requirements
- o   A minimum of 33 credits of major requirements
- o   A minimum of 9 credits of major electives
- o   A minimum of 6 credits of professional elective options

CBM Undergraduate Programs
Curriculum Plan – BBA in Digital Marketing and Social Media

Course Code	Course Title	CH	Pre-requisites
General Education Requirements	**Total Credits**	**38**	
National Requirements	**Total Credits**	**7**	
ARHG 104/ARHG 101	Arabic for Arabic Speakers/Arabic for Non-Arabic Speakers	3	
ARHG 106	Modern History of Bahrain	2	
ARHG 107	Human Rights	2	
English Requirements	**Total Credits**	**6**	
ENGL 101	Composition I	3	
ENGL 102	Composition II	3	ENGL 101
Mathematics Requirements	**Total Credits**	**6**	
MATH 115	Introduction to Probability and Statistics	3	
MATH 130	College Algebra	3	
MATH 131	Finite Math with Calculus	3	

*Students can be exempted from these courses if they successfully completed any 100 level (NQF level 5) math course.

**Students must choose between MATH 130 or MATH 131.

Course Code	Course Title	CH	Pre-requisites
ICT Requirements	**Total Credits**	**3**	
COSC 101	Introduction to Computing	3	
Lifelong Learning Requirements	**Total Credits**	**1**	
UNSS 101	University Success	1	
Social and Behavioral Science Requirements	**Total Credits**	**3**	
ENGL 205	Business Communication	3	
Natural Science Requirements	**Total Credits**	**4**	

Students should complete a minimum of 4 credits, including at least 1 credit lab from the Natural Science list of the general Education tabulated below.

	Arts and Humanities Requirements	**Total Credits**	**3**

Students should complete a minimum of 3 credits from the Arts and Humanities list of the general Education tabulated below

Free General Education Electives	**Total Credits**	**5**	

A minimum of 5 credits can be taken from any of the General Education courses (Free General Education Electives) listed below.

Mathematics List			
MATH 153	Calculus I	4	
MATH 154	Calculus II	4	MATH 153
MATH 252	Calculus III	4	MATH 154
MATH 203	Discrete Mathematics	3	MATH 153
MATH 255	Introduction to Linear Algebra	3	MATH 153
MATH 260	Probability and Statistics	4	MATH 154
Arts and Humanities List			
ANTH 152	Introduction to Cultural Anthropology	3	
HUMS 101	Forms and Ideas in the Humanities	3	
HIST 201	World History	3	
TURK 101	Turkish for Beginners	3	
CCHN 101	Spoken Mandarin	3	
COMS 356	Intercultural Communication	3	ENGL 101
PHIL 101	Introduction to Philosophy	3	
PHIL 201	Oriental and Islamic Philosophy	3	
ENGL 103	Public Speaking	3	
CULT 101	Cultural Criticism	2	ENGL 101
MUSC 101	Music Appreciation	2	
Natural Sciences List			
BIOL 101	Principles of Biology I	3	co-requisite BIOL 101L
BIOL 101L	Principles of Biology I Laboratory	1	co-requisite BIOL 101
CHEM 101	Introductory Chemistry	3	co-requisite of CHEM 101L
CHEM 101L	Introductory Chemistry Laboratory	1	co-requisite of CHEM 101
CHEM 103	General Chemistry	3	co-requisite of CHEM 103L
CHEM 103L	General Chemistry Laboratory	1	co-requisite of CHEM 103
PHYS 101	Principles of Physics I	3	co-requisite of PHYS 101L
PHYS 101L	Principles of Physics I Laboratory	1	co-requisite of PHYS 101
PHYS 102	Principles of Physics II	3	PHYS 101, PHYS 101L, MATH 153, co-requisite: PHYS 102L
PHYS 102L	Principles of Physics II Laboratory	1	PHYS 101, PHYS 101L, MATH 153, co-requisite: PHYS 102
ASTR 352	Current Developments in Astronomy	3	co-requisite of ASTR 352L
ASTR 352L	Current Developments in Astronomy Laboratory	1	co-requisite of ASTR 352
ENVS 201	Environmental Science	3	co-requisite of ENVS 201L
ENVS 201L	Environmental Science Laboratory	1	co-requisite of ENVS 201
Social and Behavioral Sciences List			
PSYC 101	Introduction to Psychology	3	
SOCS 101	Introduction to Sociology	3	
SUST 101	Principles of Sustainability	3	
POLS 321	Comparative Political Ideologies	3	
PSYC 202	Mind Matters: A Practical Exploration	3	
MDIA 101	New Media and Society	2	

CBM Undergraduate Programs
Curriculum Plan – BBA in Digital Marketing and Social Media

Program Core Requirments	Total Credits	39	
ACCT 201	Introduction to Financial Accounting	3	
ACCT 202	Introduction to Managerial Accounting	3	ACCT 201
BUSN 101	Introduction to Business	3	
BUSN 301	Business Law	3	Minimum of 60 credits
ECON 201	Principles of Microeconomics	3	
ECON 202	Principles of Macroeconomics	3	ECON 201
FINC 201	Essentials of Financial Analysis	3	ACCT 201
MGMT 101	Principles of Management	3	
MGMT 205	Organizational Behavior	3	MGMT 101
MGMT 350	Business Ethics	3	If CBM Student: MGMT 205, co-requisite: ENGL 205 If CEC Student: ENGR 100, ENGR 205
MGMT 410	Business Policy and Strategic Management	3	If CBM Student: MGMT 101, minimum 75 credits If CEC Student: ENGR 401, Passing 75 Credits
MRKG 101	Principles of Marketing	3	
MSYS 201	Principles of Management Information Systems	3	
Program Major Requirements	Total Credits	33	
DSGN 141	Computer Culture I	3	
MRKG 201	Consumer Behavior	3	MRKG 101
MRKG 202	Online Marketing Channels	3	
MRKG 302	Marketing Strategy and Planning in a Digital World	3	MRKG 101, MRKG 202 Minimum 60 credits
MRKG 401	Principles of Marketing Research	3	MATH 115, Minimum 70 credits
MRKG 421	Data Analytics and Visualization	3	Minimum 60 credits, MRKG 101, MRKG 202
MRKG 431	Contemporary Issues in Social Media Campaigns	3	Minimum 60 credits, MRKG 101, MRKG 202
MGMT 430	Project Management	3	FINC 201, ACCT 202, ENGL 205, Minimum of 70 Credits
MRKG 499	Capstone Project	6	MRKG 401, CGPA of 2.00, Minimum of 90 credits
MRKG 480	Marketing Internship	3	Minimum 90 credits, CGPA of 2.00, MRKG 101, MGMT 101, FINC 201
Program Major Electives Options	Total Credits	9	
Students pursuing BBA in Digital Marketing and Social Media must complete a minimum of nine major elective credits.			
DSGN 301	Web Design	3	If CBM Student: Minimum 60 credits
MGMT 305	International Business	3	If CBM Student: MGMT 205 , ECON 202 If CEC Student: ENGR 100, ENGR 342
MGMT 313	Managing Change and Innovation	3	MGMT 205
MGMT 403	Entrepreneurship	3	MGMT 101, Minimum of 60 Credits
MRKG 310	Integrated Marketing Communications in a Digital World	3	MRKG 101, Minimum 60 credits
MRKG 410	Services Marketing	3	MRKG 201, Minimum 60 credits
BUSN 410	Artificial Intelligence for Business	3	MATH 115 or MATH 153, ENGL 102, COSC 101 or MSYS 201, Minimum of 60 Credits
Professional Elective Options	Total Credits	6	
Students pursuing a BBA in Digital Marketing and Social Media must complete a minimum of 6 Professional Elective credits. Professional Elective credits may be earned via any course offered at or above the 200 level.			
Program Total Credits		125	

CBM Undergraduate Programs

Proposed Study Plan (BBA in DMSM) - AY 2025 - 2026

First Year

1st Semester				2nd Semester			
Course Code	Course Title	CH	Pre-requisites	Course Code	Course Title	CH	Pre-requisites
ENGL 101	Composition I	3		ENGL 102	Composition II	3	ENGL 101
ARHG 104/ARHG 101	Arabic for Arabic Speakers/Arabic for Non-Arabic Speakers	3		ARHG 106	Modern History of Bahrain	2	
MATH XXX	Math Requirement*	3		ARHG 107	Human Rights	2	
UNSS 101	University Success	1		COSC 101	Introduction to Computing	3	
XXXX	Arts and Humanities Requirements	3		XXXX	Natural Science Requirement	3	
XXXX	Free General Education Elective l	3		XXXX	Natural Science Lab Requirement	1	
				MATH 115	Introduction to Probability and Statistics	3	
TOTAL		16		TOTAL		17	

Second Year

3rd Semester				4th Semester			
Course Code	Course Title	CH	Pre-requisites	Course Code	Course Title	CH	Pre-requisites
ACCT 201	Introduction to Financial Accounting	3		ACCT 202	Introduction to Managerial Accounting	3	ACCT 201
BUSN 101	Introduction to Business	3		ECON 202	Principles of Macroeconomics	3	ECON 201
ECON 201	Principles of Microeconomics	3		MSYS 201	Principles of Management Information Systems	3	
MGMT 101	Principles of Management	3		XXXX	Free General Education Elective II	2	
MRKG 101	Principles of Marketing	3		ENGL 205	Business Communication	3	
TOTAL		15		TOTAL		14	

Third Year

5th Semester				6th Semester			
Course Code	Course Title	CH	Pre-requisites	Course Code	Course Title	CH	Pre-requisites
FINC 201	Essentials of Financial Analysis	3	ACCT 201	BUSN 301	Business Law	3	Minimum of 60 credits
MGMT 205	Organizational Behavior	3	MGMT 101	MGMT 350	Business Ethics	3	If CBM Student: MGMT 205,co-requisite: ENGL 205 If CEC Student: ENGR 100, ENGR 205
DSGN 141	Computer Culture I	3		MRKG 302	Marketing Strategy and Planning in a Digital World	3	MRKG 101, MRKG 202 Minimum 60 credits
MRKG 201	Consumer Behavior	3	MRKG 101	MRKG 421	Data Analytics and Visualization	3	Minimum 60 credits, MRKG 101, MRKG 202
MRKG 202	Online Marketing Channels	3		XXXX	Professional Elective l	3	
XXXX	Major Elective l	3					
TOTAL		18		TOTAL		15	

Summer Semester

Course Code	Course Title	CH	Pre-requisites
MRKG 480	Marketing Internship	3	Minimum 90 credits, CGPA of 2.00, MRKG 101, MGMT 101, FINC 201
TOTAL		3	

Fourth Year

7th Semester				8th Semester			
Course Code	Course Title	CH	Pre-requisites	Course Code	Course Title	CH	Pre-requisites
MGMT 410	Business Policy and Strategic Management	3	If CBM Student: MGMT 101, minimum 75 credits If CEC Student: ENGR 401, Passing 75 Credits	MRKG 431	Contemporary Issues in Social Media Campaigns	3	Minimum 60 credits, MRKG 101, MRKG 202
MRKG 401	Principles of Marketing Research	3	MATH 115, Minimum 70 credits	XXXX	Professional Elective II	3	
MGMT 430	Project Management	3	FINC 201, ACCT 202, ENGL 205, Minimum of 70 Credits	MRKG 499	Capstone Project	6	MRKG 401, CGPA of 2.00, Minimum of 90 credits
XXXX	Major Elective II	3					
XXXX	Major Elective III	3					
TOTAL		15		TOTAL		12	

CBM Postgraduate Programs

Master in Business Administration (MBA)

The College of Business and Management facilitate delivery of the MBA program in AUBH. This two-year program is important for professionals and managers looking to develop deeper understanding and analytical thinking in diverse management fields, such as strategic management, leadership, cross-culture management, data analytics for decision making, corporate finance, and managerial economics. This program and courses are specifically designed with the input of leading industry and international academic specialists, thus culminating in a robust and relevant MBA for local, regional, and global leaders. This MBA is a Level 9 qualification on Bahrain's National Qualification Framework (NQF) and therefore, requires significant candidate participation and commitment to achieve the program learning outcomes.

Program Learning Outcomes (PLOs)

Graduates of the MBA program are expected to achieve the following knowledge, skills, and professional competencies:

- ✓ Demonstrate critical knowledge and understanding of core and specialized theories, principles, and processes in contemporary business and management subjects.

- ✓ Apply core and specialized theoretical concepts, ethical practices, methods, and analytical techniques with elements of creativity and originality in different business and management settings.

- ✓ Critically analyze and solve complex managerial problems using core knowledge and empirical data to inform solutions and decision making in varied business disciplines and settings.

- ✓ Demonstrate professional levels of analysis, interpretation, and originality in addressing complex managerial and business-related issues.

- ✓ Demonstrate a professional level of written and oral communication skills, including the ability to present sound and coherent arguments for a range of audiences with different levels of knowledge or expertise in different business contexts.

- ✓ Use a range of standard and specialized analytical tools and information technology applications to analyse and synthesize quantitative and qualitative data in business and management research projects.

- ✓ Critically evaluate numerical and graphical data to address business performance that can be understood by a range of stakeholders.

- ✓ Operate at a professional level with substantial responsibility for individual and group work activities on complex and undefined problems in varied business and management scenarios.

- ✓ Demonstrate a professional level of reflexivity, strategic decision making, and peer review during business and management projects.

Program Structure

All candidates pursuing the MBA must complete a minimum of 33 credits with a cumulative GPA of 3.0 or higher. Specifically, the requirements are as follows:

- o Foundation Courses with zero credits towards the degree if applicable
- o A minimum of 18 credits of Major Requirements
- o A minimum of 9 credits of Major Electives
- o A minimum of 6 credits of MBA Thesis

CBM Postgraduate Programs

Curriculum Plan – MBA

Foundation Courses	Total Credits	0
MATH 311	Foundation in Business Statistics	0
ECON 311	Foundation in Economics	0
BUSN 411	Foundation in Research Methods	0
Program Major Requirements	**Total Credits**	**24**
BUSN 510	Intercultural Communication in Business	3
BUSN 515	Introduction to Data Analysis for Decision-Making	3
MGMT 513	Leadership Development and Team Building	3
FINC 536	Corporate Finance for a Global Environment	3
ECON 510	Managerial Economics and Business Analytics	3
MGMT 520	Operations Management for Global Supply Chains	3
BUSN 599	Final Thesis Project	6
Electives Requirements	**Total Credits**	**9**
MGMT 530	People Analytics for Leaders	3
MRKG 515	Marketing Management & Strategy	3
BUSN 520	Business Data Mining and Predictive Analytics	3
MGMT 532	Global Strategic Management and Innovation	3
BUSN 532	Entrepreneurship: Crafting your Business Journey	3
BUSN 535	Global Sustainability Management	3
ENGM 512	Project Management	3
Program Total Credits		**33**

Proposed Study Plan (MBA) - AY 2025 - 2026

First Year

1st Semester				2nd Semester			
Course Code	Course Title	CH	Pre-requisites	Course Code	Course Title	CH	Pre-requisites
BUSN 510	Intercultural Communication in Business	3		MGMT 513	Leadership Development and Team Building	3	
BUSN 515	Introduction to Data Analysis for Decision-Making	3		FINC 536	Corporate Finance for a Global Environment	3	
TOTAL		6		TOTAL		6	

Summer Semester

Course Code	Course Title	CH	Pre-requisites
XXXX	Elective Course	3	
TOTAL		3	

Second Year

3rd Semester				4th Semester			
Course Code	Course Title	CH	Pre-requisites	Course Code	Course Title	CH	Pre-requisites
ECON 510	Managerial Economics and Business Analytics	3		BUSN 599	Final Thesis Project	6	A minimum of 15 earned credit hours A completed proposal that is approved by the supervisor and the college A minimum CGPA of 2.5.
MGMT 520	Operations Management for Global Supply Chains	3		XXXX	Elective Course	3	
TOTAL		6		TOTAL		9	

Summer Semester

Course Code	Course Title	CH	Pre-requisites
XXXX	Elective Course	3	
TOTAL		3	

CBM Postgraduate Programs

Doctor of Business Administration (DBA)

The Doctor of Business Administration (DBA) is a 3–5-year program designed to equip experienced professionals with the advanced research and leadership skills essential for tackling complex business challenges in today's competitive global landscape. The curriculum emphasizes the development of innovative strategies that enhance business performance, promote sustainability, and facilitate ethical decision-making. Through comprehensive courses that encompass both theoretical coursework and practical applications, students will engage with contemporary issues facing organizations, gaining insights into effective management practices and emerging trends. Additionally, the DBA program is designed to empower students to conduct impactful research that contributes to both academia and industry, positioning them as high-level leaders in their fields.

Program Learning Outcomes (PLOs)

Graduates of the DBA program are expected to achieve the following knowledge, skills, and professional competencies:

- ✓ Demonstrate extensive detailed and often leading knowledge and understanding of advanced theories, models, and practices across key business disciplines.

- ✓ Apply specialized theoretical knowledge to real-world business challenges through practical research projects and consultancy.

- ✓ Utilize advanced research methodologies and analytical skills to critically analyze, evaluate, and generate data-driven solutions for business problems.

- ✓ Communicate professionally in oral and written format to convey complex business and scholarly concepts to diverse audiences.

- ✓ Demonstrate expert-level leadership strategic, sustainable and ethical decision-making in complex and dynamic business situations.

Program Structure

All candidates pursuing the DBA must complete a minimum of 60 credits with a cumulative GPA of 3.0 or higher. The structure of DBA program is based on 7 core requirement courses and 2 elective courses, each of 3 credits, plus a research proposal course of 9 credits, and a final dissertation of 24 credits. Specifically, the requirements are as follows:

- o   A minimum of 21 credits of Core Requirements

- o   A minimum of 6 credits of Electives Courses

- o   A minimum of 9 credits of Pre-Dissertation Course

- o   A minimum of 24 credits of Final Dissertation

# CBM Postgraduate Programs

Curriculum Plan – DBA

PHASE I		
Core Requirements	Total Credits	21
BUSN 610	Applied Business Research	3
BUSN 620	Advanced Research Methods I	3
BUSN 621	Advanced Research Methods II	3
BUSN 622	Advanced Research Methods III	3
BUSN 611	Ethics, Sustainability and Governance	3
BUSN 612	Managerial Decision Making	3
BUSN 613	Contemporary Topics in Business	3
Electives	Total Credits	6
MGMT 630	Organizational Theory and Design	3
MRKG 630	Digital Marketing Strategy and Analytics	3
ECON 630	Advanced Managerial Economics and Business Strategy	3
FINC 630	Advanced Issues in Global Financial Environment	3
PHASE II		
Pre-Dissertation Course	Total Credits	9
BUSN 640	Research Proposal	9
PHASE III		
Dissertation	Total Credits	24
BUSN 650	Final Dissertation	24
Program Total Credits		60

Proposed Study Plan (DBA) - AY 2025 - 2026

First Year

1st Semester

Course Code	Course Title	CH	Pre-requisites	Course Code	Course Title	CH	Pre-requisites
BUSN 610	Applied Business Research	3		BUSN 620	Advanced Research Methods I	3	Minimum 9 credits, Minimum CGPA of 3
BUSN 611	Ethics, Sustainability and Governance	3		BUSN 612	Managerial Decision Making	3	
TOTAL		6		TOTAL		6	

2nd Semester (header spans right columns)

Summer Semester

Course Code	Course Title	CH	Pre-requisites
XXXX	Elective Course	3	
TOTAL		3	

Second Year

3rd Semester / **4th Semester**

Course Code	Course Title	CH	Pre-requisites	Course Code	Course Title	CH	Pre-requisites
BUSN 621	Advanced Research Methods II	3		BUSN 622	Advanced Research Methods III	3	BUSN 620, BUSN 621
BUSN 640	Research Proposal	9	Minimum 9 credits, Minimum CGPA of 3	BUSN 613	Contemporary Topics in Business	3	
				BUSN 650	Final Dissertation	24	BUSN 640, Minimum CGPA of 3
TOTAL		12		TOTAL		30	

Summer Semester

Course Code	Course Title	CH	Pre-requisites
XXXX	Elective Course	3	
TOTAL		3	

Third and Fourth Years

Course Code	Course Title	CH	Pre-requisites
BUSN 650	Final Dissertation	24	BUSN 640, Minimum CGPA of 3
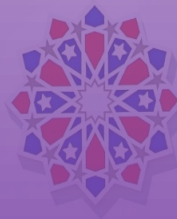
College of
Engineering & Computing (CEC)

CEC Overview

College Mission & Objectives

The mission of the Engineering and Computing College at AUBH is to provide a transformative, flexible, and innovative learning environment that prepares graduates to excel in their chosen fields and contribute to economic growth and social development. The College fosters interdisciplinary collaboration, an entrepreneurial mindset, and the acquisition of analytical and technical skills required to thrive in the digital economy. Through active engagement with communities, the College promotes respect, positive impact, and social responsibility, the fundamental objectives of the College of Engineering and Computing are as follows:

✓ Demonstrate specialized knowledge in engineering, computing, and core technical principles.

✓ Apply analytical methods and computational tools to solve complex problems.

✓ Critically evaluate challenges and propose innovative, ethical, and sustainable solutions.

✓ Communicate technical ideas effectively through written, oral, and digital formats.

✓ Work independently and in teams with professionalism, adaptability, and integrity.

Dean's Message

Dear Students,

It is my great pleasure to welcome you to the College of Engineering and Computing at the American University of Bahrain (AUBH). Beginning your academic journey with us marks the start of an exciting chapter filled with discovery, innovation, and opportunities that will shape both your professional and personal future.

At the College of Engineering and Computing, we are dedicated to fostering problem-solving, creativity, collaboration, and leadership. We encourage you to design, build, question, and explore new perspectives—skills that are essential for thriving in today's rapidly evolving technological world. Beyond the classroom, I invite you to immerse yourself in the vibrant academic and social community at AUBH, where you will have opportunities to engage with peers, faculty, and industry professionals.

Our programs are designed not only to provide you with a strong foundation in engineering and computing knowledge, but also to help you gain practical skills through hands-on experiences, labs, real-world projects, and industry-driven learning opportunities. We believe that applying knowledge in practice is key to preparing you for the challenges and innovations of the future. Still, your success depends not only on what we offer, but also on the initiative and responsibility you take in shaping your own learning journey.

I wish you a rewarding and successful journey at the College of Engineering and Computing, and I look forward to seeing the great innovations and achievements you will bring to the future.
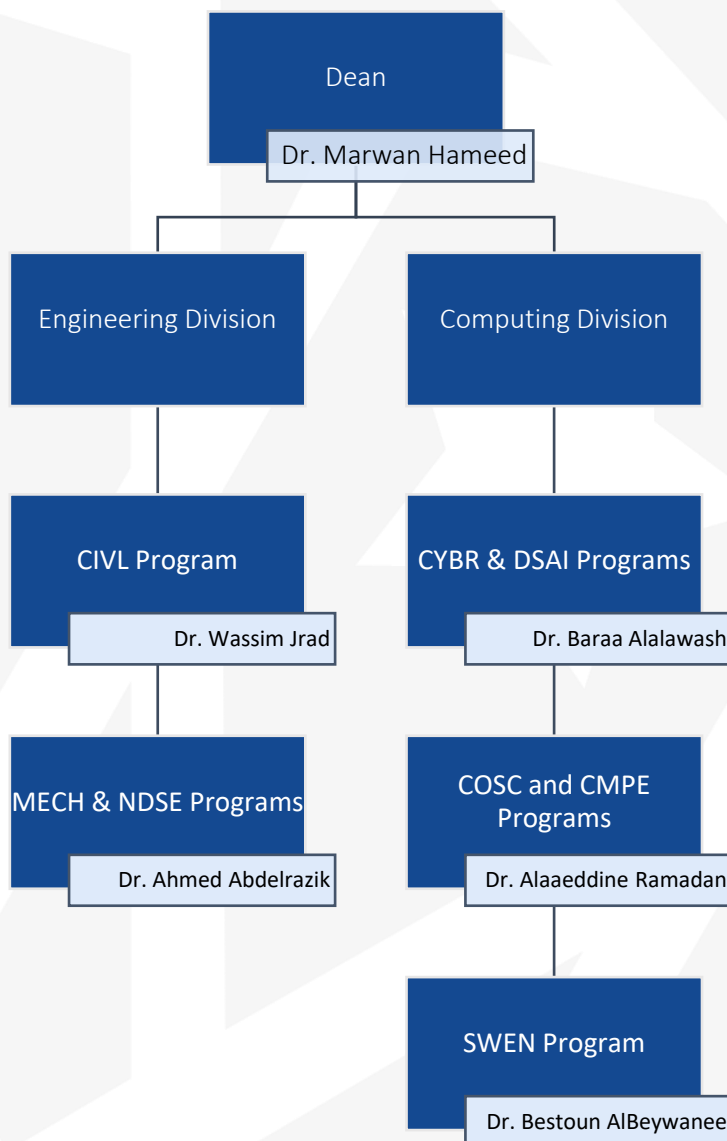
Dr. Marwan Hameed

Associate Professor,
Dean of the College of Engineering and Computing

CEC Overview

Faculty Directory

The faculty of the College of Engineering and Computing at AUBH are distinguished educators, researchers, and industry experts who bring a rich blend of academic excellence and real-world technological expertise to the classroom. With diverse international backgrounds and specialization in areas such as engineering, computer science, artificial intelligence, data analytics, cybersecurity, and software development, our faculty are dedicated to preparing students for the challenges of a rapidly evolving digital and industrial landscape. They are committed to providing hands-on learning experiences, fostering innovation, and guiding students to develop the technical knowledge, creativity, and problem-solving skills required to become leaders in engineering and computing fields. The table below highlights key information about our full-time faculty members.

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                        Dean
                   Dr. Marwan Hameed

        Engineering Division      Computing Division

          CIVL Program         CYBR & DSAI Programs
          Dr. Wassim Jrad        Dr. Baraa Alalawash

       MECH & NDSE Programs      COSC and CMPE Programs
       Dr. Ahmed Abdelrazik     Dr. Alaaeddine Ramadan

                                     SWEN Program
                                  Dr. Bestoun AlBeywanee
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CEC Overview

Name	Title	Office Location	Email
Dr. Marwan Hameed	Interim Dean	127	marwan.hameed@aubh.edu.bh
Dr. Shahid Maqsood	Professor of Industrial Engineering	134 Shared	shahid.maqsood@aubh.edu.bh
Dr. Mohammad Shbool	Associate Professor of Industrial Engineering	134 Shared	mohammad.shbool@aubh.edu.bh
Dr. Shazali Osman	Assistant Professor of Mechanical Engineering	126	shazali.osman@aubh.edu.bh
Dr. Ahmed Abdelrazik	Assistant Professor of Mechanical Engineering	D 101	ahmed.abdelrazik@aubh.edu.bh
Dr. Wassim Jrad	Assistant Professor of Civil Engineering	128	wassim.jrad@aubh.edu.bh
Dr. Saraa Alasadi	Assistant Professor of Civil Engineering	131 Shared	saraa.alasadi@aubh.edu.bh
Ms. Lina Saeed	Lecturer in Civil Engineering	133R	lina.saeed@aubh.edu.bh
Dr. Hasan Kadhem	Associate Professor of Computer Science	129	hasan.kadhem@aubh.edu.bh
Dr. Baraa Al-Alawsh	Associate Professor of Computer Science	125	bara.alalawsh@aubh.edu.bh
Dr. Alaaeddine Ramadan	Associate Professor of Computer Engineering	D 101	alaaeddine.ramadan@aubh.edu.bh
Dr. Fatema Akbar	Assistant Professor of Computer Science	130	fatema.akbar@aubh.edu.bh
Dr. Bestoun Albeywanee	Professor of Software Engineering	D 101	Bestoun.AlBeywanee@aubh.edu.bh
Dr. Mansoor Farooq	Assistant Professor of Cybersecurity	134 C	Mansoor.Farooq@aubh.edu.bh
Mrs. Khadija Al Mohsin	Lecturer in Computer Science	133Q	khadija.almohsen@aubh.edu.bh
Mr. Herbert Penoso Azuela	Lecturer of Computer Engineering	133L	herbert.azuela@aubh.edu.bh
Ms. Sara Binektas	Computer Science Lab Demonstrator	133O	sara.binektas@aubh.edu.bh
Mr. Eslam Allam	Engineering Lab Demonstrator	133K	eslam.allam@aubh.edu.bh
Dr. Haydar Alwattar	Assistant Professor of Cybersecurity	Shared Offices	Haydar.Alwattar@aubh.edu.bh
Dr. Rabe Anderson	Assistant Professor of Computer Engineering	Shared Offices	Rabe.anderson@aubh.edu.bh
Dr. Abdallah Samad	Assistant Professor of Mechanical Engineering	Shared Offices	Abdallah.samad@aubh.edu.bh
Prof. Maqbool Khan	Associate Professor of Data Science and AI	Shared Offices	Maqbool.khan@aubh.edu.bh
Mr. Fawaz Alqassimi	Lab Demonstrator	Shared Offices	Fawaz.alqassimi@aubh.edu.bh
Mr. Maaz Mohammed	Lab Technician	ICE-Lab	maaz.mohammed@aubh.edu.bh

CEC Undergraduate Programs

Bachelor of Science in Civil Engineering

The Bachelor of Science in Civil Engineering is a 4-year undergraduate curriculum that ensures academic success and preparation for a productive career in engineering. The objective of the Bachelor of Science in Civil Engineering is to give the student a comprehensive knowledge of civil, construction and environmental engineering, as well as the interdisciplinary background and skills to meaningfully participate in and contribute to technical advances towards this profession. The Bachelor of Science in Civil Engineering integrates technical aspects with studies in the social sciences to ensure appropriate sensitivity to socially related issues.

1. To Provide students with a critical understanding of civil, construction, and environmental engineering principles and practices.
2. To equip students with the necessary technical expertise and practical skills essential for a successful career in civil engineering, including hands-on experience with tools, software, and technologies used in the field.
3. To encourage collaboration with peers from different disciplines and develop an understanding of the multidisciplinary nature of engineering projects, preparing students to work effectively in diverse teams.
4. To foster ethical considerations, integrity, responsibility, and sustainable practices in civil engineering, emphasizing the importance of ethical behavior and promoting sustainable solutions in civil engineering projects.

Program Learning Outcomes (PLOs)

The Program Learning Outcomes (PLOs) are those required by the Engineering Accreditation Commission of ABET in its Criterion 3. PLOs are outcomes (1) through (7).

✓ Identify, formulate and solve complex engineering problems by applying principles of engineering, science and mathematics.

✓ Apply engineering design to produce solutions that meet specified needs with consideration of public health, safety and welfare, as well as global, cultural, social, environmental and economic factors.

✓ Communicate effectively with a range of audiences.

✓ Recognize ethical and professional responsibilities in engineering situations and make informed judgments, which consider the impact of engineering solutions in global, economic, environmental and societal contexts.

✓ Function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks and meet objectives.

✓ Develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.

✓ Acquire and apply new knowledge as needed, using appropriate learning strategies.

Program Structure

All students pursuing the Bachelor of Science in Civil Engineering must complete a minimum of 130 credits with a cumulative GPA of 2.0 or better. Specifically, the requirements are as follows:

*   A minimum of (39) credits of General Education Requirements
*   A minimum of (26) credits of Engineering Core Requirements
*   A minimum of (50) credits of Major Requirements
*   A minimum of (6) credits of Professional Elective Options
*   A minimum of (9) credits of Major Electives
*   Graduate Portfolio

CEC Undergraduate Programs
Curriculum Plan – BSc in Civil Engineering

Course Code	Course Title	CH	Pre-requisites
General Education Requirements	Total Credits	39	
National Requirements	Total Credits	7	
ARHG 104/ARHG 101	Arabic for Arabic Speakers/Arabic for Non-Arabic Speakers	3	
ARHG 106	Modern History of Bahrain	2	
ARHG 107	Human Rights	2	
English Requirements	Total Credits	6	
ENGL 101	Composition I	3	
ENGL 102	Composition II	3	ENGL 101
Mathematics Requirements	Total Credits	8	
MATH 153	Calculus I	4	
MATH 154	Calculus II	4	MATH 153
ICT Requirements	Total Credits	3	
COSC 101	Introduction to Computing	3	
Lifelong Learning Requirements	Total Credits	1	
UNSS 101	University Success	1	
Natural Science Requirements	Total Credits	8	
Students should complete a minimum of 8 credits, including at least 2 credit lab from the Natural Science list of the general Education tabulated below.			
Arts and Humanities Requirements	Total Credits	3	
Students should complete a minimum of 3 credits from the Arts and Humanities list of the general Education tabulated below			
Social and Behavioral Science Requirements	Total Credits	3	
Students should complete a minimum of 3 credits, from the Social and Behavioral Science list of the general Education tabulated below.			
Arts and Humanities List			
ANTH 152	Introduction to Cultural Anthropology	3	
HUMS 101	Forms and Ideas in the Humanities	3	
HIST 201	World History	3	
TURK 101	Turkish for Beginners	3	
CCHN 101	Spoken Mandarin	3	
COMS 356	Intercultural Communication	3	ENGL 101
PHIL 101	Introduction to Philosophy	3	
ENGL 103	Public Speaking	3	
PHIL 201	Oriental and Islamic Philosophy	3	
Natural Sciences List			
CHEM 101	Introductory Chemistry	3	co-requisite of CHEM 101L
CHEM 101L	Introductory Chemistry Laboratory	1	co-requisite of CHEM 101
PHYS 101	Principles of Physics I	3	co-requisite of PHYS 101L
PHYS 101L	Principles of Physics I Laboratory	1	co-requisite of PHYS 101
Social and Behavioral Sciences List			
PSYC 101	Introduction to Psychology	3	
SOCS 101	Introduction to Sociology	3	
ENGL 205	Business Communication	3	
SUST 101	Principles of Sustainability	3	
POLS 321	Comparative Political Ideologies	3	
PSYC 202	Mind Matters: A Practical Exploration	3	

CEC Undergraduate Programs
Curriculum Plan – BSc in Civil Engineering

Program Core Requirments	Total Credits	26	
ENGR 100	Introduction to Engineering	1	
ENGR 105	Programming for Engineers	2	COSC 101
CIVL 200	Engineering Mechanics - Statics	3	PHYS 101
ENGR 202	Engineering Mathematics	3	MATH 154
MECH 241	Engineering Materials	2	CIVL 200, CHEM 101
MATH 252	Calculus III	4	MATH 154
PHYS 102	Principles of Physics II	3	PHYS 101, PHYS 101L, MATH 153, co-requisite: PHYS 102L
PHYS 102L	Principles of Physics II Laboratory	1	PHYS 101, PHYS 101L, MATH 153, co-requisite: PHYS 102
ENGR 342	Engineering Economic Analysis	3	MATH 154
ENGR 401	Entrepreneurship for Engineers	2	ENGR 205
ENGR 205	Multidisciplinary Research Methods	2	ENGL 102
Program Major Requirements	**Total Credits**	**50**	
CIVL 121	Computer Graphics for the Built Environment	3	COSC 101
CIVL 210	Statistical Methods for the Built Environment	3	MATH 154
CIVL 218	Surveying for Civil Engineering and Construction	3	CIVL 210
MECH 241L	Engineering Materials Laboratory	1	Co-requisite: MECH 241
CIVL 302	Mechanics of Materials	3	CIVL 200
CIVL 302L	Mechanics of Materials Laboratory	1	Co-requisite: CIVL 302
CIVL 303	Engineering Geology	3	PHYS 101
CIVL 321	Structural Analysis I	3	CIVL 302
CIVL 330	Construction Engineering and Management	3	ENGR 100
CIVL 355	Environmental Engineering	3	CHEM 101
MECH 451	Fluid Mechanics	3	MATH 252
MECH 451L	Fluid Mechanics Laboratory	1	Co-requisite: MECH 451
CIVL 421	Reinforced Concrete Design	3	CIVL 321
CIVL 462	Geotechnical Engineering	3	CIVL 302
CIVL 462L	Geotechnical Engineering Laboratory	1	Co-requisite: CIVL 462
CIVL 465	Foundation Engineering and Earth Retaining Structures	3	CIVL 462
CIVL 481	Transportation Engineering	3	CIVL 218
CIVL 499A	Engineering Design: Capstone Project I	2	Senior level (90 credits), CGPA 2.0
CIVL 499B	Engineering Design: Capstone Project II	2	CIVL 499A
CIVL 406	Civil Engineering Internship	3	86 credits, CGPA 2.0
Program Major Electives Options	**Total Credits**	**9**	
Students pursuing the Bachelor of Science in Civil Engineering must complete a minimum of 9 elective credits from the following list or any other course approved by the College of Engineering and Computing			
CIVL 430	Advanced Project Management	3	CIVL 330
CIVL 441	Structural Analysis II	3	CIVL 321
CIVL 444	Applied Hydraulics	3	MECH 451
CIVL 445	Applied Hydrology	3	MECH 451
CIVL 483	Traffic Engineering Design	3	CIVL 481
CIVL 491	Construction Methods	3	CIVL 321
Professional Elective Options	**Total Credits**	**6**	
Students pursuing the Bachelor of Science in Civil Engineering must complete a minimum of 6 elective credits from general education course or any other programs at 200 level or above			
Internship	**Total Credits**	**3**	
To qualify for the Bachelor of Science in Civil Engineering, a student must fulfill the internship requirements prior to graduation. The purpose of the internship is to expose students to the profession and give them an opportunity to apply their academic knowledge in a practical setting. The internship consists of a minimum of 280 work hours (8 weeks) with an approved employer. Internships are evaluated by the internship coordinator with a pass/fail grade.			
Program Total Credits		**130**	

CEC Undergraduate Programs
Proposed Study Plan (CIVL) - AY 2025 - 2026 – BSc in Civil Engineering

First Year

1st Semester				2nd Semester			
Course Code	Course Title	CH	Pre-requisites	Course Code	Course Title	CH	Pre-requisites
ENGL 101	Composition I	3		ENGL 102	Composition II	3	ENGL 101
UNSS 101	University Success	1		ARHG 106	Modern History of Bahrain	2	
COSC 101	Introduction to Computing	3		MATH 154	Calculus II	4	MATH 153
MATH 153	Calculus I	4		PHYS 101	Principles of Physics I	3	co-requisite of PHYS 101L
CHEM 101	Introductory Chemistry	3	co-requisite of CHEM 101L	PHYS 101L	Principles of Physics I Laboratory	1	co-requisite of PHYS 101
CHEM 101L	Introductory Chemistry Laboratory	1	co-requisite of CHEM 101	XXXX	Arts and Humanities Requirements	3	
				ENGR 100	Introduction to Engineering	1	
	TOTAL	15			TOTAL	17	

Second Year

3rd Semester				4th Semester			
Course Code	Course Title	CH	Pre-requisites	Course Code	Course Title	CH	Pre-requisites
CIVL 200	Engineering Mechanics - Statics	3	PHYS 101	XXXX	Social Sciences Requirements	3	
PHYS 102	Principles of Physics II	3	PHYS 101, PHYS 101L, MATH 153, co-requisite: PHYS 102L	CIVL 210	Statistical Methods for the Built Environment	3	MATH 154
PHYS 102L	Principles of Physics II Laboratory	1	PHYS 101, PHYS 101L, MATH 153, co-requisite: PHYS 102	ARHG 107	Human Rights	2	
ARHG 104/ARHG 101	Arabic for Arabic Speakers/Arabic for Non-Arabic Speakers	3		ENGR 202	Engineering Mathematics	3	MATH 154
MATH 252	Calculus III	4	MATH 154	ENGR 205	Multidisciplinary Research Methods	2	ENGL 102
ENGR 105	Programming for Engineers	2	COSC 101	CIVL 121	Computer Graphics for the Built Environment	3	COSC 101
	TOTAL	16			TOTAL	16	

Third Year

5th Semester				6th Semester			
Course Code	Course Title	CH	Pre-requisites	Course Code	Course Title	CH	Pre-requisites
CIVL 218	Surveying for Civil Engineering and Construction	3	CIVL 210	CIVL 303	Engineering Geology	3	PHYS 101
MECH 241	Engineering Materials	2	CIVL 200, CHEM 101	CIVL 321	Structural Analysis I	3	CIVL 302
MECH 241L	Engineering Materials Laboratory	1	Co-requisite: MECH 241	CIVL 355	Environmental Engineering	3	CHEM 101
CIVL 302	Mechanics of Materials	3	CIVL 200	MECH 451	Fluid Mechanics	3	MATH 252
CIVL 302L	Mechanics of Materials Laboratory	1	Co-requisite: CIVL 302	MECH 451L	Fluid Mechanics Laboratory	1	Co-requisite: MECH 451
ENGR 342	Engineering Economic Analysis	3	MATH 154	XXXX	Professional Elective (1)	3	
ENGR 401	Entrepreneurship for Engineers	2	ENGR 205				
CIVL 330	Construction Engineering and Management	3	ENGR 100				
	TOTAL	18			TOTAL	16	

Summer Semester

Course Code	Course Title	CH	Pre-requisites				
CIVL 406	Civil Engineering Internship	3	86 credits, CGPA 2.0				
	TOTAL	3					

Fourth Year

7th Semester				8th Semester			
Course Code	Course Title	CH	Pre-requisites	Course Code	Course Title	CH	Pre-requisites
CIVL 481	Transportation Engineering	3	CIVL 218	CIVL 499B	Engineering Design: Capstone Project II	2	CIVL 499A
XXXX	Major Elective (1)	3		XXXX	Major Elective (2)	3	
CIVL 499A	Engineering Design: Capstone Project I	2	Senior level (90 credits), CGPA 2.0	XXXX	Major Elective (3)	3	
CIVL 421	Reinforced Concrete Design	3	CIVL 321	XXXX	Professional Elective (2)	3	
CIVL 462	Geotechnical Engineering	3	CIVL 302	CIVL 465	Foundation Engineering and Earth Retaining Structures	3	CIVL 462
CIVL 462L	Geotechnical Engineering Laboratory	1	Co-requisite: CIVL 462				
	TOTAL	15			TOTAL	14	

CEC Undergraduate Programs

Bachelor of Science in Mechanical Engineering

The Bachelor of Science in Mechanical Engineering consists of a 4-year undergraduate curriculum that prepares students for a wide range of careers and new technologies, as well as for advanced study. Mechanical engineers work on diverse, challenging problems that require the integration of science, engineering, and socio-economic knowledge. Mechanical engineering covers the design and analysis of all kinds of systems and technologies with mechanical components, with applications in energy production, robotics, environmental systems, materials, composites, transportation, manufacturing, machine design and many more areas. The program objectives are:

1. To provide students with a critical understanding of fundamental scientific and engineering principles related to mechanical systems.
2. To equip students with the necessary technical expertise and practical skills required for a career in mechanical engineering, including hands-on experience with tools, software, and technologies used in the field.
3. To encourage collaboration with peers from different disciplines and promote an understanding of the multidisciplinary nature of engineering projects.
4. To foster ethical considerations and professional standards in mechanical engineering, emphasizing integrity, responsibility, and sustainable practices.

Program Learning Outcomes (PLOs)

The Program Learning Outcomes (PLOs) are those required by the Engineering Accreditation Commission of ABET in its Criterion 3. PLOs are outcomes (1) through (7).

✓ Identify, formulate and solve complex engineering problems by applying principles of engineering, science and mathematics.

✓ Apply engineering design to produce solutions that meet specified needs with consideration of public health, safety and welfare, as well as global, cultural, social, environmental and economic factors.

✓ Communicate effectively with a range of audiences.

✓ Recognize ethical and professional responsibilities in engineering situations and make informed judgments, which consider the impact of engineering solutions in global, economic, environmental and societal contexts.

✓ Function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks and meet objectives.

✓ Develop and conduct appropriate experimentation, analysis and data interpretation, and use engineering judgment to draw conclusions.

✓ Acquire and apply new knowledge as needed, using appropriate learning strategies.

Program Structure

All students pursuing the Bachelor of Science in Mechanical Engineering must complete a minimum of 132 credits with a cumulative GPA of 2.0 or better. Specifically, the requirements are as follows:

- A minimum of (39) credits of General Education Requirements
- A minimum of (26) credits of Engineering Core Requirements
- A minimum of (52) credits of Major Requirements
- A minimum of (6) credits of Professional Elective Options
- A minimum of (9) credits of Major Electives
- Graduate Portfolio

CEC Undergraduate Programs
Curriculum Plan – BSc in Mechanical Engineering

Course Code	Course Title	CH	Pre-requisites
General Education Requirements	**Total Credits**	**39**	
National Requirements	**Total Credits**	**7**	
ARHG 104/ARHG 101	Arabic for Arabic Speakers/Arabic for Non-Arabic Speakers	3	
ARHG 106	Modern History of Bahrain	2	
ARHG 107	Human Rights	2	
English Requirements	**Total Credits**	**6**	
ENGL 101	Composition I	3	
ENGL 102	Composition II	3	ENGL 101
Mathematics Requirements	**Total Credits**	**8**	
MATH 153	Calculus I	4	
MATH 154	Calculus II	4	MATH 153
ICT Requirements	**Total Credits**	**3**	
COSC 101	Introduction to Computing	3	
Lifelong Learning Requirements	**Total Credits**	**1**	
UNSS 101	University Success	1	
Natural Science Requirements	**Total Credits**	**8**	
Students should complete a minimum of 8 credits, including at least 2 credit lab from the Natural Science list of the general Education tabulated below.			
Arts and Humanities Requirements	**Total Credits**	**3**	
Students should complete a minimum of 3 credits from the Arts and Humanities list of the general Education tabulated below			
Social and Behavioral Science Requirements	**Total Credits**	**3**	
Students should complete a minimum of 3 credits, from the Social and Behavioral Science list of the general Education tabulated below.			
Arts and Humanities List			
ANTH 152	Introduction to Cultural Anthropology	3	
HUMS 101	Forms and Ideas in the Humanities	3	
HIST 201	World History	3	
TURK 101	Turkish for Beginners	3	
CCHN 101	Spoken Mandarin	3	
COMS 356	Intercultural Communication	3	ENGL 101
PHIL 101	Introduction to Philosophy	3	
ENGL 103	Public Speaking	3	
PHIL 201	Oriental and Islamic Philosophy	3	
Natural Sciences List			
CHEM 101	Introductory Chemistry	3	co-requisite of CHEM 101L
CHEM 101L	Introductory Chemistry Laboratory	1	co-requisite of CHEM 101
PHYS 101	Principles of Physics I	3	co-requisite of PHYS 101L
PHYS 101L	Principles of Physics I Laboratory	1	co-requisite of PHYS 101
Social and Behavioral Sciences List			
PSYC 101	Introduction to Psychology	3	
SOCS 101	Introduction to Sociology	3	
ENGL 205	Business Communication	3	
SUST 101	Principles of Sustainability	3	
POLS 321	Comparative Political Ideologies	3	
PSYC 202	Mind Matters: A Practical Exploration	3	

CEC Undergraduate Programs

Curriculum Plan – BSc in Mechanical Engineering

Program Core Requirments	Total Credits	26	
ENGR 100	Introduction to Engineering	1	
ENGR 105	Programming for Engineers	2	COSC 101
CIVL 200	Engineering Mechanics - Statics	3	PHYS 101
ENGR 202	Engineering Mathematics	3	MATH 154
MECH 241	Engineering Materials	2	CIVL 200, CHEM 101
MATH 252	Calculus III	4	MATH 154
PHYS 102	Principles of Physics II	3	PHYS 101, PHYS 101L, MATH 153, co-requisite: PHYS 102L
PHYS 102L	Principles of Physics II Laboratory	1	PHYS 101, PHYS 101L, MATH 153, co-requisite: PHYS 102
ENGR 342	Engineering Economic Analysis	3	MATH 154
ENGR 401	Entrepreneurship for Engineers	2	ENGR 205
ENGR 205	Multidisciplinary Research Methods	2	ENGL 102
Program Major Requirements	**Total Credits**	**52**	
ELEC 204	Principles of Electrical Engineering	3	PHYS 102
MECH 101	Solid Modeling I	3	MATH 153
MECH 220	Engineering Mechanics - Dynamics	3	CIVL 200
MECH 241L	Engineering Materials Laboratory	1	Co-requisite: MECH 241
CIVL 302	Mechanics of Materials	3	CIVL 200
MECH 310	Introduction to Engineering Design	3	CIVL 302
MECH 313	Numerical Analysis of Engineering Systems	3	MECH 220, ENGR 105
MECH 314	Engineering Design: Mechanical Components	3	CIVL 302
MECH 458	Automatic Control Systems	2	MECH 313, and MATH 252
MECH 458L	Automatic Control Systems Laboratory	1	Co-requisite: MECH 458
MECH 341	Manufacturing Processes	3	MECH 241
MECH 350	Thermodynamics	3	MATH 252
MECH 451	Fluid Mechanics	3	MATH 252
MECH 451L	Fluid Mechanics Laboratory	1	Co-requisite: MECH 451
MECH 406	Mechanical Engineering Internship	3	(88 credits), CGPA 2.0
MECH 453	Heat Transfer	3	MECH 451
MECH 490L	Mechanical And Thermal Systems Laboratory	1	MECH 350, and MECH 453
MECH 499A	Mechanical Engineering Design: Capstone Project I	2	Senior Level (90 credits), CGPA 2.0
MECH 499B	Mechanical Engineering Design: Capstone Project II	2	MECH 499A
MECH 496	Advanced Machine Design	3	MECH 314 and MECH 341
MECH 498	Thermal Systems Analysis and Design	3	MECH 350 and MECH 453
Program Major Electives Options	**Total Credits**	**9**	
Students pursuing the Bachelor of Science in Mechanical Engineering must complete a minimum of 9 elective credits from the following list or any other course approved by the College of Engineering and Computing:			
MECH 457	Mechanical Vibrations	3	MECH 220, CIVL 302
MECH 440	Computer-Aided Manufacturing	3	MECH 310, MECH 341
MECH 410	Heating, Ventilating and Air-Conditioning	3	MECH 350, MECH 453
MECH 430	Industrial Management	3	MATH 252
MECH 460	Computational Fluid Dynamics	3	MECH 451
MECH 454	Renewable Energy and Sustainable Technology	3	MECH 453
MECH 470	Machinery Fault Diagnosis and Signal Processing	3	MATH 252
Professional Elective Options	**Total Credits**	**6**	
Students pursuing a Bachelor of Mechanical Engineering must complete a minimum of 6 elective credits from general educations courses or any other programs at 200 level or above.			
Internship	**Total Credits**	**3**	
To qualify for the Bachelor of Science in Mechanical Engineering a student must fulfill the internship requirements prior to graduation. The purpose of the internship is to expose students to the profession and give them an opportunity to apply their academic knowledge in a practical setting. The internship consists of a minimum of 280 work hours (8 weeks) with an approved employer. Internships are evaluated by the internship coordinator with a pass/fail grade.			
Program Total Credits		**132**	

CEC Undergraduate Programs
Proposed Study Plan (MECH) - AY 2025 - 2026

First Year

1st Semester

Course Code	Course Title	CH	Pre-requisites
ENGL 101	Composition I	3	
UNSS 101	University Success	1	
COSC 101	Introduction to Computing	3	
MATH 153	Calculus I	4	
CHEM 101	Introductory Chemistry	3	co-requisite of CHEM 101L
CHEM 101L	Introductory Chemistry Laboratory	1	co-requisite of CHEM 101
TOTAL		15	

2nd Semester

Course Code	Course Title	CH	Pre-requisites
ENGL 102	Composition II	3	ENGL 101
ARHG 106	Modern History of Bahrain	2	
MATH 154	Calculus II	4	MATH 153
PHYS 101	Principles of Physics I	3	co-requisite of PHYS 101L
PHYS 101L	Principles of Physics I Laboratory	1	co-requisite of PHYS 101
XXXX	Art and Humanities Requirements	3	
ENGR 100	Introduction to Engineering	1	
TOTAL		17	

Second Year

3rd Semester

Course Code	Course Title	CH	Pre-requisites
ARHG 104/ARHG 101	Arabic for Arabic Speakers/Arabic for Non-Arabic Speakers	3	
CIVL 200	Engineering Mechanics - Statics	3	PHYS 101
PHYS 102	Principles of Physics II	3	PHYS 101, PHYS 101L, MATH 153, co-requisite: PHYS 102L
PHYS 102L	Principles of Physics II Laboratory	1	PHYS 101, PHYS 101L, MATH 153, co-requisite: PHYS 102
ENGR 105	Programming for Engineers	2	COSC 101
MATH 252	Professional Elective 1	3	MATH 154
TOTAL		15	

4th Semester

Course Code	Course Title	CH	Pre-requisites
ENGR 202	Engineering Mathematics	3	MATH 154
ELEC 204	Principles of Electrical Engineering	3	PHYS 102
MECH 101	Solid Modeling I	3	MATH 153
ARHG 107	Human Rights	2	
MECH 220	Engineering Mechanics - Dynamics	3	CIVL 200
ENGR 205	Multidisciplinary Research Methods	2	ENGL 102
XXXX	Professional Elective	3	
TOTAL		19	

Third Year

5th Semester

Course Code	Course Title	CH	Pre-requisites
MECH 241	Engineering Materials	2	CIVL 200, CHEM 101
MECH 241L	Engineering Materials Laboratory	1	Co-requisite: MECH 241
XXXX	Social and Behavioral Science Requirements	3	
MECH 313	Numerical Analysis of Engineering Systems	3	MECH 220, ENGR 105
ENGR 342	Engineering Economic Analysis	3	MATH 154
CIVL 302	Mechanics of Materials	3	CIVL 200
ENGR 401	Entrepreneurship for Engineers	2	ENGR 205
TOTAL		17	

6th Semester

Course Code	Course Title	CH	Pre-requisites
MECH 310	Introduction to Engineering Design	3	CIVL 302
MECH 350	Thermodynamics	3	MATH 252
XXXX	Professional Elective 2	3	
XXXX	Major Elective 1	3	
MECH 451	Fluid Mechanics	3	MATH 252
MECH 451L	Fluid Mechanics Laboratory	1	Co-requisite: MECH 451
TOTAL		16	

Summer Semester

Course Code	Course Title	CH	Pre-requisites
MECH 406	Mechanical Engineering Internship	3	(88 credits), CGPA 2.0
TOTAL		3	

Fourth Year

7th Semester

Course Code	Course Title	CH	Pre-requisites
XXXX	Major Elective 2	3	
MECH 458	Automatic Control Systems	2	MECH 313, and MATH 252
MECH 458L	Automatic Control Systems Laboratory	1	Co-requisite: MECH 458
MECH 453	Heat Transfer	3	MECH 451
MECH 341	Manufacturing Processes	3	MECH 241
MECH 314	Engineering Design: Mechanical Components	3	CIVL 302
MECH 499A	Mechanical Engineering Design: Capstone Project I	2	Senior Level (90 credits), CGPA 2.0
TOTAL		17	

8th Semester

Course Code	Course Title	CH	Pre-requisites
MECH 490L	Mechanical And Thermal Systems Laboratory	1	MECH 350, and MECH 453
MECH 499B	Mechanical Engineering Design: Capstone Project II	2	MECH 499A
MECH 496	Advanced Machine Design	3	MECH 314 and MECH 341
MECH 498	Thermal Systems Analysis and Design	3	MECH 350 and MECH 453
XXXX	Major Elective 3	3	
TOTAL		12	

CEC Undergraduate Programs

Bachelor of Science in Industrial Engineering

The Bachelor of Science in Industrial Engineering is a 4-year undergraduate curriculum that ensures the students' academic success and preparation for a productive industrial engineering career. The objective of the Bachelor of Science in Industrial Engineering is to foster a world-class industrial engineering education in collaboration with industry. The college is committed to graduate competent industrial engineers equipped with the proficiency to adapt to technological and societal changes, and who are poised to excel in the field. The program objectives are:

1. To equip students with a critical understanding of fundamental scientific and engineering principles relevant to industrial systems.
2. To prepare students for successful careers in industrial engineering by equipping them with the necessary skills, competencies, and practical experience relevant to the industry.
3. To Promote teamwork and collaboration with peers from different disciplines, emphasizing the multidisciplinary nature of engineering projects.
4. To foster excellence in the field of industrial engineering by promoting critical thinking, problem-solving, and decision-making skills, as well as instilling strong work ethic, professionalism, and ethical values in students.

The Bachelor of Science in Industrial Engineering curriculum accomplishes the integration of systems using appropriate analytical, computational, and experimental practices and including studies in the social sciences to ensure appropriate sensitivity to socially related problems.

Program Learning Outcomes (PLOs)

The Program Learning Outcomes (PLOs) are those required by the Engineering Accreditation Commission of ABET in its Criterion 3. PLOs are outcomes (1) through (7).

✓ Identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
✓ Apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors
✓ Communicate effectively with a range of audiences
✓ Recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts
✓ Function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives
✓ Develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions
✓ Acquire and apply new knowledge as needed, using appropriate learning strategies

Program Structure

All students pursuing the Bachelor of Science in Industrial Engineering must complete a minimum of 125 credits with a cumulative GPA of 2.0 or better. Specifically, the requirements are as follows:

- A minimum of (39) credits of General Education Requirements
- A minimum of (26) credits of Engineering Core Requirements
- A minimum of (45) credits of Major Requirements
- A minimum of (6) credits of Professional Elective Options
- A minimum of (9) credits of Major Electives
- Graduate Portfolio

CEC Undergraduate Programs
Curriculum Plan – BSc in Industrial Engineering

Course Code	Course Title	CH	Pre-requisites
General Education Requirements	Total Credits	39	
National Requirements	Total Credits	7	
ARHG 104/ARHG 101	Arabic for Arabic Speakers/Arabic for Non-Arabic Speakers	3	
ARHG 106	Modern History of Bahrain	2	
ARHG 107	Human Rights	2	
English Requirements	Total Credits	6	
ENGL 101	Composition I	3	
ENGL 102	Composition II	3	ENGL 101
Mathematics Requirements	Total Credits	8	
MATH 153	Calculus I	4	
MATH 154	Calculus II	4	MATH 153
ICT Requirements	Total Credits	3	
COSC 101	Introduction to Computing	3	
Lifelong Learning Requirements	Total Credits	1	
UNSS 101	University Success	1	
Natural Science Requirements	Total Credits	8	
Students should complete a minimum of 8 credits, including at least 2 credit lab from the Natural Science list of the general Education tabulated below.			
Arts and Humanities Requirements	Total Credits	3	
Students should complete a minimum of 3 credits from the Arts and Humanities list of the general Education tabulated below			
Social and Behavioral Science Requirements	Total Credits	3	
Students should complete a minimum of 3 credits, from the Social and Behavioral Science list of the general Education tabulated below.			
Arts and Humanities List			
ANTH 152	Introduction to Cultural Anthropology	3	
HUMS 101	Forms and Ideas in the Humanities	3	
HIST 201	World History	3	
TURK 101	Turkish for Beginners	3	
CCHN 101	Spoken Mandarin	3	
COMS 356	Intercultural Communication	3	ENGL 101
PHIL 101	Introduction to Philosophy	3	
ENGL 103	Public Speaking	3	
PHIL 201	Oriental and Islamic Philosophy	3	
Natural Sciences List			
CHEM 101	Introductory Chemistry	3	co-requisite of CHEM 101L
CHEM 101L	Introductory Chemistry Laboratory	1	co-requisite of CHEM 101
PHYS 101	Principles of Physics I	3	co-requisite of PHYS 101L
PHYS 101L	Principles of Physics I Laboratory	1	co-requisite of PHYS 101
Social and Behavioral Sciences List			
PSYC 101	Introduction to Psychology	3	
SOCS 101	Introduction to Sociology	3	
ENGL 205	Business Communication	3	
SUST 101	Principles of Sustainability	3	
POLS 321	Comparative Political Ideologies	3	
PSYC 202	Mind Matters: A Practical Exploration	3	

CEC Undergraduate Programs
Curriculum Plan – BSc in Industrial Engineering

Program Core Requirments	Total Credits	26	
ENGR 100	Introduction to Engineering	1	
ENGR 105	Programming for Engineers	2	COSC 101
CIVL 200	Engineering Mechanics - Statics	3	PHYS 101
ENGR 202	Engineering Mathematics	3	MATH 154
MECH 241	Engineering Materials	2	CIVL 200, CHEM 101
MATH 252	Calculus III	4	MATH 154
PHYS 102	Principles of Physics II	3	PHYS 101, PHYS 101L, MATH 153, co-requisite: PHYS 102L
PHYS 102L	Principles of Physics II Laboratory	1	PHYS 101, PHYS 101L, MATH 153, co-requisite: PHYS 102
ENGR 342	Engineering Economic Analysis	3	MATH 154
ENGR 401	Entrepreneurship for Engineers	2	ENGR 205
ENGR 205	Multidisciplinary Research Methods	2	ENGL 102
Program Major Requirements	Total Credits	45	
MECH 101	Solid Modeling I	3	MATH 153
MECH 204	Thermofluids	2	PHYS 101
MECH 204L	Thermofluids Laboratory	1	Concurrent MECH 204
MATH 260	Probability and Statistics	4	MATH 154
NDSE 301	Operations Research: Modeling	3	MATH 154
NDSE 302	Stochastic and Probability Modeling	4	NDSE 301, MATH 260
NDSE 306	Systems Simulation	3	MATH 260
COSC 390	Introduction to Machine Learning and Data Analytics	3	ENGR 105, MATH 260
NDSE 404	Design and Analysis of Experiments	3	NDSE 301 ENGR 342, COSC 390
NDSE 406	Industrial Engineering Internship	3	Senior Level (81 Credits), CGPA 2.0)
NDSE 412	Facilities Design and Planning	3	ENGR 100
NDSE 415	Supply Chain Management	3	NDSE 412
NDSE 423	Quality Engineering	3	MATH 260
NDSE 481	Safety Engineering	3	ENGR 100
NDSE 499A	Engineering Design: Capstone Project I	2	Senior level (90 credits), CGPA 2.0
NDSE 499B	Engineering Design: Capstone Project II	2	NDSE 499A
Program Major Electives Options	Total Credits	9	
Students pursuing the Bachelor of Science in Industrial Engineering must complete a minimum of 9 elective credits from the following list or any other course approved by the College of Engineering and Computing:			
At least 2 from the following:			
MGMT 410	Business Policy and Strategic Management	3	If CBM Student: MGMT 101, minimum 75 credits If CEC Student: ENGR 401, Passing 75 Credits
DSAI 465			
NDSE 480	Project Management for Engineers	3	ENGR 205, ENGR 342
At least 1 from the following:			
MECH 341	Manufacturing Processes	3	MECH 241
MGMT 305	International Business	3	If CBM Student: MGMT 205 , ECON 202 If CEC Student: ENGR 100, ENGR 342
MGMT 350	Business Ethics	3	If CBM Student: MGMT 205,co-requisite: ENGL 205 If CEC Student: ENGR 100, ENGR 205
CIVL 355	Environmental Engineering	3	CHEM 101
Professional Elective Options	Total Credits	6	
Students pursuing the Bachelor of Science in Industrial Engineering must complete a minimum of 6 elective credits from general education or any other program at 200 level or above.			
Internship	Total Credits	3	
To qualify for the Bachelor of Science in Industrial Engineering, a student must fulfill the internship requirements prior to graduation. The purpose of the internship is to expose students to the profession and give them an opportunity to apply their academic knowledge in a practical setting. The internship consists of a minimum of 280 work hours (8 weeks) with an approved employer. Internships are evaluated by the internship coordinator with a pass/fail grade.			
Program Total Credits		125	

CEC Undergraduate Programs
Proposed Study Plan (NDSE) - AY 2025 - 2026

First Year

1st Semester

Course Code	Course Title	CH	Pre-requisites
CHEM 101	Introductory Chemistry	3	co-requisite of CHEM 101L
CHEM 101L	Introductory Chemistry Laboratory	1	co-requisite of CHEM 101
COSC 101	Introduction to Computing	3	
ENGL 101	Composition I	3	
UNSS 101	University Success	1	
MATH 153	Calculus I	4	
TOTAL		15	

2nd Semester

Course Code	Course Title	CH	Pre-requisites
ENGR 100	Introduction to Engineering	1	
PHYS 101	Principles of Physics I	3	co-requisite of PHYS 101L
PHYS 101L	Principles of Physics I Laboratory	1	co-requisite of PHYS 101
ENGL 102	Composition II	3	ENGL 101
ARHG 106	Modern History of Bahrain	2	
XXXX	Arts and Humanities Requirement	3	
MATH 154	Calculus II	4	MATH 153
TOTAL		17	

Second Year

3rd Semester

Course Code	Course Title	CH	Pre-requisites
ARHG 104/ARHG 101	Arabic for Arabic Speakers/Arabic for Non-Arabic Speakers	3	
PHYS 102	Principles of Physics II	3	PHYS 101, PHYS 101L, MATH 153, co-requisite: PHYS 102L
PHYS 102L	Principles of Physics II Laboratory	1	PHYS 101, PHYS 101L, MATH 153, co-requisite: PHYS 102
ENGR 105	Programming for Engineers	2	COSC 101
CIVL 200	Engineering Mechanics - Statics	3	PHYS 101
MATH 252	Calculus III	4	MATH 154
TOTAL		16	

4th Semester

Course Code	Course Title	CH	Pre-requisites
MECH 101	Solid Modeling I	3	MATH 153
ARHG 107	Human Rights	2	
ENGR 202	Engineering Mathematics	3	MATH 154
MECH 204	Thermofluids	2	PHYS 101
MECH 204L	Thermofluids Laboratory	1	Concurrent MECH 204
MATH 260	Probability and Statistics	4	MATH 154
ENGR 205	Multidisciplinary Research Methods	2	ENGL 102
TOTAL		17	

Third Year

5th Semester

Course Code	Course Title	CH	Pre-requisites
XXXX	Professional Elective 1	3	
MECH 241	Engineering Materials	2	CIVL 200, CHEM 101
NDSE 301	Operations Research: Modeling	3	MATH 154
ENGR 342	Engineering Economic Analysis	3	MATH 154
COSC 390	Introduction to Machine Learning and Data Analytics	3	ENGR 105, MATH 260
ENGR 401	Entrepreneurship for Engineers	2	ENGR 205
TOTAL		16	

6th Semester

Course Code	Course Title	CH	Pre-requisites
NDSE 302	Stochastic and Probability Modeling	4	NDSE 301, MATH 260
NDSE 306	Systems Simulation	3	MATH 260
NDSE 404	Design and Analysis of Experiments	3	NDSE 301 ENGR 342, COSC 390
NDSE 412	Facilities Design and Planning	3	ENGR 100
NDSE 481	Safety Engineering	3	ENGR 100
TOTAL		16	

Summer Semester

Course Code	Course Title	CH	Pre-requisites
NDSE 406	Industrial Engineering Internship	3	Senior Level (81 Credits), CGPA 2.0)
TOTAL		3	

Fourth Year

7th Semester

Course Code	Course Title	CH	Pre-requisites
NDSE 415	Supply Chain Management	3	NDSE 412
NDSE 423	Quality Engineering	3	MATH 260
NDSE 499A	Engineering Design: Capstone Project I	2	Senior level (90 credits), CGPA 2.0
XXXX	Social Requirements	3	
XXXX	Major Elcetive 1	3	
TOTAL		14	

8th Semester

Course Code	Course Title	CH	Pre-requisites
NDSE 499B	Engineering Design: Capstone Project II	2	NDSE 499A
XXXX	Major Elective 2	3	
XXXX	Major Elective 3	3	
XXXX	Professional Elective 2	3	
TOTAL		11	

CEC Undergraduate Programs

Bachelor of Science in Software Engineering

The Bachelor of Science in Software Engineering is a 4-year undergraduate curriculum designed to provide students with a comprehensive understanding of software development principles, methodologies, and practices. The program aims to equip students with the skills and knowledge necessary to design, develop, test, and maintain software systems that meet the needs of various industries and organizations. More specifically, the objectives of the program are:

1. To provide students with a strong foundation in computer science principles, programming languages, and software engineering fundamentals.
2. To equip students with the skills and techniques necessary to analyze user requirements, design software solutions, and implement them using appropriate software development methodologies.
3. To train students in the use of modern software engineering tools and technologies, including software development environments, version control systems, and automated testing frameworks.
4. To educate students on software quality assurance practices, including software testing, debugging, and maintenance, to ensure the reliability and efficiency of software systems.
5. To foster teamwork, communication, and project management skills in students, enabling them to work effectively in software development teams and deliver projects on time and within budget.
6. To prepare students for a successful career in software engineering and for advanced study in related disciplines at the graduate level.

Program Learning Outcomes (PLOs)

The Program Learning Outcomes (PLOs) are:

✓ an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.

✓ an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.

✓ an ability to communicate effectively with a range of audiences.

✓ an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.

✓ an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.

✓ an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.

✓ an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

Program Structure

All students pursuing the Bachelor of Science in Software Engineering must complete a minimum of 130 credits with a cumulative GPA of 2.0 or better. Specifically, the requirements are as follows:

- A minimum of (39) credits of General Education Requirements
- A minimum of (40) credits of Computing Requirements
- A minimum of (36) credits of Major Requirements
- A minimum of (9) credits of Major Electives
- A minimum of (6) credits of Professional Elective Options
- Graduate Portfolio

CEC Undergraduate Programs
Curriculum Plan – BSc in Software Engineering

Course Code	Course Title	CH	Pre-requisites
General Education Requirements	Total Credits	39	
National Requirements	Total Credits	7	
ARHG 104/ARHG 101	Arabic for Arabic Speakers/Arabic for Non-Arabic Speakers	3	
ARHG 106	Modern History of Bahrain	2	
ARHG 107	Human Rights	2	
English Requirements	Total Credits	6	
ENGL 101	Composition I	3	
ENGL 102	Composition II	3	ENGL 101
Mathematics Requirements	Total Credits	8	
MATH 153	Calculus I	4	
MATH 154	Calculus II	4	MATH 153
ICT Requirements	Total Credits	3	
COSC 101	Introduction to Computing	3	
Lifelong Learning Requirements	Total Credits	1	
UNSS 101	University Success	1	
Natural Science Requirements	Total Credits	8	
Students should complete a minimum of 4 credits, including at least 1 credit lab from the Natural Science list of the general Education tabulated below.			
Arts and Humanities Requirements	Total Credits	3	
Students should complete a minimum of 3 credits from the Arts and Humanities list of the general Education tabulated below			
Social and Behavioral Science Requirements	Total Credits	3	
Students should complete a minimum of 3 credits, from the Social and Behavioral Science list of the general Education tabulated below.			
Arts and Humanities List			
TURK 101	Turkish for Beginners	3	
CCHN 101	Spoken Mandarin	3	
PHIL 101	Introduction to Philosophy	3	
ANTH 152	Introduction to Cultural Anthropology	3	
HUMS 101	Forms and Ideas in the Humanities	3	
HIST 201	World History	3	
ENGL 103	Public Speaking	3	
COMS 356	Intercultural Communication	3	ENGL 101
PHIL 201	Oriental and Islamic Philosophy	3	
Natural Sciences List			
CHEM 101	Introductory Chemistry	3	co-requisite of CHEM 101L
CHEM 101L	Introductory Chemistry Laboratory	1	co-requisite of CHEM 101
PHYS 101	Principles of Physics I	3	co-requisite of PHYS 101L
PHYS 101L	Principles of Physics I Laboratory	1	co-requisite of PHYS 101
Social and Behavioral Sciences List			
PSYC 101	Introduction to Psychology	3	
SOCS 101	Introduction to Sociology	3	
ENGL 205	Business Communication	3	
SUST 101	Principles of Sustainability	3	
POLS 321	Comparative Political Ideologies	3	
PSYC 202	Mind Matters: A Practical Exploration	3	

CEC Undergraduate Programs
Curriculum Plan – BSc in Software Engineering

Program Core Requirments	Total Credits	40	
COSC 102	Object-Oriented Programming	3	COSC 101
COSC 125	Data Structure and Programming Techniques	3	COSC 102
MATH 203	Discrete Mathematics	3	MATH 153
CMPE 215	Communication Networks	3	COSC 125
ENGR 205	Multidisciplinary Research Methods	2	ENGL 102
MATH 255	Introduction to Linear Algebra	3	MATH 153
MATH 260	Probability and Statistics	4	MATH 154
CMPE 270	Digital Systems	3	MATH 153
CMPE 270L	Digital Systems Laboratory	1	Corequisite CMPE 270
CMPE 271	Computer Organization	3	COSC 102, CMPE 270
COSC 312	Design and Usage of Databases	3	MATH 203, COSC 125
COSC 372	Operating Systems	3	CMPE271
COSC 372L	Operating Systems Laboratory	1	Co-requisite COSC 372
SWEN 360	Software Design and Engineering	3	COSC 125
ENGR 401	Entrepreneurship for Engineers	2	ENGR 205
Program Major Requirements	Total Credits	33	
PHYS 102	Principles of Physics II	3	PHYS 101, PHYS 101L, MATH 153, co-requisite: PHYS 102L
PHYS 102L	Principles of Physics II Laboratory	1	PHYS 101, PHYS 101L, MATH 153, co-requisite: PHYS 102
DSAI 310	Introduction to Data Science	3	MATH 260, COSC 102
CYBR 310	Introduction to Cybersecurity	3	CMPE 215
SWEN 360L	Software Design and Engineering Laboratory	1	Co-requisite SWEN 360
CYBR 460	Secure Software Design and Engineering	3	SWEN 360
SWEN 320	Human Computer Interaction	2	COSC 125
SWEN 370	Software Requirements Engineering	3	SWEN 360
SWEN 470	Software Design and Architecture	3	SWEN 370
SWEN 460	Software Testing and Quality Assurance	3	SWEN 370
COSC 485	Web Engineering	3	COSC 312
SWEN 410L	Software Engineering Professional Certificate	1	Senior Level (90 Credits)
SWEN 499A	Software Engineering Design Project A	1	Senior level (90 Credits), CGPA 2.0, SWEN 360/L
SWEN 499B	Software Engineering Design Project B	3	SWEN 499A
SWEN 406	Software Engineering Internship	3	86 credits, CGPA 2.0.
Program Major Electives Options	Total Credits	9	
Students pursuing the Bachelor of Science in Software Engineering must complete a minimum of 9 elective credits from the following list or any other course approved by the College of Engineering and Computing:			
SWEN 475	Object Oriented Design	3	SWEN 360/L
COSC 486	Mobile Programming	3	COSC 312
COSC 415	Cloud Computing	3	COSC 372
COSC 412	Implementation of Database Systems	3	COSC 312
CYBR 415	Cloud Security and Privacy	3	CMPE 215
CYBR 465	Web application Security	3	COSC 312, CYBR 310
Professional Elective Options	Total Credits	6	
Students pursuing the Bachelor of Science in Software Engineering must complete a minimum of 6 elective credits from general education course or any other programs at 200 level or above.			
Internship	Total Credits	3	
To qualify for the Bachelor of Science in Software Engineering a student must fulfill the internship requirements prior to graduation. The purpose of the internship is to expose students to the profession and give them an opportunity to apply their academic knowledge in a practical setting. The internship consists of a minimum of 280 work hours (8 weeks) with an approved employer. Internships are evaluated by the internship coordinator with a pass/fail grade.			
Program Total Credits		127	

CEC Undergraduate Programs
Proposed Study Plan (SWEN) - AY 2025 - 2026

First Year

1st Semester				2nd Semester			
Course Code	Course Title	CH	Pre-requisites	Course Code	Course Title	CH	Pre-requisites
ENGL 101	Composition I	3		ENGL 102	Composition II	3	
MATH 153	Calculus I	4		MATH 154	Calculus II	4	MATH 153
XXXX	National Science Requirement	3		XXXX	National Science Requirement	3	
XXXX	National Science Requirement Laboratory	1		XXXX	National Science Requirement Laboratory	1	
UNSS 101	University Success	1		COSC 102	Object-Oriented Programming	3	COSC 101
COSC 101	Introduction to Computing	3		ARHG 104/ARHG 101	Arabic for Arabic Speakers/Arabic for Non-Arabic Speakers	3	
	TOTAL	15			TOTAL	17	

Second Year

3rd Semester				4th Semester			
Course Code	Course Title	CH	Pre-requisites	Course Code	Course Title	CH	Pre-requisites
MATH 203	Discrete Mathematics	3	MATH 153	MATH 260	Probability and Statistics	4	MATH 154
CMPE 270	Digital Systems	3	MATH 153	SWEN 320	Human Computer Interaction	2	COSC 125
CMPE 270L	Digital Systems Laboratory	1	Corequisite CMPE 270	CMPE 271	Computer Organization	3	COSC 102, CMPE 270
XXXX	Social and Behavioral Science Requirements	3		ARHG 106	Modern History of Bahrain	2	
MATH 255	Introduction to Linear Algebra	3	MATH 153	CMPE 215	Communication Networks	3	COSC 125
COSC 125	Data Structure and Programming Techniques	3	COSC 102	ENGR 205	Multidisciplinary Research Methods	2	ENGL 102
	TOTAL	16			TOTAL	16	

Third Year

5th Semester				6th Semester			
Course Code	Course Title	CH	Pre-requisites	Course Code	Course Title	CH	Pre-requisites
CYBR 310	Introduction to Cybersecurity	3	CMPE 215	PHYS 102	Principles of Physics II	3	PHYS 101, PHYS 101L, MATH 153, co-requisite: PHYS 102L
COSC 372	Operating Systems	3	CMPE271	PHYS 102L	Principles of Physics II Laboratory	1	PHYS 101, PHYS 101L, MATH 153, co-requisite: PHYS 102
COSC 372L	Operating Systems Laboratory	1	Co-requisite COSC 372	XXXX	Arts and Humanities Requirements	3	
COSC 312	Design and Usage of Databases	3	MATH 203, COSC 125	DSAI 310	Introduction to Data Science	3	MATH 260, COSC 102
SWEN 360	Software Design and Engineering	3	COSC 125	SWEN 370	Software Requirements Engineering	3	SWEN 360
SWEN 360L	Software Design and Engineering Laboratory	1	Co-requisite SWEN 360	XXXX	Major Elective 1	3	
ENGR 401	Entrepreneurship for Engineers	2	ENGR 205				
	TOTAL	16			TOTAL	16	

Summer Semester

Course Code	Course Title	CH	Pre-requisites
SWEN 406	Software Engineering Internship	3	86 credits, CGPA 2.0.
	TOTAL	3	

Fourth Year

7th Semester				8th Semester			
Course Code	Course Title	CH	Pre-requisites	Course Code	Course Title	CH	Pre-requisites
COSC 485	Web Engineering	3	COSC 312	SWEN 460	Software Testing and Quality Assurance	3	SWEN 370
CYBR 460	Secure Software Design and Engineering	3	SWEN 360	SWEN 499B	Software Engineering Design Project B	3	SWEN 499A
SWEN 499A	Software Engineering Design Project A	1	Senior level (90 Credits), CGPA 2.0, SWEN 360/L	SWEN 410L	Software Engineering Professional Certificate	1	Senior Level (90 Credits)
SWEN 470	Software Design and Architecture	3	SWEN 370	ARHG 107	Human Rights	2	
XXXX	Major Elective 2	3		XXXX	Professional Elective 2	3	
XXXX	Professional Elective 1	3		XXXX	Major Elective 3	3	
	TOTAL	16			TOTAL	15	

CEC Undergraduate Programs

Bachelor of Science in Computer Engineering

The Bachelor of Science in Computer Engineering is a 4-year undergraduate curriculum that aims at producing the best-skilled, hands-on, practicing computer engineer. More specifically, the objectives are:

1. To equip students with the technical knowledge and skills that will enable them to have a successful career in the computer engineering profession.

2. To provide students with a general education that will enable them to appreciate the social, ethical, economic, and environmental dimensions of problems they may face.

3. To develop students' communication skills and social skills that are necessary to work effectively with others.

4. To develop students' ability to solve problems by analyzing what is already known and then applying logic and creativity to find a solution.

5. To equip students with the intellectual skills necessary to continue learning and to stay current with the profession as it changes.

Program Learning Outcomes (PLOs)

The Program Learning Outcomes (PLOs) are:
- ✓ Identify, formulate and solve complex engineering problems by applying principles of knowledge of science, mathematics and electrical & computer engineering.
- ✓ Ability to Apply engineering and IT design to design reliable systems, devices or processes from initial specifications to a deliverable system, that meet specified needs but always with care and consideration for public health, safety and welfare, as well as for global, cultural, social, environmental.
- ✓ Communicate effectively with a range of audiences.
- ✓ Recognize ethical and professional responsibilities in engineering and IT situations and make informed judgments, which must consider the impact of engineering and IT solutions to global, economic, environmental and societal contexts.
- ✓ Function effectively as part of a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks and meet objectives.
- ✓ Develop and conduct appropriate experimentation, analysis and interpretation of data, and use scientific judgment to draw conclusions.
- ✓ Acquire and apply new knowledge as needed, using appropriate learning strategies.

Program Structure

All students pursuing the Bachelor of Science in Computer Engineering must complete a minimum of 124 credits with a cumulative GPA of 2.0 or better. Specifically, the requirements are as follows:

- A minimum of (39) credits of General Education Requirements

- A minimum of (40) credits of Computing Requirements

- A minimum of (30) credits of Major Requirements

- A minimum of (9) credits of Major Electives

- A minimum of (6) credits of Professional Elective Options

- Graduate Portfolio

CEC Undergraduate Programs
Curriculum Plan – BSc in Computer Engineering

Course Code	Course Title	CH	Pre-requisites
General Education Requirements	Total Credits	39	
National Requirements	Total Credits	7	
ARHG 104/ARHG 101	Arabic for Arabic Speakers/Arabic for Non-Arabic Speakers	3	
ARHG 106	Modern History of Bahrain	2	
ARHG 107	Human Rights	2	
English Requirements	Total Credits	6	
ENGL 101	Composition I	3	
ENGL 102	Composition II	3	ENGL 101
Mathematics Requirements	Total Credits	8	
MATH 153	Calculus I	4	
MATH 154	Calculus II	4	MATH 153
ICT Requirements	Total Credits	3	
COSC 101	Introduction to Computing	3	
Lifelong Learning Requirements	Total Credits	1	
UNSS 101	University Success	1	
Natural Science Requirements	Total Credits	8	
Students should complete a minimum of 8 credits, including at least 2 credit lab from the Natural Science list of the general Education tabulated below.			
Arts and Humanities Requirements	Total Credits	3	
Students should complete a minimum of 3 credits from the Arts and Humanities list of the general Education tabulated below			
Social and Behavioral Science Requirements	Total Credits	3	
Students should complete a minimum of 3 credits, from the Social and Behavioral Science list of the general Education tabulated below.			
Arts and Humanities List			
ANTH 152	Introduction to Cultural Anthropology	3	
HUMS 101	Forms and Ideas in the Humanities	3	
HIST 201	World History	3	
TURK 101	Turkish for Beginners	3	
CCHN 101	Spoken Mandarin	3	
COMS 356	Intercultural Communication	3	ENGL 101
PHIL 101	Introduction to Philosophy	3	
ENGL 103	Public Speaking	3	
PHIL 201	Oriental and Islamic Philosophy	3	
Natural Sciences List			
CHEM 101	Introductory Chemistry	3	co-requisite of CHEM 101L
CHEM 101L	Introductory Chemistry Laboratory	1	co-requisite of CHEM 101
PHYS 101	Principles of Physics I	3	co-requisite of PHYS 101L
PHYS 101L	Principles of Physics I Laboratory	1	co-requisite of PHYS 101
Social and Behavioral Sciences List			
PSYC 101	Introduction to Psychology	3	
SOCS 101	Introduction to Sociology	3	
ENGL 205	Business Communication	3	
SUST 101	Principles of Sustainability	3	
POLS 321	Comparative Political Ideologies	3	
PSYC 202	Mind Matters: A Practical Exploration	3	

CEC Undergraduate Programs
Curriculum Plan – BSc in Computer Engineering

Program Core Requirments	Total Credits	40	
COSC 102	Object-Oriented Programming	3	COSC 101
COSC 125	Data Structure and Programming Techniques	3	COSC 102
MATH 203	Discrete Mathematics	3	MATH 153
CMPE 215	Communication Networks	3	COSC 125
ENGR 205	Multidisciplinary Research Methods	2	ENGL 102
MATH 255	Introduction to Linear Algebra	3	MATH 153
MATH 260	Probability and Statistics	4	MATH 154
CMPE 270	Digital Systems	3	MATH 153
CMPE 270L	Digital Systems Laboratory	1	Corequisite CMPE 270
CMPE 271	Computer Organization	3	COSC 102, CMPE 270
COSC 312	Design and Usage of Databases	3	MATH 203, COSC 125
COSC 372	Operating Systems	3	CMPE271
COSC 372L	Operating Systems Laboratory	1	Co-requisite COSC 372
SWEN 360	Software Design and Engineering	3	COSC 125
ENGR 401	Entrepreneurship for Engineers	2	ENGR 205
Program Major Requirements	Total Credits	30	
PHYS 102	Principles of Physics II	3	PHYS 101, PHYS 101L, MATH 153, co-requisite: PHYS 102L
PHYS 102L	Principles of Physics II Laboratory	1	PHYS 101, PHYS 101L, MATH 153, co-requisite: PHYS 102
ENGR 202	Engineering Mathematics	3	MATH 154
ELEC 320	Circuit Analysis	3	PHYS 102, Math 154
CMPE 410L	Computer Engineering Professional Certificate	1	Senior Level (90 Credits)
CMPE 470	Digital Circuits	3	CMPE 270
CMPE 412	Microprocessors	3	CMPE 271
CMPE 478	Embedded Systems Programming	3	CMPE 412
CMPE 499A	Engineering Design: Capstone Project I	1	Senior level (90 Credits), CGPA 2.0, SWEN 360, CMPE 470
CMPE 499B	Engineering Design: Capstone Project II	3	CMPE 499A
ELEC 330	Fundamentals of Engineering Electronics	3	ELEC 320
CMPE 406	Computer Engineering Internship	3	80 credits, CGPA 2.0.
Program Major Electives Options	Total Credits	9	
Students pursuing the Bachelor of Science in Computer Engineering must complete a minimum of 9 elective credits from the following list or any other course approved by the College of Engineering and Computing:			
CYBR 470	Cryptography	3	MATH 203
CMPE 482	Robotics	3	COSC 372L
DSAI 474	Computer Vision	3	Math 260, COSC 125
CMPE 425	Advanced IoT	3	CMPE 412
CMPE 467	Network Management	3	CMPE 215
Professional Elective Options	Total Credits	6	
Students pursuing the Bachelor of Science in Computer Engineering must complete a minimum of 6 elective credits from general education course or any other programs at 200 level or above.			
Internship	Total Credits	3	
To qualify for the Bachelor of Science in Computer Engineering a student must fulfill the internship requirements prior to graduation. The purpose of the internship is to expose students to the profession and give them an opportunity to apply their academic knowledge in a practical setting. The internship consists of a minimum of 280 work hours (8 weeks) with an approved employer. Internships are evaluated by the internship coordinator with a pass/fail grade.			
Program Total Credits		124	

CEC Undergraduate Programs
Proposed Study Plan (CMPE) - AY 2025 - 2026

First Year

1st Semester

Course Code	Course Title	CH	Pre-requisites
ENGL 101	Composition I	3	
UNSS 101	University Success	1	
COSC 101	Introduction to Computing	3	
MATH 153	Calculus I	4	
	Natural Science Requirement	3	
	Natural Science Lab Requirement	1	
TOTAL		15	

2nd Semester

Course Code	Course Title	CH	Pre-requisites
ENGL 102	Composition II	3	ENGL 101
ARHG 104/ARHG 101	Arabic for Arabic Speakers/Arabic for Non-Arabic Speakers	3	
MATH 154	Calculus II	4	MATH 153
COSC 102	Object-Oriented Programming	3	COSC 101
	Natural Science Requirement	3	
	Natural Science Lab Requirement	1	
TOTAL		17	

Second Year

3rd Semester

Course Code	Course Title	CH	Pre-requisites
COSC 125	Data Structure and Programming Techniques	3	COSC 102
MATH 203	Discrete Mathematics	3	MATH 153
CMPE 270	Digital Systems	3	MATH 153
CMPE 270L	Digital Systems Laboratory	1	Corequisite CMPE 270
MATH 255	Introduction to Linear Algebra	3	MATH 153
TOTAL		13	

4th Semester

Course Code	Course Title	CH	Pre-requisites
MATH 260	Probability and Statistics	4	MATH 154
CMPE 215	Communication Networks	3	COSC 125
CMPE 271	Computer Organization	3	COSC 102, CMPE 270
ENGR 205	Multidisciplinary Research Methods	2	ENGL 102
ENGR 202	Engineering Mathematics	3	MATH 154
TOTAL		15	

Third Year

5th Semester

Course Code	Course Title	CH	Pre-requisites
PHYS 102	Principles of Physics II	3	PHYS 101, PHYS 101L, MATH 153, co-requisite: PHYS 102L
PHYS 102L	Principles of Physics II Laboratory	1	PHYS 101, PHYS 101L, MATH 153, co-requisite: PHYS 102
COSC 372	Operating Systems	3	CMPE271
COSC 372L	Operating Systems Laboratory	1	Co-requisite COSC 372
COSC 312	Design and Usage of Databases	3	MATH 203 and COSC 125
SWEN 360	Software Design and Engineering	3	COSC 125
ENGR 401	Entrepreneurship for Engineers	2	ENGR 205
TOTAL		16	

6th Semester

Course Code	Course Title	CH	Pre-requisites
ELEC 320	Circuit Analysis	3	PHYS 102, Math 154
CMPE 470	Digital Circuits	3	CMPE 270
CMPE 412	Microprocessors	3	CMPE 271
XXXX	Arts and Humanities Requirements	3	
ARHG 107	Human Rights	2	
XXXX	Major Electives 1	3	
TOTAL		17	

Summer Semester

Course Code	Course Title	CH	Pre-requisites
CMPE 406	Computer Engineering Internship	3	80 credits, CGPA 2.0.
TOTAL		3	

Fourth Year

7th Semester

Course Code	Course Title	CH	Pre-requisites
CMPE 478	Embedded Systems Programming	3	CMPE 412
CMPE 499A	Engineering Design: Capstone Project I	1	Senior level (90 Credits), CGPA 2.0, SWEN 360, CMPE 470
CMPE 410L	Computer Engineering Professional Certificate	1	Senior Level (90 Credits)
ARHG 106	Modern History of Bahrain	2	
XXXX	Professional Elective 1	3	
XXXX	Major Elective 2	3	
TOTAL		13	

8th Semester

Course Code	Course Title	CH	Pre-requisites
ELEC 330	Fundamentals of Engineering Electronics	3	ELEC 320
XXXX	Social and Behaviroal Science Requiremetns	3	
CMPE 499B	Engineering Design: Capstone Project II	3	CMPE 499A
XXXX	Professional Elective 2	3	
XXXX	Major Elective 3	3	
TOTAL		15	

CEC Undergraduate Programs

Bachelor of Science in Computer Science

The Bachelor of Science in Computer Science consists of a 4-year undergraduate curriculum that aims to produce practicing computer scientists with the highest level of skills in the industry. More specifically, the objectives of the program are:

1. To provide students with the technical knowledge and skills which will enable them to have a successful career in the computer science profession.

2. To provide students with a general education that will enable them to appreciate the social, ethical, economic and environmental dimensions of problems they may face.

3. To develop students' communication and social skills which are essential for working effectively in a group.

4. To develop students' ability to solve problems by applying logic and creativity to what they have learned in order to find a solution.

5. To provide students with the intellectual skills necessary for continuous learning in order to keep up with the constantly evolving industry.

Program Learning Outcomes (PLOs)

The Program Learning Outcomes (PLOs) are:
- ✓ Demonstrate critical knowledge and understanding of mathematics and current technical concepts and practices in the core of computing.
- ✓ Critically analyze the complexity of real problems, identify, define the computing requirements appropriate to its solution and evaluate the performance.
- ✓ Design, implement, and evaluate a computing-based solution to meet a given set of computing requirements in the context of the program's discipline
- ✓ Communicate effectively in a variety of professional contexts
- ✓ Recognize professional responsibilities and make informed judgments in computing practice based on legal and ethical principles.
- ✓ Function effectively as a member or leader of a team engaged in activities appropriate to the program's discipline.
- ✓ Apply computer science theory and software development fundamentals to produce computing-based solutions.

Program Structure

All students pursuing the Bachelor of Science in Computer Science must complete a minimum of 127 credits with a cumulative GPA of 2.0 or better. Specifically, the requirements are as follows:

- A minimum of (39) credits of General Education Requirements

- A minimum of (40) credits of Computing Requirements

- A minimum of (33) credits of Major Requirements

- A minimum of (9) credits of Major Electives

- A minimum of (6) credits of Professional Elective Options

- Graduate Portfolio

CEC Undergraduate Programs
Curriculum Plan – BSc in Computer Science

Course Code	Course Title	CH	Pre-requisites
General Education Requirements	Total Credits	39	
National Requirements	Total Credits	7	
ARHG 104/ARHG 101	Arabic for Arabic Speakers/Arabic for Non-Arabic Speakers	3	
ARHG 106	Modern History of Bahrain	2	
ARHG 107	Human Rights	2	
English Requirements	Total Credits	6	
ENGL 101	Composition I	3	
ENGL 102	Composition II	3	ENGL 101
Mathematics Requirements	Total Credits	8	
MATH 153	Calculus I	4	
MATH 154	Calculus II	4	MATH 153
ICT Requirements	Total Credits	3	
COSC 101	Introduction to Computing	3	
Lifelong Learning Requirements	Total Credits	1	
UNSS 101	University Success	1	
Natural Science Requirements	Total Credits	8	
Students should complete a minimum of 4 credits, including at least 1 credit lab from the Natural Science list of the general Education tabulated below.			
Arts and Humanities Requirements	Total Credits	3	
Students should complete a minimum of 3 credits from the Arts and Humanities list of the general Education tabulated below			
Social and Behavioral Science Requirements	Total Credits	3	
Students should complete a minimum of 3 credits, from the Social and Behavioral Science list of the general Education tabulated below.			
Arts and Humanities List			
TURK 101	Turkish for Beginners	3	
CCHN 101	Spoken Mandarin	3	
PHIL 101	Introduction to Philosophy	3	
ANTH 152	Introduction to Cultural Anthropology	3	
HUMS 101	Forms and Ideas in the Humanities	3	
HIST 201	World History	3	
ENGL 103	Public Speaking	3	
COMS 356	Intercultural Communication	3	ENGL 101
PHIL 201	Oriental and Islamic Philosophy	3	
Natural Sciences List			
CHEM 101	Introductory Chemistry	3	co-requisite of CHEM 101L
CHEM 101L	Introductory Chemistry Laboratory	1	co-requisite of CHEM 101
PHYS 101	Principles of Physics I	3	co-requisite of PHYS 101L
PHYS 101L	Principles of Physics I Laboratory	1	co-requisite of PHYS 101
PHYS 102	Principles of Physics II	3	PHYS 101, PHYS 101L, MATH 153, co-requisite: PHYS 102L
PHYS 102L	Principles of Physics II Laboratory	1	PHYS 101, PHYS 101L, MATH 153, co-requisite: PHYS 102
BIOL 101	Principles of Biology I	3	co-requisite BIOL 101L
BIOL 101L	Principles of Biology I Laboratory	1	co-requisite BIOL 101
ASTR 352	Current Developments in Astronomy	3	co-requisite of ASTR 352L
ASTR 352L	Current Developments in Astronomy Laboratory	1	co-requisite of ASTR 352
ENVS 201	Environmental Science	3	co-requisite of ENVS 201L
ENVS 201L	Environmental Science Laboratory	1	co-requisite of ENVS 201
Social and Behavioral Sciences List			
PSYC 101	Introduction to Psychology	3	
SOCS 101	Introduction to Sociology	3	
ENGL 205	Business Communication	3	
SUST 101	Principles of Sustainability	3	
POLS 321	Comparative Political Ideologies	3	
PSYC 202	Mind Matters: A Practical Exploration	3	

CEC Undergraduate Programs
Curriculum Plan – BSc in Computer Science

Program Core Requirments	Total Credits	40	
COSC 102	Object-Oriented Programming	3	COSC 101
COSC 125	Data Structure and Programming Techniques	3	COSC 102
MATH 203	Discrete Mathematics	3	MATH 153
CMPE 215	Communication Networks	3	COSC 125
ENGR 205	Multidisciplinary Research Methods	2	ENGL 102
MATH 255	Introduction to Linear Algebra	3	MATH 153
MATH 260	Probability and Statistics	4	MATH 154
CMPE 270	Digital Systems	3	MATH 153
CMPE 270L	Digital Systems Laboratory	1	Corequisite CMPE 270
CMPE 271	Computer Organization	3	COSC 102, CMPE 270
COSC 312	Design and Usage of Databases	3	MATH 203, COSC 125
COSC 372	Operating Systems	3	CMPE271
COSC 372L	Operating Systems Laboratory	1	Co-requisite COSC 372
SWEN 360	Software Design and Engineering	3	COSC 125
ENGR 401	Entrepreneurship for Engineers	2	ENGR 205
Program Major Requirements	Total Credits	30	
COSC 210	Management Information Systems	3	COSC 101
COSC 248	Algorithms and Complexity	3	MATH 203, COSC 125
DSAI 310	Introduction to Data Science	3	MATH 260, COSC 102
COSC 406	Computer Science Internship	3	83 credits, CGPA 2.0.
SWEN 360L	Software Design and Engineering Laboratory	1	Co-requisite SWEN 360
CYBR 310	Introduction to Cybersecurity	3	CMPE 215
DSAI 465			
COSC 415	Cloud Computing	3	COSC 372
CMPE 467	Network Management	3	CMPE 215
COSC 485	Web Engineering	3	COSC 312
COSC 410L	Computer Science Professional Certificate	1	Senior Level (90 credits)
COSC 499A	Computer Science Design Project A	1	Senior level (90 Credits), CGPA 2.0, SWEN 360/L
COSC 499B	Computer Science Design Project B	3	COSC 499A
Program Major Electives Options	Total Credits	9	
Students pursuing the Bachelor of Science in Computer Science must complete a minimum of 9 elective credits from the following list or any other course approved by the College of Engineering and Computing:			
DSAI 422	Data Mining	3	DSAI 310
CYBR 470	Cryptography	3	MATH 203
COSC 412	Implementation of Database Systems	3	COSC 312
COSC 486	Mobile Programming	3	COSC 312
DSAI 482	Big Data Technologies	3	DSAI 310
DSAI 474	Computer Vision	3	Math 260, COSC 125
Professional Elective Options	Total Credits	6	
Students pursuing the Bachelor of Science in Computer Science must complete a minimum of 6 elective credits from general education course or any other programs at 200 level or above.			
Internship	Total Credits	3	
To qualify for the Bachelor of Science in Computer Science a student must fulfill the internship requirements prior to graduation. The purpose of the internship is to expose students to the profession and give them an opportunity to apply their academic knowledge in a practical setting. The internship consists of a minimum of 280 work hours (8 weeks) with an approved employer. Internships are evaluated by the internship coordinator with a pass/fail grade.			
Program Total Credits		124	

CEC Undergraduate Programs
Proposed Study Plan (COSC) - AY 2025 - 2026

First Year

1st Semester

Course Code	Course Title	CH	Pre-requisites
ENGL 101	Composition I	3	
MATH 153	Calculus I	4	
XXXX	Natural Science Requirement	3	
XXXX	Natural Science Requirement Lab	1	
UNSS 101	University Success	1	
COSC 101	Introduction to Computing	3	
TOTAL		15	

2nd Semester

Course Code	Course Title	CH	Pre-requisites
ENGL 102	Composition II	3	ENGL 101
MATH 154	Calculus II	4	MATH 153
XXXX	Natural Science Requirement	3	
XXXX	Natural Science Requirement Lab	1	
COSC 102	Object-Oriented Programming	3	COSC 101
ARHG 104/ARHG 101	Arabic for Arabic Speakers/Arabic for Non-Arabic Speakers	3	
TOTAL		17	

Second Year

3rd Semester

Course Code	Course Title	CH	Pre-requisites
MATH 203	Discrete Mathematics	3	MATH 153
CMPE 270	Digital Systems	3	MATH 153
CMPE 270L	Digital Systems Laboratory	1	Corequisite CMPE 270
XXXX	Social and Behavioral Science Requirements	3	
MATH 255	Introduction to Linear Algebra	3	MATH 153
COSC 125	Data Structure and Programming Techniques	3	COSC 102
TOTAL		16	

4th Semester

Course Code	Course Title	CH	Pre-requisites
MATH 260	Probability and Statistics	4	MATH 154
ARHG 106	Modern History of Bahrain	2	
CMPE 271	Computer Organization	3	COSC 102, CMPE 270
COSC 248	Algorithms and Complexity	3	MATH 203, COSC 125
CMPE 215	Communication Networks	3	COSC 125
ENGR 205	Multidisciplinary Research Methods	2	ENGL 102
TOTAL		17	

Third Year

5th Semester

Course Code	Course Title	CH	Pre-requisites
CYBR 310	Introduction to Cybersecurity	3	CMPE 215
COSC 372	Operating Systems	3	CMPE271
COSC 372L	Operating Systems Laboratory	1	Co-requisite COSC 372
COSC 312	Design and Usage of Databases	3	MATH 203, COSC 125
SWEN 360	Software Design and Engineering	3	COSC 125
SWEN 360L	Software Design and Engineering Laboratory	1	Co-requisite SWEN 360
ENGR 401	Entrepreneurship for Engineers	2	ENGR 205
TOTAL		16	

6th Semester

Course Code	Course Title	CH	Pre-requisites
ARHG 107	Human Rights	2	
XXXX	Arts and Humanitites Requirements	3	
COSC 210	Management Information Systems	3	COSC 101
DSAI 310	Introduction to Data Science	3	MATH 260, COSC 102
COSC 415	Cloud Computing	3	COSC 372
TOTAL		14	

Summer Semester

Course Code	Course Title	CH	Pre-requisites
COSC 406	Computer Science Internship	3	83 credits, CGPA 2.0.
TOTAL		3	

Fourth Year

7th Semester

Course Code	Course Title	CH	Pre-requisites
COSC 485	Web Engineering	3	COSC 312
COSC 499A	Computer Science Design Project A	1	Senior level (90 Credits), CGPA 2.0, SWEN 360/L
COSC 410L	Computer Science Professional Certificate	1	Senior Level (90 credits)
XXXX	Major Elective 1	3	
XXXX	Major Elective 2	3	
XXXX	Professional Elective 1	3	
TOTAL		14	

8th Semester

Course Code	Course Title	CH	Pre-requisites
DSAI 465	Artificial Intelligence	3	If Industrial Engineering Student: DSAI 310 or COSC 390 If Data Science and AI Student: DSAI 310
CMPE 467	Network Management	3	CMPE 215
COSC 499B	Computer Science Design Project B	3	COSC 499A
XXXX	Professional Elective 2	3	
XXXX	Major Elective 3	3	
TOTAL		15	

CEC Undergraduate Programs

Bachelor of Science in Cybersecurity

The Bachelor of Science in Cybersecurity is a 4-year undergraduate curriculum that ensures academic success and preparation for a productive career in cybersecurity. The program aims to equip students with the skills and knowledge necessary to secure computer systems, networks, and data from various cyber threats.

The objectives of the program are:

1. To provide students with a solid foundation in computer science principles and practices, as well as specialized knowledge in the field of cybersecurity.
2. To equip students with the knowledge and skills necessary to identify, assess, and mitigate cybersecurity risks and threats.
3. To train students in the design, implementation, and management of secure computer systems and networks.
4. To educate students on legal, ethical, social, and economic issues related to cybersecurity, including privacy, data protection, and cybercrime.
5. To provide students with the intellectual skills necessary for continuous learning in order to keep up with the constantly evolving industry.
6. To prepare students for a successful career in the field of cybersecurity and for advanced study in computer science and cybersecurity at the graduate level.

Program Learning Outcomes (PLOs)

The Program Learning Outcomes (PLOs) are:
✓ Demonstrate critical knowledge and understanding of mathematics and current technical concepts and practices in the core of computing and cybersecurity.
✓ Analyze a complex computing problem and to apply principles of computing and other relevant disciplines to identify solutions.
✓ Design, implement, and evaluate a computing-based solution to meet a given set of computing requirements in the context of the program's discipline.
✓ Communicate effectively in a variety of professional contexts.
✓ Recognize professional responsibilities and make informed judgments in computing practice based on legal and ethical principles.
✓ Function effectively as a member or leader of a team engaged in activities appropriate to the program's discipline.
✓ Apply security principles and practices to maintain operations in the presence of risks and threats. [CY]

Program Structure

All students pursuing the Bachelor of Science in Cybersecurity must complete a minimum of 130 credits with a cumulative GPA of 2.0 or better. Specifically, the requirements are as follows:
• A minimum of (39) credits of General Education Requirements
• A minimum of (6) credits of Professional Elective Options
• A minimum of (40) credits of Computing Requirements
• A minimum of (36) credits of Major Requirements
• A minimum of (9) credits of Major Electives
• Graduate Portfolio

CEC Undergraduate Programs
Curriculum Plan – BSc in Cybersecurity

Course Code	Course Title	CH	Pre-requisites
General Education Requirements	**Total Credits**	**39**	
National Requirements	**Total Credits**	**7**	
ARHG 104/ARHG 101	Arabic for Arabic Speakers/Arabic for Non-Arabic Speakers	3	
ARHG 106	Modern History of Bahrain	2	
ARHG 107	Human Rights	2	
English Requirements	**Total Credits**	**6**	
ENGL 101	Composition I	3	
ENGL 102	Composition II	3	ENGL 101
Mathematics Requirements	**Total Credits**	**8**	
MATH 153	Calculus I	4	
MATH 154	Calculus II	4	MATH 153
ICT Requirements	**Total Credits**	**3**	
COSC 101	Introduction to Computing	3	
Lifelong Learning Requirements	**Total Credits**	**1**	
UNSS 101	University Success	1	
Natural Science Requirements	**Total Credits**	**8**	
Students should complete a minimum of 4 credits, including at least 1 credit lab from the Natural Science list of the general Education tabulated below.			
Arts and Humanities Requirements	**Total Credits**	**3**	
Students should complete a minimum of 3 credits from the Arts and Humanities list of the general Education tabulated below			
Social and Behavioral Science Requirements	**Total Credits**	**3**	
Students should complete a minimum of 3 credits, from the Social and Behavioral Science list of the general Education tabulated below.			
Arts and Humanities List			
TURK 101	Turkish for Beginners	3	
CCHN 101	Spoken Mandarin	3	
PHIL 101	Introduction to Philosophy	3	
ANTH 152	Introduction to Cultural Anthropology	3	
HUMS 101	Forms and Ideas in the Humanities	3	
HIST 201	World History	3	
ENGL 103	Public Speaking	3	
COMS 356	Intercultural Communication	3	ENGL 101
PHIL 201	Oriental and Islamic Philosophy	3	
Natural Sciences List			
CHEM 101	Introductory Chemistry	3	co-requisite of CHEM 101L
CHEM 101L	Introductory Chemistry Laboratory	1	co-requisite of CHEM 101
PHYS 101	Principles of Physics I	3	co-requisite of PHYS 101L
PHYS 101L	Principles of Physics I Laboratory	1	co-requisite of PHYS 101
PHYS 102	Principles of Physics II	3	PHYS 101, PHYS 101L, MATH 153, co-requisite: PHYS 102L
PHYS 102L	Principles of Physics II Laboratory	1	PHYS 101, PHYS 101L, MATH 153, co-requisite: PHYS 102
BIOL 101	Principles of Biology I	3	co-requisite BIOL 101L
BIOL 101L	Principles of Biology I Laboratory	1	co-requisite BIOL 101
ASTR 352	Current Developments in Astronomy	3	co-requisite of ASTR 352L
ASTR 352L	Current Developments in Astronomy Laboratory	1	co-requisite of ASTR 352
ENVS 201	Environmental Science	3	co-requisite of ENVS 201L
ENVS 201L	Environmental Science Laboratory	1	co-requisite of ENVS 201
Social and Behavioral Sciences List			
PSYC 101	Introduction to Psychology	3	
SOCS 101	Introduction to Sociology	3	
ENGL 205	Business Communication	3	
SUST 101	Principles of Sustainability	3	
POLS 321	Comparative Political Ideologies	3	
PSYC 202	Mind Matters: A Practical Exploration	3	

CEC Undergraduate Programs
Curriculum Plan – BSc in Cybersecurity

Program Core Requirments	Total Credits	40	
COSC 102	Object-Oriented Programming	3	COSC 101
COSC 125	Data Structure and Programming Techniques	3	COSC 102
MATH 203	Discrete Mathematics	3	MATH 153
CMPE 215	Communication Networks	3	COSC 125
ENGR 205	Multidisciplinary Research Methods	2	ENGL 102
MATH 255	Introduction to Linear Algebra	3	MATH 153
MATH 260	Probability and Statistics	4	MATH 154
CMPE 270	Digital Systems	3	MATH 153
CMPE 270L	Digital Systems Laboratory	1	Corequisite CMPE 270
CMPE 271	Computer Organization	3	COSC 102, CMPE 270
COSC 312	Design and Usage of Databases	3	MATH 203, COSC 125
COSC 372	Operating Systems	3	CMPE271
COSC 372L	Operating Systems Laboratory	1	Co-requisite COSC 372
SWEN 360	Software Design and Engineering	3	COSC 125
ENGR 401	Entrepreneurship for Engineers	2	ENGR 205
Program Major Requirements	**Total Credits**	**36**	
COSC 248	Algorithms and Complexity	3	MATH 203, COSC 125
SWEN 360L	Software Design and Engineering Laboratory	1	Co-requisite SWEN 360
CYBR 310	Introduction to Cybersecurity	3	CMPE 215
CYBR 362	Security Vulnerabilities and Threats	3	CYBR 310
CYBR 460	Secure Software Design and Engineering	3	SWEN 360
CYBR 315	Network Security and Forensics Analysis	3	CMPE 215
CYBR 375	Cybercrime	3	CYBR 310
CYBR 462	Information System Risk Management	3	CYBR 362
CYBR 470	Cryptography	3	MATH 203
CYBR 480	Security Standards and Audits	3	CYBR 362
CYBR 410L	Cybersecurity Professional Certificate	1	Senior Level (90 Credits)
CYBR 405	Cybersecurity Internship	3	86 credits, CGPA 2.0.
CYBR 495A	Cybersecurity Design Project A	1	Senior Level (90 Credits), CGPA 2.0, SWEN 360/L
CYBR 495B	Cybersecurity Design Project B	3	CYBR 495A
Program Major Electives Options	**Total Credits**	**9**	
Students pursuing the Bachelor of Science in Cybersecurity must complete a minimum of 9 elective credits from the following list or any other course approved by the College of Engineering and Computing:			
CYBR 415	Cloud Security and Privacy	3	CMPE 215
CYBR 465	Web application Security	3	COSC 312, CYBR 310
CYBR 467	Ethical Hacking	3	CYBR 362
CYBR 482	Information Technology Audit and Control	3	CYBR 310
CYBR 487	Cybersecurity Framework and Management	3	CYBR 310
CYBR 475	Cyber Incident Handling and Response	3	CYBR 310
Professional Elective Options	**Total Credits**	**6**	
Students pursuing the Bachelor of Science in Cybersecurity must complete a minimum of 6 elective credits from general education course or any other programs at 200 level or above.			
Internship	**Total Credits**	**3**	
To qualify for the Bachelor of Science in Cybersecurity a student must fulfill the internship requirements prior to graduation. The purpose of the internship is to expose students to the profession and give them an opportunity to apply their academic knowledge in a practical setting. The internship consists of a minimum of 280 work hours (8 weeks) with an approved employer. Internships are evaluated by the internship coordinator with a pass/fail grade.			
Program Total Credits		**130**	

CEC Undergraduate Programs
Proposed Study Plan (CYBR) - AY 2025 - 2026

First Year

1st Semester

Course Code	Course Title	CH	Pre-requisites
ENGL 101	Composition I	3	
UNSS 101	University Success	1	
COSC 101	Introduction to Computing	3	
MATH 153	Calculus I	4	
XXXX	Science Requirement	3	
XXXX	Science Lab Requirement	1	
	TOTAL	15	

2nd Semester

Course Code	Course Title	CH	Pre-requisites
ENGL 102	Composition II	3	ENGL 101
ARHG 104/ARHG 101	Arabic for Arabic Speakers/Arabic for Non-Arabic Speakers	3	
MATH 154	Calculus II	4	MATH 153
COSC 102	Object-Oriented Programming	3	COSC 101
XXXX	Science Requirement	3	
XXXX	Science Lab Requirement	1	
	TOTAL	17	

Second Year

3rd Semester

Course Code	Course Title	CH	Pre-requisites
COSC 125	Data Structure and Programming Techniques	3	COSC 102
MATH 203	Discrete Mathematics	3	MATH 153
CMPE 270	Digital Systems	3	MATH 153
CMPE 270L	Digital Systems Laboratory	1	Corequisite CMPE 270
MATH 255	Introduction to Linear Algebra	3	MATH 153
XXXX	Social Science Requirements	3	
	TOTAL	16	

4th Semester

Course Code	Course Title	CH	Pre-requisites
MATH 260	Probability and Statistics	4	MATH 154
CMPE 215	Communication Networks	3	COSC 125
CMPE 271	Computer Organization	3	COSC 102, CMPE 270
ENGR 205	Multidisciplinary Research Methods	2	ENGL 102
COSC 248	Algorithms and Complexity	3	MATH 203, COSC 125
ARHG 106	Modern History of Bahrain	2	
	TOTAL	17	

Third Year

5th Semester

Course Code	Course Title	CH	Pre-requisites
CYBR 310	Introduction to Cybersecurity	3	CMPE 215
SWEN 360L	Software Design and Engineering Laboratory	1	Co-requisite SWEN 360
COSC 372	Operating Systems	3	CMPE271
COSC 372L	Operating Systems Laboratory	1	Co-requisite COSC 372
COSC 312	Design and Usage of Databases	3	MATH 203 and COSC 125
SWEN 360	Software Design and Engineering	3	COSC 125
ENGR 401	Entrepreneurship for Engineers	2	ENGR 205
	TOTAL	16	

6th Semester

Course Code	Course Title	CH	Pre-requisites
CYBR 362	Security Vulnerabilities and Threats	3	CYBR 310
CYBR 315	Network Security and Forensics Analysis	3	CMPE 215
CYBR 375	Cybercrime	3	CYBR 310
XXXX	Arts and Humanities Requirements	3	
ARHG 107	Human Rights	2	
XXXX	Major Electives 1	3	
	TOTAL	17	

Summer Semester

Course Code	Course Title	CH	Pre-requisites
CYBR 405	Cybersecurity Internship	3	86 credits, CGPA 2.0.
	TOTAL	3	

Fourth Year

7th Semester

Course Code	Course Title	CH	Pre-requisites
CYBR 460	Secure Software Design and Engineering	3	SWEN 360
CYBR 462	Information System Risk Management	3	CYBR 362
CYBR 470	Cryptography	3	MATH 203
CYBR 495A	Cybersecurity Design Project A	1	Senior Level (90 Credits), CGPA 2.0, SWEN 360/L
XXXX	Professional Elective 1	3	
XXXX	Major Elective 2	3	
	TOTAL	16	

8th Semester

Course Code	Course Title	CH	Pre-requisites
CYBR 480	Security Standards and Audits	3	CYBR 362
CYBR 410L	Social and Behaviroal Science Requiremetns	1	Senior Level (90 Credits)
CYBR 495B	Cybersecurity Design Project B	3	CYBR 495A
XXXX	Professional Elective 2	3	
XXXX	Major Elective 3	3	
	TOTAL	13	

CEC Undergraduate Programs

Bachelor of Science in Data Science and AI

The Bachelor of Science in Data Science and Artificial Intelligence consists of a 4-year undergraduate curriculum that aims to produce practicing data scientists with the highest level of skills in the industry. More specifically, the objectives of the program are:

1. To provide students with a solid foundation in mathematics, statistics, and computer science principles, as well as specialized knowledge in the field of data science and artificial intelligence.
2. To equip students with the skills and techniques necessary to collect, clean, and analyze large datasets using various data science tools and programming languages.
3. To train students in the application of machine learning algorithms and artificial intelligence techniques to develop predictive models, natural language processing systems, computer vision applications, and other AI-driven solutions.
4. To educate students on the ethical and responsible use of data science and artificial intelligence, including considerations of privacy, bias, and fairness.
5. To foster critical thinking and problem-solving skills in students, enabling them to identify opportunities for applying data science and AI in various domains and industries.
6. To prepare students for a successful career in the field of data science and artificial intelligence, as well as for advanced study in related disciplines at the graduate level.

Program Learning Outcomes (PLOs)

The Program Learning Outcomes (PLOs) are:
- ✓ Demonstrate critical knowledge and understanding of mathematics and current technical concepts and practices in the core of computing, Data Science, and Artificial Intelligence.
- ✓ Analyze a complex computing problem and to apply principles of computing and other relevant disciplines to identify solutions.
- ✓ Design, implement, and evaluate a computing-based solution to meet a given set of computing requirements in the context of the program's discipline.
- ✓ Communicate effectively in a variety of professional contexts.
- ✓ Recognize professional responsibilities and make informed judgments in computing practice based on legal and ethical principles.
- ✓ Function effectively as a member or leader of a team engaged in activities appropriate to the program's discipline.
- ✓ Apply theory, techniques, and tools throughout the data science lifecycle and employ the resulting knowledge to satisfy stakeholders' needs.

Program Structure

All students pursuing the Bachelor of Science in Data Science and Artificial Intelligence must complete a minimum of 130 credits with a cumulative GPA of 2.0 or better. Specifically, the requirements are as follows:
- A minimum of (39) credits of General Education Requirements
- A minimum of (40) credits of Computing Requirements
- A minimum of (36) credits of Major Requirements
- A minimum of (9) credits of Major Electives
- A minimum of (6) credits of Professional Elective Options
- Graduate Portfolio

CEC Undergraduate Programs

Curriculum Plan – BSc in Data Science and AI

Course Code	Course Title	CH	Pre-requisites
General Education Requirements	Total Credits	39	
National Requirements	Total Credits	7	
ARHG 104/ARHG 101	Arabic for Arabic Speakers/Arabic for Non-Arabic Speakers	3	
ARHG 106	Modern History of Bahrain	2	
ARHG 107	Human Rights	2	
English Requirements	Total Credits	6	
ENGL 101	Composition I	3	
ENGL 102	Composition II	3	ENGL 101
Mathematics Requirements	Total Credits	8	
MATH 153	Calculus I	4	
MATH 154	Calculus II	4	MATH 153
ICT Requirements	Total Credits	3	
COSC 101	Introduction to Computing	3	
Lifelong Learning Requirements	Total Credits	1	
UNSS 101	University Success	1	
Natural Science Requirements	Total Credits	8	
Students should complete a minimum of 4 credits, including at least 1 credit lab from the Natural Science list of the general Education tabulated below.			
Arts and Humanities Requirements	Total Credits	3	
Students should complete a minimum of 3 credits from the Arts and Humanities list of the general Education tabulated below			
Social and Behavioral Science Requirements	Total Credits	3	
Students should complete a minimum of 3 credits, from the Social and Behavioral Science list of the general Education tabulated below.			
Arts and Humanities List			
TURK 101	Turkish for Beginners	3	
CCHN 101	Spoken Mandarin	3	
PHIL 101	Introduction to Philosophy	3	
ANTH 152	Introduction to Cultural Anthropology	3	
HUMS 101	Forms and Ideas in the Humanities	3	
HIST 201	World History	3	
ENGL 103	Public Speaking	3	
COMS 356	Intercultural Communication	3	ENGL 101
PHIL 201	Oriental and Islamic Philosophy	3	
Natural Sciences List			
CHEM 101	Introductory Chemistry	3	co-requisite of CHEM 101L
CHEM 101L	Introductory Chemistry Laboratory	1	co-requisite of CHEM 101
PHYS 101	Principles of Physics I	3	co-requisite of PHYS 101L
PHYS 101L	Principles of Physics I Laboratory	1	co-requisite of PHYS 101
PHYS 102	Principles of Physics II	3	PHYS 101, PHYS 101L, MATH 153, co-requisite: PHYS 102L
PHYS 102L	Principles of Physics II Laboratory	1	PHYS 101, PHYS 101L, MATH 153, co-requisite: PHYS 102
BIOL 101	Principles of Biology I	3	co-requisite BIOL 101L
BIOL 101L	Principles of Biology I Laboratory	1	co-requisite BIOL 101
ASTR 352	Current Developments in Astronomy	3	co-requisite of ASTR 352L
ASTR 352L	Current Developments in Astronomy Laboratory	1	co-requisite of ASTR 352
ENVS 201	Environmental Science	3	co-requisite of ENVS 201L
ENVS 201L	Environmental Science Laboratory	1	co-requisite of ENVS 201
Social and Behavioral Sciences List			
PSYC 101	Introduction to Psychology	3	
SOCS 101	Introduction to Sociology	3	
ENGL 205	Business Communication	3	
SUST 101	Principles of Sustainability	3	
POLS 321	Comparative Political Ideologies	3	
PSYC 202	Mind Matters: A Practical Exploration	3	

CEC Undergraduate Programs

Curriculum Plan – BSc in Data Science and AI

Program Core Requirments	Total Credits	40	
COSC 102	Object-Oriented Programming	3	COSC 101
COSC 125	Data Structure and Programming Techniques	3	COSC 102
MATH 203	Discrete Mathematics	3	MATH 153
CMPE 215	Communication Networks	3	COSC 125
ENGR 205	Multidisciplinary Research Methods	2	ENGL 102
MATH 255	Introduction to Linear Algebra	3	MATH 153
MATH 260	Probability and Statistics	4	MATH 154
CMPE 270	Digital Systems	3	MATH 153
CMPE 270L	Digital Systems Laboratory	1	Corequisite CMPE 270
CMPE 271	Computer Organization	3	COSC 102, CMPE 270
COSC 312	Design and Usage of Databases	3	MATH 203, COSC 125
COSC 372	Operating Systems	3	CMPE271
COSC 372L	Operating Systems Laboratory	1	Co-requisite COSC 372
SWEN 360	Software Design and Engineering	3	COSC 125
ENGR 401	Entrepreneurship for Engineers	2	ENGR 205
Program Major Requirements	Total Credits	33	
COSC 248	Algorithms and Complexity	3	MATH 203, COSC 125
DSAI 310	Introduction to Data Science	3	MATH 260, COSC 102
DSAI 370	Data Analytics Ethics	3	DSAI 310
SWEN 360L	Software Design and Engineering Laboratory	1	Co-requisite SWEN 360
CYBR 310	Introduction to Cybersecurity	3	CMPE 215
DSAI 380	Data Visualization	3	DSAI 310
DSAI 474	Computer Vision	3	Math 260, COSC 125
DSAI 462	Advanced Computational Statistics	3	DSAI 310
DSAI 482	Big Data Technologies	3	DSAI 310
DSAI 465			
DSAI 410L	Data Science Professional Certificate	1	Senior Level (90 Credits)
DSAI 406	Data Science Internship	3	86 credits, CGPA 2.0.
DSAI 499A	Data Science Design Project A	1	Senior Level (90 credits), CGPA 2.0, SWEN 360/L
DSAI 499B	Data Science Design Project B	3	DSAI 499A
Program Major Electives Options	Total Credits	9	
Students pursuing the Bachelor of Science in Data Science and Artificial Intelligence must complete a minimum of 9 elective credits from the following list or any other course approved by the College of Engineering:			
DSAI 450	Business Intelligence	3	DSAI 465
DSAI 472	Social and Behavioral Analytics	3	DSAI 310
DSAI 420	Marketing Analytics	3	DSAI 310
DSAI 448	Sports Analytics	3	DSAI 310
DSAI 460	Internet of Things Analytics	3	DSAI 310
DSAI 422	Data Mining	3	DSAI 310
Professional Elective Options	Total Credits	6	
Students pursuing the Bachelor of Science in Data Science and Artificial Intelligence must complete a minimum of 6 elective credits from general education course or any other programs at 200 level or above.			
Internship	Total Credits	3	
To qualify for the Bachelor of Science in Data Science and Artificial Intelligence a student must fulfill the internship requirements prior to graduation. The purpose of the internship is to expose students to the profession and give them an opportunity to apply their academic knowledge in a practical setting. The internship consists of a minimum of 280 work hours (8 weeks) with an approved employer. Internships are evaluated by the internship coordinator with a pass/fail grade.			
Program Total Credits		127	

CEC Undergraduate Programs
Proposed Study Plan (DSAI) - AY 2025 - 2026

First Year

1st Semester				2nd Semester			
Course Code	Course Title	CH	Pre-requisites	Course Code	Course Title	CH	Pre-requisites
ENGL 101	Composition I	3		ENGL 102	Composition II	3	ENGL 101
MATH 153	Calculus I	4		MATH 154	Calculus II	4	MATH 153
XXXX	Natural Science Requirement	3		XXXX	Natural Science Requirement	3	
XXXX	Natural Science Requirement Lab	1		XXXX	Natural Science Requirement Lab	1	
UNSS 101	University Success	1		COSC 102	Object-Oriented Programming	3	COSC 101
COSC 101	Introduction to Computing	3		ARHG 104/ARHG 101	Arabic for Arabic Speakers/Arabic for Non-Arabic Speakers	3	
	TOTAL	15			TOTAL	17	

Second Year

3rd Semester				4th Semester			
Course Code	Course Title	CH	Pre-requisites	Course Code	Course Title	CH	Pre-requisites
MATH 203	Discrete Mathematics	3	MATH 153	MATH 260	Probability and Statistics	4	MATH 154
CMPE 270	Digital Systems	3	MATH 153	ARHG 106	Modern History of Bahrain	2	
CMPE 270L	Digital Systems Laboratory	1	Corequisite CMPE 270	CMPE 271	Computer Organization	3	COSC 102, CMPE 270
XXXX	Social and Behavioral Science Requirements	3		COSC 248	Algorithms and Complexity	3	MATH 203, COSC 125
MATH 255	Introduction to Linear Algebra	3	MATH 153	CMPE 215	Communication Networks	3	COSC 125
COSC 125	Data Structure and Programming Techniques	3	COSC 102	ENGR 205	Multidisciplinary Research Methods	2	ENGL 102
	TOTAL	16			TOTAL	17	

Third Year

5th Semester				6th Semester			
Course Code	Course Title	CH	Pre-requisites	Course Code	Course Title	CH	Pre-requisites
DSAI 310	Introduction to Data Science	3	MATH 260, COSC 102	ARHG 107	Human Rights	2	
COSC 372	Operating Systems	3	CMPE271	XXXX	Arts and Humanities Requirements	3	
COSC 372L	Operating Systems Laboratory	1	Co-requisite COSC 372	DSAI 370	Data Analytics Ethics	3	DSAI 310
COSC 312	Design and Usage of Databases	3	MATH 203, COSC 125	CYBR 310	Introduction to Cybersecurity	3	CMPE 215
SWEN 360	Software Design and Engineering	3	COSC 125	DSAI 380	Data Visualization	3	DSAI 310
SWEN 360L	Software Design and Engineering Laboratory	1	Co-requisite SWEN 360	DSAI 482	Big Data Technologies	3	DSAI 310
ENGR 401	Entrepreneurship for Engineers	2	ENGR 205				
	TOTAL	16			TOTAL	17	

Summer Semester

Course Code	Course Title	CH	Pre-requisites
DSAI 406	Data Science Internship	3	86 credits, CGPA 2.0.
	TOTAL	3	

Fourth Year

7th Semester				8th Semester			
Course Code	Course Title	CH	Pre-requisites	Course Code	Course Title	CH	Pre-requisites
DSAI 465				DSAI 462	Advanced Computational Statistics	3	DSAI 310
DSAI 499A	Data Science Design Project A	1	Senior Level (90 credits), CGPA 2.0, SWEN 360/L	DSAI 474	Computer Vision	3	Math 260, COSC 125
DSAI 410L	Data Science Professional Certificate	1	Senior Level (90 Credits)	DSAI 499B	Data Science Design Project B	3	DSAI 499A
XXXX	Major Elective 1	3		XXXX	Professional Elective 2	3	
XXXX	Major Elective 2	3		XXXX	Major Elective 3	3	
XXXX	Professional Elective 1	3					
	TOTAL	11			TOTAL	15	

CEC Postgraduate Programs

Master of Science in Engineering Management (ENGM)

The Master of Science in Engineering Management at the American University of Bahrain (AUBH) is a graduate degree program designed to bridge the gap between engineering and business management. It is structured to expose students to the application of management techniques and theories to engineering processes and practices, with a heavy emphasis on practical, industrial-focused application. The program will enable students to improve their strengths in planning, organization, and administrative abilities to manage complex operational processes better to maximize performance, with the technological skills of problem-solving and efficiency optimization of an engineer to contribute intellectually to the engineering management profession. This ENGM is a Level 9 qualification on Bahrain's National Qualification Framework (NQF) and, therefore, requires significant candidate participation and commitment to achieve the program learning outcomes.

Program Learning Outcomes (PLOs)

Graduates of the ENGM program are expected to achieve the following knowledge, skills, and professional competencies:

- ✓ Demonstrate critical knowledge and understanding of core and specialized theories and practices in engineering management.

- ✓ Apply core and specialized theories and sustainable practices in engineering management to drive organizational success.

- ✓ Utilize analytical thinking and analysis techniques to effectively manage people, finances, and enterprises as an integrated system.

- ✓ Apply problem-solving and analytical skills to evaluate how products and services can best be designed, configured, and produced.

- ✓ Use a range of standard and specialized analytical tools and information technology applications to analyze and synthesize data in engineering management research projects.

- ✓ Demonstrate a professional level of written and oral communication skills, including the ability to present for a range of audiences with different levels of knowledge or expertise in engineering.

- ✓ Operate at a professional level with substantial responsibility for individual and group work activities on complex and undefined problems in engineering management and develop leadership skills to succeed as a professional engineering manager.

- ✓ Demonstrate a high level of strategic decision-making processes and critically evaluate the impact of engineering practices on people and the environment.

Program Structure

All students pursuing the Master of Science in Engineering Management must complete a minimum of 33 credits with a cumulative GPA of 3.0 or higher. Specifically, the requirements are as follows:

o   Foundation Courses with zero credits towards the degree if applicable

o   A minimum of 21 credits of Major Requirements

o   A minimum of 6 credits of Major Electives

o   A minimum of 6 credits of Master Thesis

CEC Postgraduate Programs

Curriculum Plan – ENGM

Foundation Courses	Total Credits	0
ENGM 411	Foundation in Research Methods	0
Program Major Requirements	Total Credits	27
ENGM 511	Financial and Cost Accounting	3
ENGM 512	Project Management	3
ENGM 513	Managing People and Organizations	3
ENGM 514	Technology Management	3
MGMT 520	Operations Management for Global Supply Chains	3
ENGM 525	Concept to Commercialization	3
ENGM 535	Analytics for Engineering Managers	3
ENGM 599	Master Thesis	6
Electives Requirements	Total Credits	6
ENGM 528	Engineering and Sustainable Development	3
ENGM 529	Environmental, Social and Governance (ESG)	3
ENGM 532	Product Design and Innovation	3
ENGM 536	Financial Management	3
BUSN 520	Business Data Mining and Predictive Analytics	3
MGMT 530	People Analytics for Leaders	3
MGMT 513	Leadership Development and Team Building	3
Program Total Credits		33

Proposed Study Plan (ENGM) - AY 2025 - 2026

First Year

1st Semester

Course Code	Course Title	CH	Pre-requisites	Course Code	Course Title	CH	Pre-requisites
ENGM 511	Financial and Cost Accounting	3		ENGM 513	Managing People and Organizations	3	
ENGM 512	Project Management	3		ENGM 535	Analytics for Engineering Managers	3	
TOTAL		6		TOTAL		6	

2nd Semester (header continues above)

Summer Semester

Course Code	Course Title	CH	Pre-requisites
ENGM 514	Technology Management	3	
TOTAL		3	

Second Year

3rd Semester

Course Code	Course Title	CH	Pre-requisites	Course Code	Course Title	CH	Pre-requisites
MGMT 520	Operations Management for Global Supply Chains	3		ENGM 599	Master Thesis	6	A minimum of 15 earned credit hours A completed proposal that is approved by the supervisor and the college A minimum CGPA of 2.5.
ENGM 525	Concept to Commercialization	3		XXXX	Elective Course	3	
TOTAL		6		TOTAL		9	

4th Semester (header continues above)

Summer Semester

Course Code	Course Title	CH	Pre-requisites
XXXX	Elective Course	3	
TOTAL		3	

College of
Media and Design (CMD)

CMD Overview

College Mission & Objectives

The mission of the College of Media and Design is to develop technically competent, aesthetically sensitive, and socially responsible professionals prepared for a changing, global society. In support of the mission of American University of Bahrain, the fundamental objectives of the College of Media and Design are as follows:

- ✓ Develop a broad-based, interdisciplinary foundation in the liberal arts, sciences, and humanities
- ✓ Develop the verbal, written, and visual skills necessary for the effective communication of ideas
- ✓ Develop individual design and media production abilities that effectively integrate technology, function, and aesthetics
- ✓ Develop an enlightened sense of design media production
- ✓ Develop a strong sense of professional ethics and beliefs
- ✓ Provide leadership service for a pluralistic society

Dean's Message

Dear Students,

It is my great pleasure to welcome you to the College of Media and Design at the American University of Bahrain (AUBH).

Beginning your academic journey with us marks the start of an inspiring chapter filled with creativity, exploration, and opportunities that will shape both your professional career and personal growth.

At the College of Media and Design, we are committed to cultivating creativity, critical thinking, collaboration, and leadership. We encourage you to design, create, question, and explore new ideas—skills that are essential for thriving in today's fast-changing world of media, communication, and design.

Beyond the classroom, I invite you to immerse yourself in the dynamic academic and creative community at AUBH, where you will have opportunities to engage with peers, faculty, and industry professionals.

Our programs are designed not only to give you a strong foundation in media and design theory, but also to equip you with practical skills through hands-on projects, studios, workshops, and industry-driven experiences.

We believe that applying your creativity in practice is key to preparing you for the challenges and innovations of the future. Still, your success will depend not only on the opportunities we provide, but also on the initiative and passion you bring to your own learning journey.

I wish you a rewarding and successful experience at the College of Media and Design, and I look forward to seeing the impactful work and creative achievements you will contribute to the future.

Dr. Layal Halawani

Assistant Professor,
Dean of the College of Media and Design

CMD Overview

Faculty Directory

The faculty of the College of Media and Design at AUBH are creative scholars and seasoned professionals who bring a dynamic blend of academic rigor and real-world expertise to the classroom. With diverse international backgrounds and deep industry experience in areas such as communication, visual arts, design, and emerging media, our faculty are dedicated to fostering innovation, critical thinking, and global awareness. The table below provides key information about our full-time faculty members.

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                    Dean
              Dr. Layal Halawani

 MMD Associate      MMD Lecturer      MMD Lecturer
   Professor
 Dr. Lilian Hallak   Mr. Khaled Alhasan   Mr. Hamad Ali
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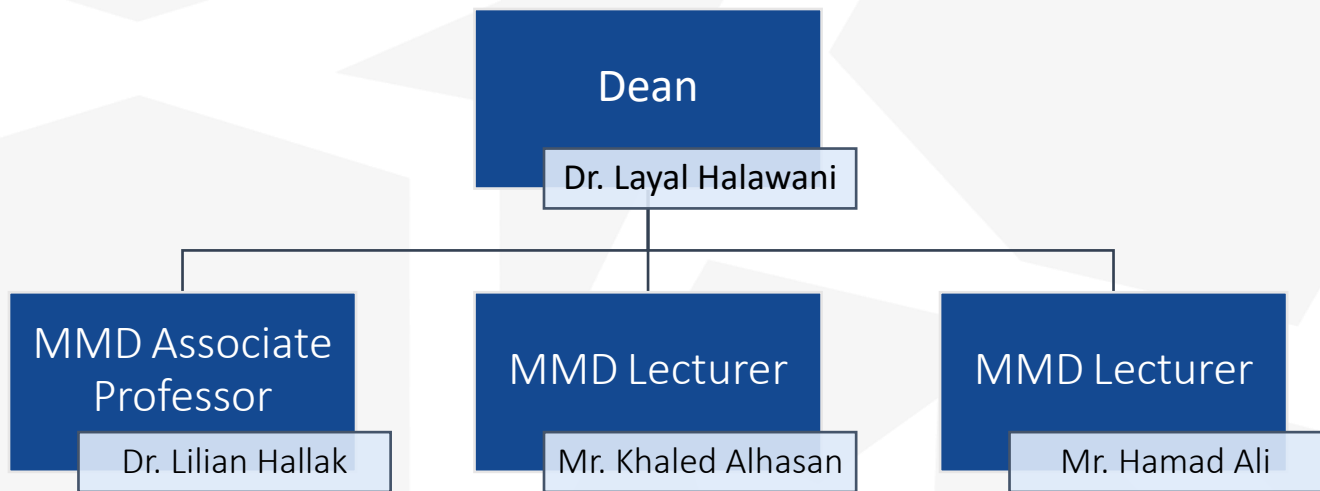
Name	Title	Office Location	Email
Dr. Layal Halawani	Assistant Professor of Multimedia	123 – Academic D	layal.halawani@aubh.edu.bh
Dr. Lilian Hallak	Associate Professor of Multimedia	124 – Academic D	lilian.hallak@aubh.edu.bh
Mr. Khalid AlHasan	Lecturer of Multimedia and Design, Studio Manager	Audio Studio – Academic D	khaled.alhasan@aubh.edu.bh
Mr. Hamad Ali	Lecturer of Multimedia and Design	Shared Offices – Academic D	hamad.ali@aubh.edu.bh

CMD Undergraduate Programs

Bachelor of Arts in Multimedia Design

The Bachelor of Arts in Multimedia Design is a 4-year undergraduate curriculum that develops the knowledge and skills which provide students with qualifications to establish careers in a wide range of public- and private-sector industries, both in Bahrain and abroad. The possibilities include acquiring professional positions in media, advertising, business marketing and public relations, , film, television, entertainment and video gaming, and online, interactive training networks, to name just a few. The Bachelor of Arts in Multimedia Design gives students the opportunity to specialize in multimedia design, mass communication, production, or advertising. Each degree option develops a solid base of multimedia skills and knowledge, encompassing interface design, 2-D animation, video production, Web-based design, digital audio, and hands-on experience with real-world multimedia production. This knowledge is further enhanced by majors in a chosen field of specialization, selecting from subject areas such as film and television, journalism, communication, and advertising.

Program Learning Outcomes (PLOs)

Graduates of the Multimedia Design program are expected to achieve the following knowledge, skills, and professional competencies:

- ✓ Demonstrate critical knowledge of theory, elements, and principles of multimedia design.
- ✓ Identify the major cultural and ethical components of multimedia design, as well as its history and aesthetics.
- ✓ Utilize the various production techniques and methods in multimedia design.
- ✓ Adhere to the discipline's ethical codes and contribute to the development profession.
- ✓ Employ the skills necessary to review, analyze and critically evaluate literature; to conduct original research; to draw and report conclusions.
- ✓ Utilize analytical skills by reviewing, critiquing, evaluating professional works; synthesize information in the field of multimedia.
- ✓ Define and analyze multimedia design problems; develop innovative and creative design solutions, meeting regional and international standards.
- ✓ Demonstrate the ability to use industry standard multimedia design software.
- ✓ Communicate effectively and creatively in both writing and presentations, as well as by combining multi-media image, sound, video, animation and text.
- ✓ Demonstrate leadership qualities, entrepreneurship, and strong professional work ethics.
- ✓ Employ soft-skills and self-confidence; work effectively independently and in a team.
- ✓ Understand various career development options and make informed choices.

Program Structure

All students pursuing the Bachelor of Arts in Multimedia Design must complete a minimum of 125 credits with a cumulative GPA of 2.0 or better. Specifically, the requirements are as follows:

- o A minimum of 38 credits of general education requirements
- o A minimum of 51 credits of design core requirements
- o A minimum of 18 credits of major requirements
- o A minimum of 9 credits of major electives
- o A minimum of 9 credits of professional elective options

CMD Undergraduate Programs
Curriculum Plan – MMD

Course Code	Course Title	CH	Pre-requisites
General Education Requirements	**Total Credits**	**38**	
National Requirements	**Total Credits**	**7**	
ARHG 104/ARHG 101	Arabic for Arabic Speakers/Arabic for Non-Arabic Speakers	3	
ARHG 106	Modern History of Bahrain	2	
ARHG 107	Human Rights	2	
English Requirements	**Total Credits**	**6**	
ENGL 101	Composition I	3	
ENGL 102	Composition II	3	ENGL 101
Mathematics Requirements	**Total Credits**	**3**	
MATH 115	Introduction to Probability and Statistics	3	
ICT Requirements	**Total Credits**	**3**	
COSC 101	Introduction to Computing	3	
Lifelong Learning Requirements	**Total Credits**	**1**	
UNSS 101	University Success	1	
Natural Science Requirements	**Total Credits**	**4**	
Students should complete a minimum of 4 credits, including at least 1 credit lab from the Natural Science list of the general Education tabulated below.			
Arts and Humanities Requirements	**Total Credits**	**3**	
Students should complete a minimum of 3 credits from the Arts and Humanities list of the general Education tabulated below.			
Social and Behavioral Science Requirements	**Total Credits**	**3**	
Students should complete a minimum of 3 credits, from the Social and Behavioral Science list of the general Education tabulated below.			
Free General Education Electives	**Total Credits**	**8**	
A minimum of 8 credits can be taken from any of the General Education courses (Free General Education Electives tabulated below.			
Mathematics List			
MATH 130	College Algebra	3	
MATH 131	Finite Math with Calculus	3	
MATH 153	Calculus I	4	
MATH 154	Calculus II	4	MATH 153
MATH 154	Calculus II	4	MATH 153
MATH 252	Calculus III	4	MATH 154
MATH 203	Discrete Mathematics	3	MATH 153
MATH 255	Introduction to Linear Algebra	3	MATH 153
MATH 260	Probability and Statistics	4	MATH 154
Arts and Humanities List			
ANTH 152	Introduction to Cultural Anthropology	3	
HUMS 101	Forms and Ideas in the Humanities	3	
HIST 201	World History	3	
TURK 101	Turkish for Beginners	3	
CCHN 101	Spoken Mandarin	3	
COMS 356	Intercultural Communication	3	ENGL 101
PHIL 101	Introduction to Philosophy	3	
ENGL 103	Public Speaking	3	
PHIL 201	Oriental and Islamic Philosophy	3	
Natural Sciences List			
BIOL 101	Principles of Biology I	3	co-requisite BIOL 101L
BIOL 101L	Principles of Biology I Laboratory	1	co-requisite BIOL 101
CHEM 101	Introductory Chemistry	3	co-requisite of CHEM 101L
CHEM 101L	Introductory Chemistry Laboratory	1	co-requisite of CHEM 101
CHEM 103	General Chemistry	3	co-requisite of CHEM 103L
CHEM 103L	General Chemistry Laboratory	1	co-requisite of CHEM 103
PHYS 101	Principles of Physics I	3	co-requisite of PHYS 101L
PHYS 101L	Principles of Physics I Laboratory	1	co-requisite of PHYS 101
PHYS 102	Principles of Physics II	3	PHYS 101, PHYS 101L, MATH 153, co-requisite: PHYS 102L
PHYS 102L	Principles of Physics II Laboratory	1	PHYS 101, PHYS 101L, MATH 153, co-requisite: PHYS 102
PHYS 105	Principles of Physics III	3	PHYS 101 and MATH 154 and co-requisite of PHYS 105L
PHYS 105L	Principles of Physics III Laboratory	1	co-requisite of PHYS 105
ASTR 352	Current Developments in Astronomy	3	co-requisite of ASTR 352L
ASTR 352L	Current Developments in Astronomy Laboratory	1	co-requisite of ASTR 352
ENVS 201	Environmental Science	3	co-requisite of ENVS 201L
ENVS 201L	Environmental Science Laboratory	1	co-requisite of ENVS 201
Social and Behavioral Sciences List			
PSYC 101	Introduction to Psychology	3	
SOCS 101	Introduction to Sociology	3	
ENGL 205	Business Communication	3	
SUST 101	Principles of Sustainability	3	
POLS 321	Comparative Political Ideologies	3	
PSYC 202	Mind Matters: A Practical Exploration	3	
MDIA 101	New Media and Society	2	

CMD Undergraduate Programs
Curriculum Plan - MMD

Program Core Requirments	Total Credits	51	
DSGN 101	Visual Culture I	3	
DSGN 102	Visual Culture II	3	DSGN 101
DSGN 111	Basic Design I	3	
DSGN 112	Basic Design II	3	DSGN 111
DSGN 141	Computer Culture I	3	
DSGN 142	Computer Culture II	3	DSGN 141
DSGN 201	Typography	3	DSGN 141
DSGN 211	Photography Techniques	3	
DSGN 244	Digital Image Processing	3	DSGN 142
DSGN 261	Video Production I	3	
DSGN 321	Introduction to Multimedia	3	
DSGN 411	Physical Interaction Design	3	DSGN 341
DSGN 401	Capstone Project I	3	DSGN 332 Senior Level standing 90cr.
DSGN 402	Capstone Project II	6	DSGN 401
DSGN 405	Multimedia Design Internship	6	Option 1: Completed 60 Cr for 1st Internship & Completed 90 Cr. for 2nd Internship Option 2: Completed 90 Cr.
Program Major Requirements	Total Credits	18	
DSGN 232	Digital Vector Graphics	3	DSGN 141
DSGN 301	Web Design	3	If CBM Student: Minimum 60 credits
DSGN 302	Interactive Web Projects	3	DSGN 301
DSGN 331	Multimedia Design	3	DSGN 321
DSGN 332	Multimedia Production	3	DSGN 331
DSGN 341	3-D Computer Graphics	3	DSGN 142
Program Major Electives Options	Total Credits	9	
Students pursuing Bachelor of Fine Arts in Multimedia Design must complete a minimum of nine elective credits in design (DSGN) coursework offered at or above the 200-level .			
DSGN 212	Photography Workshop	3	DSGN 211
DSGN 210	Digital Storytelling	3	
DSGN 241	Concept Development	3	DSGN 111
DSGN 223	Sound and Image	3	
DSGN 262	Video Production II	3	DSGN 261
Professional Elective Options	Total Credits	9	
Students pursuing a Bachelor of Arts in Multimedia Design must complete a minimum of 9 elective credits. Elective credits can be earned via any courses offered at or above the 100-level.			
Program Total Credits		125	

CMD Undergraduate Programs

Proposed Study Plan - AY 2025 - 2026

First Year

1st Semester				2nd Semester			
Course Code	Course Title	CH	Pre-requisites	Course Code	Course Title	CH	Pre-requisites
ENGL 101	Composition I	3		ENGL 102	Composition II	3	ENGL 101
ARHG 104/ARHG 101	Arabic for Arabic Speakers/Arabic for Non-Arabic Speakers	3		ARHG 106	Modern History of Bahrain	2	
UNSS 101	University Success	1		COSC 101	Introduction to Computing	3	
DSGN 101	Visual Culture I	3		DSGN 102	Visual Culture II	3	DSGN 101
DSGN 111	Basic Design I	3		DSGN 112	Basic Design II	3	DSGN 111
DSGN 141	Computer Culture I	3		DSGN 142	Computer Culture II	3	DSGN 141
TOTAL		16		TOTAL		17	

Second Year

3rd Semester				4th Semester			
Course Code	Course Title	CH	Pre-requisites	Course Code	Course Title	CH	Pre-requisites
XXXX	Social and Behavioral Science	3		XXXX	Natural Science Requirment	3	
DSGN 232	Digital Vector Graphics	3	DSGN 141	XXXX	Natural Science Lab Requirment	1	
DSGN 211	Photography Techniques	3		DSGN 261	Video Production I	3	
DSGN 201	Typography	3	DSGN 141	DSGN 244	Digital Image Processing	3	DSGN 142
ARHG 107	Human Rights	2		DSGN 321	Introduction to Multimedia	3	
MATH 115	Introduction to Probability and Statistics	3		XXXX	Free General Education Elective	2	
TOTAL		17		TOTAL		15	

Third Year

5th Semester				6th Semester			
Course Code	Course Title	CH	Pre-requisites	Course Code	Course Title	CH	Pre-requisites
DSGN 301	Web Design	3	If CBM Student: Minimum 60 credits	DSGN 302	Interactive Web Projects	3	DSGN 301
DSGN 331	Multimedia Design	3	DSGN 321	DSGN 332	Multimedia Production	3	DSGN 331
DSGN 341	3-D Computer Graphics	3	DSGN 142	DSGN 411	Physical Interaction Design	3	DSGN 341
XXXX	Major Electives 1	3		XXXX	Major Electives 2	3	
XXXX	Free General Education Elective	3		XXXX	Arts and Humanities Requirment	3	
TOTAL		15		TOTAL		15	

Fourth Year

7th Semester				8th Semester			
Course Code	Course Title	CH	Pre-requisites	Course Code	Course Title	CH	Pre-requisites
DSGN 405	Multimedia Design Internship	6	Option 1: Completed 60 Cr for 1st Internship & Completed 90 Cr. for 2nd Internship Option 2: Completed 90 Cr.	XXXX	Free General Education Elective	3	
DSGN 401	Capstone Project I	3	DSGN 332 Senior Level standing 90cr.	DSGN 402	Capstone Project II	6	DSGN 401
XXXX	Professional Elective 1	3		XXXX	Major Electives 3	3	
XXXX	Professional Elective 2	3		XXXX	Professional Elective 3	3	
TOTAL		15		TOTAL		15	
				Total		125	

Course Descriptions

College of Arts and Sciences Courses

ANTH 152 Introduction to Cultural Anthropology
Study of the variety of cultural patterns that human societies use to adapt to the environment, guide social interaction and understand the human condition. Introduces the ideas and methods anthropologists use to develop a scientific and humanistic understanding of the world's cultures.

ARHG 101/ ARGH 104 Arabic Language
ARHG101/Arabic – For Non-Arabic Speakers: This course develops reading and writing skills in Modern Standard Arabic with active speaking and listening skills in formal Arabic. Authentic materials from the Arabic media will be used in addition to text-related video and audio materials.

ARHG 101/ ARGH 104 Arabic Language
ARHG104/Arabic for Arabic Speakers: A practical language course which aims at developing the language skills of native speakers of Arabic. This course provides the students with a comprehensive knowledge of the linguistic system. It's intended to help learners reach a superior level of proficiency by expanding vocabulary and providing paragraph-level activities in reading, writing, and speaking; through a selection texts by writers from across the Arab world address a literary themes and represent a range of genres, styles, and periods; where each text is followed by exercises that measure understanding and comprehension, vocabulary and language applications, including grammar, morphology, spelling, stylistic applications and composition.

ARHG 106 Modern History of Bahrain
The course covers the Modern History of Bahrain since 1500 till 2002. It contains: Chapter I: Introduction geography. Chapter II: A Short History of Bahrain until the beginning of the sixteenth century. Chapter III: Bahrain between European and regional ambitions. Chapter IV: Utub tribe and the establishment of political entities in the Arabian Gulf. Chapter V of Bahrain and British protection. Chapter VI: Bahrain after independence.

ARHG 107 Human Rights
This course covers human rights historical development, major human rights laws, treaties, and conventions. To learn obligations as citizens and residents of Bahrain as well as a member of the international community and to understand Human Rights Enforcement Mechanisms in Bahrain.

ASTR 352 Current Developments in Astronomy
"In-depth examination and interpretation of astronomical discoveries occurring at the time the course is taught. Reading includes both background material and current periodicals accessible to General Education students. Likely areas of discussion include spacecraft exploration of the solar system, satellite observations of high-energy radiation from space, exotic astronomical objects (e.g., double quasars, black hole candidates), and new cosmological data.

ASTR 352L Current Developments in Astronomy Laboratory
ASTR 352L is designed to reinforce topics presented in ASTR 352 lectures. Through scientific experimentation, students will improve their understanding of basic concepts in astronomy while becoming trained on experimental techniques used in astronomy and increasing their insight on the foundations of the scientific process. Likely topics covered are the exploration of the sky, angular size, the spectrum, the Doppler effect, eclipses, moon phases, transits, day and night, the seasons, our Sun, the search of exoplanets, the state of the universe, and the age of the universe.

BIOL 101 Principles of Biology I
BIO 101 provides students with an introduction to the fundamental principles of biology. This course covers the basis of life: cells, macromolecules, energy flow, genetics and inheritance, evolution and biodiversity, and ecology.

BIOL 101L Principles of Biology I Laboratory
BIOL 101 L is designed to reinforce topics presented in BIOL 101 lectures. Through scientific experimentation, students will improve their understanding of basic concepts in biology: cells, macromolecules, energy flow, genetics and inheritance, evolution and biodiversity, and ecology.

CCHN 101 Spoken Mandarin
This spoken Mandarin L1 course is designed to introduce students to the fundamentals of spoken Mandarin. More specifically, students will be introduced to Mandarin and various dialects, the pronunciation of Modern Standard Chinese, and the Mandarin Pinyin system. They will also learn basic information about the Chinese Character writing system, and practice using common, routine expressions in the classroom. By the end of the course, students will be able to communicate appropriately and coherently with native speakers about basic topics and themes regarding daily life and academic situations.

CHEM 101 Introductory Chemistry
This course will provide students with a comprehensive overview of the major areas of chemistry. Chemical principles for each topic under discussion are presented together with their foundation in atomic and molecular structure. Topics covered range from atomic theory to the descriptions of chemical reactivity and reactions, quantitative methods in chemistry, reactions in aqueous media and chemical reaction rates. Applications of chemistry, "the central science" are discussed throughout the lectures. Lectures, quizzes, homework, and worksheet problems give students the opportunity to practice their knowledge, and to gain experience in problem solving. Upon completion of the course the student will have gained a strong foundation for the further study of chemistry, and for the application of chemical principles in a variety of other fields.

CHEM 101L Introductory Chemistry Laboratory
This course is an application of the general chemistry concepts studied in CHEM 101. The student carries out experiments including chemical equilibria, solutions, titrations. Upon completion of the course the student will have gained a strong foundation for the further study of chemistry, and for the application of chemical principles in a variety of other fields.

CHEM 103 General Chemistry

This course will provide students with a comprehensive overview of the major areas of chemistry. Chemical principles for each topic under discussion are presented together with their foundation in atomic and molecular structure. Topics covered range from atomic theory to the descriptions of chemical reactivity and reactions, quantitative methods in chemistry, reactions in aqueous media and chemical kinetics and chemical equilibrium. Applications of chemistry, "the central science" are discussed throughout the lectures. Lectures, quizzes, homework, and worksheet problems give students the opportunity to practice their knowledge, and to gain experience in problem solving. Upon completion of the course the student will have gained a strong foundation for the further study of chemistry, and for the application of chemical principles in a variety of other fields.

CHEM 103L General Chemistry Laboratory

This course is an application of the general chemistry concepts studied in CHEM 103. The student carries out experiments including chemical equilibria, solutions, titrations. Upon completion of the course the student will have gained a strong foundation for the further study of chemistry, and for the application of chemical principles in a variety of other fields.

COMS 356 Intercultural Communication

Cultural factors in interpersonal communication, such as perception, roles, language codes and nonverbal communication. Students will apply and evaluate theories of intercultural communication.

COSC 101 Introduction to Computing

This course is designed to provide students with the core competencies of computing literacy and computational thinking, which are essential skills in the digital information age. The course provides an overview of computer systems—hardware, software and networks. Students will practice using essential computing programs and will develop computational solutions to basic problems. The course also covers social and ethical issues related to computing.

CULT 101 Cultural Criticism

This course will provide students with a general framework for analyzing various aspects of cultural theory and practice. Beginning with an introduction to cultural criticism, students will obtain the theoretical knowledge necessary to assess the material world around them, and the one in which individuals (and the societies that they create) inhabit. Students will learn to evaluate the various characteristics which inform our interactions with that world and the cultural factors which inform and shape those interactions.

ENGL 101 Composition I

ENGL 101 introduces the conventions of academic writing and critical thinking and teaches the writing skills necessary for success in college. Read and respond to a variety of texts from different disciplines and produce academic texts using a range of critical thinking and rhetorical strategies. Learn how to apply APA documentation style to ethically document sources in texts and reference lists. The course is designed to provide guided practice in the multi-step process of academic writing. Identify and apply the conventions of academic writing in college work.

ENGL 102 Composition II

ENGL 102 introduces the conventions of research writing and teaches how to produce research papers using critical thinking and analytical skills in response to a variety of academic texts. The course is designed to provide guidance in all steps of the research process including choosing a topic, designing a research methodology, analyzing data, and writing up and presenting results.

ENGL 103 Public Speaking

ENGL 103 helps students understand the nature of public speaking and develop techniques to improve their public speaking skills. In the course, students will practice planning, preparing, and delivering various types of speeches in a public setting. The course emphasizes research, delivery, and basic analysis and evaluation of students' own and others' speeches.

ENGL 205 Business Communication

ENGL 205 is designed to develop the English language skills needed to perform effectively in the current global marketplace. The course builds confidence in communicating orally and in writing in various business contexts, explains essential business vocabulary, and teaches the 21st Century skills essential for success in today's workplace.

ENVS 201 Environmental Science

ENVS 201 explores the relationship between humans and the natural world, providing students with a comprehensive understanding of environmental issues and the scientific principles behind them. Students will study the interactions between Earth's systems, such as the atmosphere, hydrosphere, and lithosphere, and the impact of human activity on these systems. Topics include ecosystem dynamics, energy, air and water resources, pollution and climate change, population ecology, urbanization, food security, biodiversity, and conservation.

ENVS 201L Environmental Science Laboratory

ENV 201L is designed to reinforce topics presented in ENV 201 lectures. Through field-based, hands-on work, students will improve their understanding of environmental science. Students will be able to: apply the scientific method of inquiry, engage in interactive field trips, and work efficiently in teams.

MATH 153 Calculus I

This course aims to enhance understanding of concepts and the development of problem-solving skills in the areas of single variable differential calculus and single variable integral calculus. Topics include limits, differentiation, curve sketching, optimization, and introductory integration. Functions studied range from simple algebraic and radical expressions to more sophisticated rational, logarithms, exponentials, and trigonometric functions. (Prerequisite: MATH 098 or placement exam)

MATH 154 Calculus II

This course involves applications and techniques of integration, including substitution, by parts, trigonometric substitution, and by partial fractions. The course also introduces improper integrals, numerical integration, sequences and series, geometric series formula, criteria for convergence, power series, and Taylor expansion.

MATH 203 Discrete Mathematics

This course focuses on logic, methods of proof, set theory, number theory, equivalence, and order relations, counting (combinations and permutations), and solving recurrence relations.

MATH 252 Calculus III

This course emphasizes on vector functions (continuity, derivatives, and integrals), parametric curves and surfaces, polar coordinates, as well as functions of several variables (including continuity and partial derivatives, gradient, directional derivatives). Topics also include the chain rule, double and triple integrals, iterated integrals, integration using polar, cylindrical, and spherical coordinates, change of variables, line, and surface integrals (including surface area), curl and divergence, and the integral theorems of Green, Stokes, and Gauss.

MATH 255 Linear Algebra

This course focuses on systems of linear equations and matrices, Gauss elimination, matrices, determinants vectors in 2- and 3-dimensional space, norm, dot product, cross product, lines, planes, Euclidean vector spaces, general vector spaces, and matrix diagonalization.

MATH 260 Probability and Statistics

This course is an introduction to probability and statistics. It emphasizes on operations of sets, counting problems, definition of probability, conditional probability, Bayes' theorem, one- and two-dimensional random variables, mathematical expectation and variance, basic discrete and continuous probability distributions, moment generating functions, law of large numbers, and central limit theorem. It also includes aspects of descriptive statistics, statistical intervals, hypothesis testing and simple linear regression and correlation.

MDIA 101 New Media and Society

An introductory survey course examining the co-constitutive and interconnected interplay of influence between new media and society. The course pays special attention to, and critically analyzes emergent issues and debates, shaping the public discourse in local as well as global society. This course introduces and promotes media literacy, helping students to be able to analyze and understand the complex media ecosystems around us. Specifically, this course will support the students' understanding of how media affects society and vice versa. This course will support students in analyzing information and forming opinions, preparing them to participate in current debates within the dynamic field of new/media. Finally, this course will raise the level of media literacy among the students enabling them to carefully and intelligently navigate the complex media ecosystems.

MUSC 101 Music Appreciation

The course is aimed at engaging students with little or no prior music knowledge in active listening to Western musical works displayed in wide historical and artistic contexts. The introductory lectures provide definitions of classical music elements, instruments, forms, and genres, while the main corpus of lectures is focused on listening to and discussing music composed in the Middle Ages, Renaissance, Baroque, Classical, Romantic, Modern, and Post-Modern periods.

PHIL 101 Introduction to Philosophy

This course introduces students to central questions in philosophy through exploration of issues and concepts from selected renowned Western philosophers. It engages students in the close study of their own values and beliefs on themes such as the nature of reality, knowledge, the self, the good, and the right, and all in light of some of the greatest works in the Western philosophic enterprise, while considering their historical context and contribution to human thought and development.

PHIL 201 Oriental and Islamic Philosophy

This course provides an in-depth exploration of Oriental and Islamic philosophy, examining key philosophical texts, concepts, thinkers, and themes that have shaped the philosophical landscape of Eastern cultures. Philosophical traditions of the East, including Indian and Chinese philosophies will be covered, with a discussion of how Islamic philosophy intersects with and diverges from these traditions. The course will cover topics such as metaphysics, ethics, and epistemology, focusing on the contributions of significant thinkers such as Confucius, Laozi, Al-Farabi, Avicenna (Ibn Sina), Al-Ghazali, and Ibn Rushd among several other prominent philosophers.

PHYS 101 Principles of Physics I

This course provides an overview of the fundamental principles of physics in areas of mechanics. Topics include standards and units, vectors and coordinate systems, kinematics, dynamics of single particles, work energy and power, conservation on energy, dynamics of system of particles, collisions, and rotational kinematics and dynamics. The course is designed for students requiring calculus-based physics.

PHYS 101L Principles of Physics I Laboratory

PHYS101L is designed to reinforce topics presented in PHYS 101 lectures. Through scientific experimentation, students will improve their understanding of basic concepts in mechanics while developing their foundation of the scientific process. Laboratory work includes the setting up and running of physics' experiments, whether hands on or online. Regular activities include data taking, data presentation, data visualization, data analysis, fitting, drawing of conclusions, writing logbooks. Logbooks are booklets where the process entailed in the design, carrying out and drawing of conclusions is described, and they are an integral part of this course.

PHYS 102 Principles of Physics II
The course provides an overview of the fundamental principles of physics in areas of electricity and magnetism. Topics include electric force, electric field, Gauss law, electric potential, capacitance and dielectrics, current and resistance, direct current circuits, magnetic fields, sources of magnetic fields, Biot-Savart Law, Ampere's Law, Faraday's law, and Lenz's Law. The course is designed for students requiring calculus-based physics.

PHYS 102L Principles of Physics II Laboratory
This course is designed to reinforce topics presented in PHYS 102 lectures. Through scientific experimentation, students will improve their understanding of basic concepts in electricity and magnetism while developing their foundation of the scientific process. Laboratory work includes the setting up and running of physics' experiments, whether hands on or online. Regular activities include data taking, data presentation, data visualization, data analysis, fitting, and drawing of conclusions.

PHYS 105 Principles of Physics III
This course provides an overview of the fundamental principles of physics in the areas of static equilibrium and elasticity, fluid mechanics, kinetic theory of gases, zeroth, first and second laws of thermodynamics, mechanical waves, vibrating bodies, and acoustic phenomenal.

PHYS 105L Principles of Physics III Laboratory
PHYS105L is designed to reinforce topics presented in PHYS 105 lectures. Through scientific experimentation, students will improve their understanding of basic concepts in static equilibrium and elasticity, fluid mechanics, kinetic theory of gases, first and second law of thermodynamics, mechanical waves, vibrating bodies, and acoustic phenomena while developing their foundation of the scientific process. Laboratory work includes the setting up and running of physics experiments. Regular activities include data taking, data presentation, data visualization, data analysis, fitting, and drawing of conclusions. Logbooks are booklets where the process entailed in the design, carrying out and drawing of conclusions is described, and they are an integral part of this course.

POLS 321 Comparative Political Ideologies
Examines, compares, and contrasts a range of political ideologies and their interpretation and application in contemporary societies. Attention is paid to defining the role and function of ideologies in specific contemporary states.

PSYC 101 Introduction to Psychology
Psychology is the scientific study of behavior and mental processes. The content focuses on the exploration of major theories and concepts, methods, and research findings in psychology. Topics include the biological bases of behavior, ethics involved in research, perception, cognition, learning, memory, emotion, motivation, development, personality, social psychology, psychological disorders and therapeutic approaches, and applied psychology.

PSYC 202 Mind Matters: A Practical Exploration
This course offers an engaging, hands-on exploration of how psychological principles shape everyday experiences, decisions, and interactions. Students will delve into topics such as perception, motivation, relationships, stress, and resilience, discovering how the mind influences behavior in practical, meaningful ways. Through real-world examples, interactive activities, and case studies, students will gain insights into the science of thought and behavior, developing tools to enhance self-awareness, communication, and personal growth. Mind Matters invites learners to uncover the relevance of psychology in their own lives and make informed, positive changes through a deeper understanding of the human mind.

SOCS 101 Introduction to Sociology
This course will introduce students to the basic concepts and theories of sociology, as well as to the methods used in sociological research. The course will address how sociological concepts and theories are used to analyze and interpret our social world, and how profoundly our society and the groups to which students belong, influence them.

SUST 101 Principles of Sustainability
This introductory course uses an interdisciplinary approach to help students understand the main concepts of (sustainability. Students will learn about sustainability as it relates to economic development, social equity, and current environmental challenges. Students will also develop the ability to apply sustainable thinking in their personal and professional lives.

TURK 101 Turkish for Beginners
The course familiarizes students with the basics of the Turkish language and culture. It develops students' communication skills and fluency in Turkish in simple, everyday situations. Communicative activities including role plays are used to allow students to practice and develop all four language skills – speaking, listening, reading, and writing at a basic level. The course content is organized in interesting themes and is aligned with Common European Framework of Reference for Languages (CEFR) Level A1.

UNSS 101 University Success
This course is designed to help students function as independent learners within a university environment. The course teaches students various transferable study skills, including time management, dealing with group projects, test preparation, and critical reading. It also intends to raise students' understanding of themselves as learners.

College of Business and Management

ACCT 101 / ACCT 201 Introduction to Financial Accounting

This course is an introduction to accounting and is required of all business majors. Its primary purpose is to give you an understanding of how and why accounting information is used from an external (financial reporting) and to some extent, internal (managerial reporting) perspective. Although the process of preparing accounting reports will be discussed, it is not the primary focus of this course. Instead, the focus will be on how accounting reports can facilitate decision making for a wide variety of individuals who are interested in and affected by the activities of a business.

ACCT 102 / ACCT 202 Introduction to Managerial Accounting

This introductory accounting course provides students with the knowledge of managerial accounting and its application in making economic decisions in a business entity. Topics covered will enable students to analyze and interpret both historical and estimated data by management to conduct daily operations, plan future operations and develop overall business strategies. As such, the emphasis will be on the use of accounting information for management purposes. Further developing analytical skills through problem solving and thoughtful participation in class as part of the preparation for a professional career is a major objective of this course.

ACCT 311 Intermediate Accounting

This course provides a deeper understanding of accounting theory and its practical application. It covers the conceptual framework of financial reporting, presentation and disclosure of financial statements and the application of selected accounting standards.

BUSN 101 Introduction to Business

This course introduces the fundamental principles of business organization, ownership, operation, and control. It demonstrates an understanding of the business language and theory of today's organizations in terms of surviving in the economic systems. This course will help students to demonstrate the ability to express business ideas and plans in writing, ability to make effective oral business presentations, ability to work in teams, and develop effective communication skills to thrive in today's market dynamics.

BUSN 301 Business Law

Business Law course is designed to provide learners with a study of the law governing the business environment, including the study of common law, statutory law and the role of legal institutions in regulating business activities. The course covers the topics of the American legal system, including civil litigation, intentional and unintentional torts, and the law of contracts. The course includes a general discussion of the legal system of Bahrain, in line with the course content.

BUSN 401 Business Research Methods

This course is designed to provide students with the necessary skills and knowledge to address an identified research problem (basic or applied) to develop and use an actionable research proposal. In this process, the students will gain an understanding of relevant approaches and elements of undertaking a research enquiry specifically to provide insights to solving a relevant problem. Students will develop critical core competencies and skills required to carry out such an enquiry. These competencies and skills include defining research questions; setting appropriate research objectives; study design that incorporates research objectives; secondary and primary data collection and instruments; sampling and analysis methods; and effective reporting of results; as well as the importance of ethical conduct in conducting research in both a domestic and in international business contexts.

BUSN 410 Artificial Intelligence for Business

This course aims to provide students with critical knowledge and experience to identify opportunities in proposing and deploying AI solutions to real business scenarios. Having successfully completed the course, students will be able to describe AI and the role it can play to deliver benefits for businesses, identify potential applications of AI in practice, and assess the main capabilities of AI and the core technologies that help deliver them.

BUSN 411 Foundation in Research Methods

This course is designed to provide students with the necessary skills and knowledge to determine the information necessary to address an identified research problem (basic or applied). In this process, the students will gain an understanding of relevant approaches and elements of undertaking a research enquiry specifically to provide insights to solving a relevant problem. They will develop critical core competencies and skills required to carry out such an enquiry. These competencies and skills include defining research questions; setting appropriate research objectives; study design that incorporates research objectives; secondary and primary data collection and instruments; sampling and analysis methods; and effective reporting of results; as well as the importance of ethical conduct in conducting research in both a domestic and in international business contexts.

BUSN 510 Intercultural Communication in Business

This course explores how to understand each other better in today's diverse global workplaces. We'll look at how different cultures have different ways of thinking and how not understanding this can cause problems in organizations. We'll focus on leadership and business communication in diverse settings. You'll also learn how to analyze information to make good decisions in international situations. The course helps you improve your communication skills, both speaking and writing, for discussions on cultural differences, being culturally competent, managing diversity, and ethical behavior at work.

BUSN 515 Introduction to Data Analysis for Decision-Making

his course introduces the methods and tools which help to systematically extract not only information but also insights from the data in various business functions, such as operations, supply chain, marketing, and finance. The course first covers the foundations of business analytics: decision making, definition and categories of business analytics, big data. Candidates will get hands-on experience by ethically analyzing real world business data using a state-of-the-art business analytics software. The course puts an emphasis on how to effectively communicate findings with business managers and other interested parties.

BUSN 520 Business Data Mining and Predictive Analytics

This course provides a comprehensive coverage of the most widely supervised and unsupervised methods such as logistic regression, k-nearest neighbor, naïve bayes, clustering, neural network, regularization, etc. This course also provides a strong theoretical foundation of predictive analytics and machine learning models in making both classifications and predictions based on big data. Using real world case studies, candidates learn how to ethically apply and implement the suitable techniques using state of the art business analytics software and present the findings effectively.

BUSN 532 Entrepreneurship: Crafting your Business Journey

The MBA Global Strategic Management and Innovation course provides students the opportunity to critical evaluate concepts related to global strategy and innovation and their importance for firms to succeed specially in dynamic business environments. A unique feature of this course is the corporation of a cutting-edge global strategy simulation game, allowing students to apply theoretical knowledge in a practical, risk-free, virtual environment. The curriculum covers diverse aspects such as cross-cultural management, strategic design options, disruptive innovation, and technology clusters. Assessments methods include, participation, in class quizzes, a team project report based on the simulation game, an online discussion question, and a final exam based on innovation.

BUSN 535 Global Sustainability Management

This course provides a conceptual understanding of the key questions underpinning sustainability management. It integrates ecological concepts like scale, limits, and boundaries with economic and social needs. The course examines how these dimensions interact and create tensions, raising fundamental questions about managing economic activities in light of environmental, political, and social demands. It provides a broad overview of sustainability and critical insights into the global sustainability landscape.

BUSN 599 Final Thesis Project

In this course, students will write a final thesis project applying the knowledge and skills they have learnt in the classroom. The topics chosen will reflect the students' aspirations to contribute novel insights to the field of business, with the potential to influence real organizational decisions and strategies. Throughout the course students will identify a research question or a problem within an organization. They will conduct a comprehensive literature review and then apply appropriate research methodologies and tools to address the research question or problem. Lastly, students will draw meaningful interpretations from the data and relate findings back to the literature or broader business implication.

BUSN 610 Applied Business Research

This course is designed to provide students with the skills to develop translational research broadly within the business and management domains. Students will learn how to identify applied business challenges and develop research questions to address these challenges. Students will be introduced to both quantitative and qualitative research and learn to consider a multi-method approach that can be more useful for business professionals in today's complex world. In this process, students will gain an understanding of the choice of a data collection strategy and assess the main benefits and drawbacks of each method. This course will offer a holistic view of business research designs and guide the students to frame their research questions in a way that is connected to applied and industry research. Accordingly, students will learn how to analyze the necessary data in a systematic and methodologically sound manner to achieve the objectives of their intended research and make evidence-based decisions.

BUSN 611 Ethics, Sustainability and Governance

This course explores the fundamental concepts and contemporary theories of Ethics, Sustainability and Governance. Students will examine how Ethics, Sustainability, and Governance are defined and draw together the concepts of ethics, sustainability, and governance. Through case studies and practical applications, students will learn to analyze and design sustainable businesses with a conceptual understanding of some of the key questions that underlie research on sustainability management. This course is essential for those aiming to lead and manage contemporary organizations in the current business landscape.

BUSN 612 Managerial Decision Making

This course provides a comprehensive exploration of managerial leadership, focusing on key theories and research relevant to leadership within formal organizations. It emphasizes the decision-making process, including the construction and evaluation of arguments, effective decision-making strategies, and the role of data analytics. Additionally, the course delves into the public dimensions of argumentation and advocacy, highlighting essential skills needed for successful leadership. By analyzing theoretical frameworks, cognitive biases, and group dynamics, students will develop a nuanced understanding of how to navigate complex decision-making environments while effectively advocating for their ideas and initiatives.

BUSN 613 Contemporary Topics in Business

This course examines cutting-edge issues, trends, and challenges shaping the global business landscape. Designed for doctoral-level students, it provides an interdisciplinary exploration of contemporary topics such as digital transformation, sustainable business practices, leadership in the 21st century, global market dynamics, and the impact of emerging technologies on business strategy. Through critical analysis, case studies, and research-driven discussions, students will engage with complex business phenomena, develop insights into the evolving business environment, and enhance their ability to address strategic challenges. The course emphasizes fostering innovative thinking and scholarly contributions to advance theory and practice in modern business contexts.

BUSN 620 Advanced Research Methods I

This course provides an in-depth exploration of advanced qualitative research methodologies used in the business field. Students will refine their skills in designing, conducting, and analyzing qualitative research studies. By the end of the course, students will be equipped to contribute original qualitative insights to their respective fields and undertake independent research projects at an advanced level.

BUSN 621 Advanced Research Methods II

This course equips students with in-depth knowledge and skills in quantitative research methodologies, enabling them to design, conduct, and analyze sophisticated empirical studies. The course covers advanced statistical techniques, including multivariate analysis, structural equation modeling (SEM), ANOVA and time series analysis. Emphasis is placed on selecting appropriate methodologies, interpreting data, and presenting findings in a clear, rigorous manner.

BUSN 622 Advanced Research Methods III

This course provides an advanced exploration of research methodologies, focusing on quantitative and mixed methods in business and management research. It emphasizes the development of robust research designs, the application of advanced statistical techniques, and the integration of qualitative and quantitative approaches to address complex research questions. Through critical analysis of methodological frameworks and practical application of data collection and analysis strategies, students will gain the skills needed to conduct impactful research. The course also highlights the interplay between research methodology and decision-making, preparing students to produce rigorous, evidence-based contributions to both academic and professional contexts.

BUSN 640 Research Proposal

The course is designed to guide the students through the research proposal process to tackle an applied research problem in the context of business and management. In this process, the students will develop critical core competencies and skills required to carry out the main components of their research proposal, starting from the formulation of the topic; developing research aims and objectives; critically reviewing of relevant literature; developing the research model and conceptual framework for the research; selecting appropriate research methodology of the study; sampling and data collection process; describing data analysis techniques that will be used in the research. Students will empathize ethical considerations related to sampling and research standards.

BUSN 650 Final Dissertation

In this course, students undertake independent research under the guidance of an academic supervisor to write a final thesis project applying the knowledge and skills acquired throughout the study program. The topics chosen should tackle an applied research problem in the context of business and management. Students should implement the research plans developed in their research proposal. They will conduct a comprehensive literature review and then apply appropriate specialized research methodologies and tools to address the research aims. Students will draw meaningful interpretations/conclusions from the data and discuss their implications for business practices.

ECON 101 / ECON 201 Principles of Microeconomics

This class is an introduction to economics as it applies to the functioning of markets, businesses, and households. Students learn how individuals make decisions about how to use scarce resources efficiently and how these decisions affect markets and the overall economy. Effect of government policies on the functioning of markets is also examined.

ECON 102 / ECON 202 Principles of Macroeconomics

This course introduces the analysis of a market economy. Emphasis will be on the measurement and determinants of aggregate economic performance, including output, income, employment, prices, interest rates, and economic growth. Consideration will be given to the role of the monetary and banking system, the Federal Reserve, government fiscal policy, and the global economy in influencing domestic business cycles, inflation, and growth.

ECON 311 Foundation in Economics

The course gives candidates an insight into some of the key elements of both micro and macro-economics, providing a solid foundation and sound understanding for the varied field of economics. A focus is given to the demand and supply model, elasticities, the functions of money and the role the central bank, market structures, economic growth, inflation, equilibrium in the macro-economy and government policies.

ECON 510 Managerial Economics and Business Analytics

Managerial Economics is the use of economic theory, mathematical and statistical techniques to examine how a firm can make optimal managerial decisions given the constraints it faces. The main objective of this course is to equip candidates with the necessary theory and techniques and the ability to apply them to inform and enhance managerial decision making.

ECON 630 Advanced Managerial Economics and Business Strategy

This course integrates microeconomic principles with strategic business decision-making, providing students with the analytical tools to address complex managerial challenges. It bridges advanced economic theories with real-world challenges faced by business leaders, offering a deep understanding of how to apply these concepts to practical scenarios. By mastering these principles, students will develop the skills to adapt organizational strategies to the demands of an evolving business environment, enhancing their ability to make informed and impactful decisions in competitive markets.

FINC 101 / FINC 201 Essentials of Financial Analysis

This course introduces the foundational knowledge in finance so that student can build skills and critically think about financial decisions made on a daily basis. The course begins with basic concepts, focusing on the economic environment (including financial markets, risk, the valuation process, and then shows how specific techniques and decision rules can be used to help maximize the value of the firm.

FINC 221 Banking

This course provides an overview of the functions and services performed by banking and other financial institutions, as well as introduces the legal basis of the bankers/customer relationship and facilitates awareness of the scale of competition within the financial services market.

FINC 231 Managerial Finance

This course provides a comprehensive analysis of the structure of optimal decisions relative to the functional areas of corporate financial decision making. Emphasis is placed upon developing an understanding of operating and financial leverage, and equity and debt financing, in addition to the applications and limitations of equity valuation models, and risk and return.

FINC 311 Corporate Finance

The aim of the unit is to introduce students to the theory and application of why and how value enhancing corporate financial decisions are made and implemented. With the emphasis on publicly listed companies, topics covered include the corporate objective of management, investment evaluation models, project analysis and evaluation, sources and types of funding, issues in risk and return, asset pricing models, issues in capital structure and dividend policy and the efficiency of capital markets. The unit is designed to ensure students with the necessary skill set for making value-changing financial decisions to maximise firm value.

FINC 312 International Finance

Analysis of the international complexities of corporate financial management and investment strategies. Emphasis is placed on the nature of the close link between corporate financial management and developments in international financial institutions and international financial markets.

FINC 371 Financial Markets and Institutions

This course offers a comprehensive introduction to the workings of financial markets and institutions. It explores the various types of financial markets and institutions, examining their roles, dynamics, and the associated returns and risks. Additionally, the course addresses contemporary challenges and issues these financial markets and institutions face, providing students with the necessary tools and knowledge to effectively navigate and analyze these complex financial environments.

FINC 410 Data Mining and Machine Learning

This course will enable students to gain critical knowledge and understanding of data mining and machine learning. Data mining and machine learning focuses on developing algorithms to automatically discover patterns and utilise models of large datasets. This course will enable students to gain critical knowledge and understanding of data mining and machine learning. Data mining and machine learning are transforming finance. These techniques analyze vast datasets to uncover valuable insights. Financial institutions use these tools for informed decision-making, risk management, and trend identification. For finance students, mastering these technologies is crucial for future success. By understanding data mining and machine learning, students can develop innovative solutions and contribute to the evolving financial landscape.

FINC 411 Investments and Portfolio Management

A survey of investments including corporate and government securities, real property and financial intermediaries. Survey of investment theory emphasizing security analysis, valuation and portfolio management .

FINC 412 Data driven Financial Analysis

This course is intended to give students the opportunity to widen and deepen their knowledge of financial theory and practice by explaining how financial models and techniques implemented. Students are expected to use Excel to model a number of common applications including the models used for valuation, construction of portfolios, estimation of risk measures, and performance measurement. By the end of the course students should have a critical understanding of finance concepts as well as an extended knowledge of the spreadsheet package.

FINC 414 Islamic Banking and Finance

The course aims at providing learners with a solid foundation of the principles of Islamic finance and equipping them with the knowledge to actively engage with both theoretical and practical aspects of Shariah-compliant financial instruments and services. The course also covers financial reporting practices for Islamic financial products across different jurisdictions, comparing how AAOIFI and IFRS affect financial disclosures and compliance. Additionally, the course rigorously evaluates the specific governance issues and risks faced by Islamic banks and provides a detailed comparison between Islamic and conventional fund management, particularly focusing on differences in asset selection, portfolio management, the unique characteristics of sources of funds, income distribution to Profit Sharing Investment Accounts, and current issues including FINTEC in Islamic finance industry.

FINC 421 Alternative Investments

This course explores contemporary finance topics with a focus on alternative investments that are not extensively covered in other finance courses. Students will examine both the theoretical and practical aspects of managing alternative asset classes, including real estate, hedge funds, commodities, and private capital. The purpose of the course is to give students a good understanding of the operation of these investments; the benefits and pitfalls associated with them; and strategies to integrate them into the context of portfolio management.

FINC 451 Starting a New Business

Entrepreneurial ventures need capital to support their business models, grow market share and create shareholder value. This course explores the core considerations in addressing the financing needs and challenges to support the launch and growth of new ventures as well as growth considerations when starting a business and achieving new milestones. Major topics include investment analysis, capital structure and valuation. Financing options available to new ventures at various stages of development are examined in depth. The criteria used by investors, debt financiers and other players in the capital market are also considered.

FINC 461 Mergers and Acquisition

This course provides an in-depth understanding of the fundamental principles and practices of mergers, acquisitions, takeovers, and corporate restructuring, with a particular emphasis on valuation techniques. It aims to develop expertise in understanding the valuation processes essential for analyzing and assessing the strategic rationale and financial implications of corporate consolidation activities.

FINC 480 Finance Internship

The purpose of the Internship subject is to provide students with opportunity to demonstrate the application of conceptual knowledge to the real world via industry placement in their selected field. This allows students to integrate their theoretical and conceptual knowledge with the skills and problem-solving techniques required in the workplace. Other outcomes include the acquisition of knowledge, research skills and the attitudes of business professionals, the ability to think independently, grow in originality, creativity, initiative, curiosity, enthusiasm, and resourcefulness, the ability to communicate ideas, an understanding of theory and procedures; knowledge of pertinent literature; and adeptness in the workplace. This subject provides a valuable transition between university and the workplace.

FINC 499 Capstone Project

This course is designed for final-year Finance students to deepen their understanding of finance principles. Throughout the course, students will engage in research and present solutions to real-world financial challenges. The course encourages students to apply analytical, logical, and creative thinking skills to integrate their theoretical knowledge with practical experience in real-world financial scenarios and practices.

FINC 536 Corporate Finance for a Global Environment

The course is designed to offer candidates a rigorous learning experience that would allow them to thoroughly understand contemporary finance theories. It examines the fundamentals of finance with an increasing focus on applications relevant to corporate executives. Topics include time value of money, valuation of financial and real assets, relationships between risk and return, capital structure choice, and payout policy. As a result, the course's theme is the valuation process, which is emphasized throughout the topics. Moreover, in the globalization era, the course considers financial and investment decision-making withing the context of global environment.

FINC 630 Advanced Issues in Global Financial Environment

The main objective of the course is to provide students with an extensive critical understanding of the mainstream areas of modern corporate finance and related areas of financial management. This course will offer a holistic view of corporate policies and decisions in today's complex world, such as capital structure, investment policy, and mergers and acquisitions. This course will analyze the major financial challenges facing corporate managers, including corporate restructuring and financial distress. There will be an emphasis on the role of entrepreneurial finance in enhancing firm growth and performance.

HRMT 302 Recruiting the Best Talent

This course provides an overview of the recruitment process and strategies by which organizations identify and hire the best talents. Students will develop specific skills and acquire the competencies needed to effectively assess and select the best candidate for the best job vacancy.

HRMT 304 Compensation, Benefits and HRIS Systems

This course introduces students to the major concepts of strategic compensation. It is designed to provide students with knowledge and skills needed to become successful compensation professionals. This course aims to equip students with the fundamentals of building pay structures and designing compensation systems. In this course, students will learn about employee benefits, bases for pay, contemporary compensation challenges, and global issues.

HRMT 305 Role of an HR Practitioner and Leader

Exemplary HR leaders are known for being forward-thinking, strong communicators and collaborators, ethical, quick problem-solvers, innovative, and having strong conflict management and relationship skills. Learn the functions of HR practitioners and leaders, differences between generalist and specialist roles in small, midsize, and large corporations, and how they contribute to a company's success. Explore how organizational psychology theories and social sciences build the foundation for understanding human behavior, workplace productivity, and employee satisfaction.

HRMT 401 Labor Relations and Ethical Issues in HRM"

This course introduces students to the major concepts of employee and labor relations. Students will learn about contemporary labor relations strategies, practices, and constraints. Students will examine key theories, legal frameworks, and best practices, emphasizing conflict resolution, organizational justice, and the strategic management of employee relationships. Case studies and real-world examples will enhance understanding and foster critical thinking skills essential for HR professionals.

HRMT 402 Training, Coaching, and Succession Planning

This course introduces students to fundamentals of talent management concepts and practices such as strategic training, coaching and succession planning. It is designed to provide students with knowledge and skills needed to successfully assess and design training needs as HR professionals. This course aims to introduce students to effective mentoring programs. In this course, students will learn employee development strategies, career management and succession planning process.

HRMT 403 Relationship and Performance Management

This course introduces students to the major concepts of relationship and performance management. Students will learn about performance management strategies, practices, and constraints. This course offers students the opportunity to delve into managing employee performance and evaluate various HRM scenarios from the lenses of HR professionals.

HRMT 406 International HRM

Today, managing across borders is more common than not and requires effective communication, collaboration, and relationship management skills. Develop a critical understanding of human resources management's role in an international context. Topics covered include the recruitment and selection of expatriates, performance management, and reward systems in a multinational context. Case studies are explored for the better understanding of realistic problems in international HRM. Discover skillsets and talents needed to prepare future HR managers for the challenges of multiculturalism and global issues in the modern workplace.

HRMT 480 Human Resources Internship

The purpose of the Internship course is to provide students with the opportunity to demonstrate the application of conceptual knowledge to the real world via industry placement in their selected field. This allows students to integrate their theoretical and conceptual knowledge with the skills and problem-solving techniques required in the workplace. Other outcomes include the acquisition of knowledge, research skills and the attitudes of business professionals, the ability to think independently, grow in originality, creativity, initiative, curiosity, enthusiasm, resourcefulness, and the ability to communicate ideas, an understanding of theory and procedures; knowledge of pertinent literature; and adeptness in the workplace. This subject provides a valuable transition between university and the workplace.

HRMT 499 Capstone Project

This course is for senior undergraduate students in HRM. In this course, students will be able to develop an original case study analysis research project that identifies key challenges faced by local and multinational organizations related to a diverse HRM topic. Examine specific HRM business case examples and leverage past course readings, external research, and various resources to formulate effective solutions. Additionally, reflect on the knowledge and skills acquired throughout the HRM program to inform the development of this real-world case study project. Your analytical and communication skills should be prominently demonstrated throughout the project.

MATH 311 Foundation in Business Statistics

This course provides a foundation of statistical methods to students with different educational backgrounds and work experiences. The topics that will be covered in this course include but not limited to descriptive statistics, elements of probability, probability distributions, sampling distributions, statistical inference for means (including estimation and hypothesis testing), correlation and simple linear regression. Applications of these topics in business and economics are emphasized.

MGMT 101 Principles of Management

This course explores the basic managerial functions of planning, organizing, leading, motivating, and controlling the contemporary environment. This course will provide students with the basic concepts and principles of management and show the application of these concepts and principles to managerial roles and activities for efficiency and effectiveness in the workplace. This course will also help in developing students' critical thinking abilities and problem-solving skills reflected in managerial real-life scenarios. Moreover, focusing on their communication skills promotes teamwork which is essential in today's managerial environment.

MGMT 205 Organizational Behavior

Organizational Behavior explores core theories and their practical application in real-world organizational contexts. Students gain the ability to interpret and analyze organizational dynamics through OB theories, implement a sophisticated understanding of behavioral science in practical scenarios, and evaluate contemporary OB issues. The course equips students to demonstrate effective OB knowledge, guiding individuals and teams in the dynamic and diverse landscape of organizational settings.

MGMT 301 Operations Management

This course examines issues included in productions and operations management, design, operation and control of industrial enterprises, plant location, scheduling quality control, layouts, facilities, planning, material processing and inventory control.

MGMT 302 Managing Human Resources

This course provides an overview of the processes by which organizations acquire, deploy, and retain their workforce. Students will develop specific knowledge, skills, and abilities needed to effectively carry out staffing activities, including HR planning, recruiting, selecting, placing, onboarding, training and developing employees, labour relations, workplace safety, and compensation. Emphasis will be placed on the practical application of relevant theory, related research, and legal constraints as well as developing and applying critical thinking skills. Students will also develop skills in planning their career path.

MGMT 303 Management and Leadership Development

This course introduces students to the major concepts of the behavioral sciences that apply to the management of organizations. The course focuses on understanding factors and developing skills that affect the behavior and ultimately the performance of individuals and groups within organizations. Course activities are structured to provide students with opportunities for skill development through application, practice and reflection.

MGMT 305 International Business

This course reviews the principles, tools, processes, and practices used by managers to understand international markets, cultures, economies, and political environments and to achieve competitive advantage in an international setting. Topics covered include globalization, country differences (political, economic, legal, and cultural), global trade and investment, global monetary systems, strategy and structure of international businesses, and international business operations and practices.

MGMT 306 Cross-Cultural Management

This course introduces students to culture as an important variable in international management and examines its impact on organizations, strategy, negotiations, management of human capital, leadership, team building, and ethics. The course content includes a metaphor approach to explore key differences among cultures and examine their relevance for international management practice. The course aims to present future and current leaders/managers with a wider perspective on how to achieve the optimal leadership performances from a team through managing and engaging with stakeholders who are influenced by different cultures.

MGMT 310 Fundamentals of Family Business

This course introduces the ethical dimensions of business as related to the various stakeholders inside and outside the organization. Topics include business ethical theory, ethical decision making, typical dilemmas, and corporate social responsibility.

MGMT 312 Negotiations and Conflict Management

This course explores conflict as a management issue in business organizations and explores techniques and methods for reaching effective agreements. The course employs a range of approaches, such as case studies, role playing, and other experiential learning tools to develop analytical problem-solving abilities and enhance conflict management skills.

MGMT 313 Managing Change and Innovation

This course explores the importance of innovation to business success and considers current trends in technology, society, consumer expectations and the workforce. The course includes examination of strategies for enabling innovation and overcoming obstacles to change. The course content also presents the concept of a learning organization in the context of transformational leadership.

MGMT 314 Management Intervention and Consultation

This course is designed to initially overview the consulting profession with a subsequent emphasis on organization consulting issues. Effort will be placed on developing proficiencies in various skills required to practice consulting. The overall objective of this course is to help students develop a basic understanding of consultation skills and knowledge.

MGMT 350 Business Ethics

This course introduces the ethical dimensions of business as related to the various stakeholders inside and outside the organization. Topics include business ethical theory, ethical decision making, typical dilemmas, and corporate social responsibility.

MGMT 380 Project Management

This course delves into the principles of project management, covering essential aspects such as project selection, team dynamics, scheduling, budgeting, and closure. Students will grasp project management theories, apply diverse methodologies for decision-making, adapt strategies to various organizational structures, analyze project performance, meet stakeholder expectations, and ensure successful project delivery. Additionally, they will learn to utilize data evaluation techniques and tools like Gantt Charts and CPM to craft precise project plans and contribute effectively to project teams through organized collaboration and research activities.

MGMT 401 Internship

This course introduces students to the major concepts of the behavioral sciences that apply to the management of organizations. The course focuses on understanding factors and developing skills that affect the behavior and ultimately the performance of individuals and groups within organizations. Course activities are structured to provide students with opportunities for skill development through application, practice and reflection.

MGMT 403 Entrepreneurship

The course introduces the fundamentals of starting the entrepreneurship journey as a career and as a business, backed up by empirical guidance and solid theoretical research in the field. Learners will be able to harness different tools and resources and would build the right attitude on how to start a new business venture that is relevant and can be competitive in the marketplace.

MGMT 410 Business Policy and Strategic Management

This course provides critical understanding of strategic management and business policies in modern organizations. This course is designed to develop problem-solving and decision-making skills in business situations that involve the organization as a whole and integrate knowledge and skills acquired from all areas of business**.**

MGMT 430 Project Management

This course delves into the principles of project management, covering essential aspects such as project selection, team dynamics, scheduling, budgeting, and closure. Students will grasp project management theories, apply diverse methodologies for decision-making, adapt strategies to various organizational structures, analyse project performance, meet stakeholder expectations, and ensure successful project delivery. Additionally, they will learn to utilize data evaluation techniques and tools like Gantt Charts and CPM to craft precise project plans and contribute effectively to project teams through organized collaboration and research activities.

MGMT 513 Leadership Development and Team Building

This course equips aspiring business leaders with essential knowledge and skills to effectively lead teams and manage the dynamics of modern organizations. Emphasizing the critical role of leadership in achieving organizational success, it integrates theory with practice to build a comprehensive understanding of leadership principles and effective team-building strategies. Students will explore various leadership styles, ethical practices, and contemporary challenges in team leadership while applying strategic concepts in practical scenarios.

MGMT 520 Operations Management for Global Supply Chains

Operations management is the design, operation, and improvement of the systems that create and deliver goods and services. Students will demonstrate mastery level knowledge of concepts and tools in fundamental areas of operations management, including process design and analysis, quality management, inventory management, demand forecasting, sales and operations planning, material requirements planning, lean production, and supply chain management. Students will also develop the ability to perform both quantitative and qualitative analysis of problems and issues in operations management as well as to analyze the ethical consequences of their decisions.

MGMT 530 People Analytics for Leaders

The people analytics movement has contributed important insights to help managers become more effective at leading people and making better human-resources (HR) decisions. This course is designed to introduce these insights and the use of data to improve the practice of managing people within organizations. All practices and approaches learned in this course are backed up by robust empirical evidence that has demonstrated their effectiveness. Ethical considerations relating to the use of data about the organization's workforce will be discussed. The course will utilize a variety of methods including lectures, case analyses, class discussions, and hands-on exploration of a variety of data sets.

MGMT 532 Global Strategic Management and Innovation

The MBA Global Strategic Management and Innovation course provides students the opportunity to critical evaluate concepts related to global strategy and innovation and their importance for firms to succeed specially in dynamic business environments. A unique feature of this course is the corporation of a cutting-edge global strategy simulation game, allowing students to apply theoretical knowledge in a practical, risk-free, virtual environment. The curriculum covers diverse aspects such as cross-cultural management, strategic design options, disruptive innovation, and technology clusters. Assessments methods include, participation, in class quizzes, a team project report based on the simulation game, an online discussion question, and a final exam based on innovation.

MGMT 630 Organizational Theory and Design

This course explores the fundamental concepts and contemporary theories of organizational structure and design. Students will examine how organizations are structured, how they function, and how they adapt to changing environments. Key topics include organizational culture, strategy, technology, and innovation. Through case studies and practical applications, students will learn to analyze and design effective organizational structures that enhance performance and support strategic goals. This course is essential for those aiming to lead and manage complex organizations in a dynamic business landscape.

MRKG 201 Consumer Behavior

This course will help students understand how consumer behavior is central to the planning, development, and implementation of marketing strategies. In addition to discussing classic consumer behavior concepts, such as personality, perception, learning, and attitude, this course will shed light on contemporary trends and issues, including the role of new media, technological advances, and recent ethical concerns affecting the marketing industry.

MRKG 202 Online Marketing Channels

This course is designed to provide students with a thorough understanding of how different online marketing channels (including: social media marketing, search engine optimization (SEO), paid-search, email marketing, website optimization, and mobile marketing, among others) operate, in tandem, as a part of an overarching digital marketing strategy. The students will also learn how digital marketing theory and research can be utilized to achieve marketing goals in the online sphere.

MRKG 302 Marketing Strategy and Planning in a Digital World

The purpose of this course is to familiarize students with the process of developing and implementing a marketing strategy in a digital world. The course focuses on competitive positioning at the heart of marketing strategy and offers in-depth emphasis on the processes used in marketing to achieve competitive advantage. The course pays special attention to the role of digital marketing tools in informing digital marketing strategy and planning.

MRKG 310 Integrated Marketing Communications in a Digital World

The purpose of this course is to familiarize students with an evolved definition of integrated marketing communications (IMC) and teach them how to effectively communicate in the business world of today. It will help students understand the importance of weaving together all marketing activities (both online and offline) into one clear message and voice. The subject additionally explores advertising and promotions, and the roles of social media, and other marketing tactics to effectively reach consumers and transmit marketing communication in a digital world.

MRKG 401 Principles of Marketing Research

The purpose of this course is to familiarize students with the key challenges facing marketing researchers in a modern world. The course will introduce students to the transactional stages of marketing research, including problem definition, research design development,

data collection and analysis, and communication of research findings. It will further teach students to apply research findings to current marketing challenges.

MRKG 410 Services Marketing

The purpose of this course is to enable students to acquire critical knowledge and understanding about the vital role that services play in the economy and its future and how services dominate the advanced economies of the world. This course will also cover implementing service strategies for competitive advantage across industries.

MRKG 421 Data Analytics and Visualization

The purpose of this course is to enable students to acquire critical knowledge and understanding of digital marketing analytics and its impact on marketing strategy and planning. Students will be able to critically analyse marketing data and use specialist tools to make informed marketing decisions.

MRKG 431 Contemporary Issues in Social Media Campaigns

The purpose of this course is to enable students to acquire critical knowledge and understanding of digital marketing analytics and its impact on marketing strategy and planning. Students will be able to critically analyse marketing data and use specialist tools to make informed marketing decisions.

MRKG 480 Marketing Internship

The purpose of the Internship subject is to provide students with opportunity to demonstrate the application of conceptual knowledge to the real world via industry placement in their selected field. This allows students to integrate their theoretical and conceptual knowledge with the skills and problem-solving techniques required in the workplace. Other outcomes include the acquisition of knowledge, research skills and the attitudes of business professionals, the ability to think independently, grow in originality, creativity, initiative, curiosity, enthusiasm, and resourcefulness, the ability to communicate ideas, an understanding of theory and procedures; knowledge of pertinent literature; and adeptness in the workplace. This subject provides a valuable transition between university and the workplace.

MRKG 499 Capstone Project

This course is designed for final year digital marketing and social media students to further their digital marketing knowledge and skills. As they take this course, students will research and present solutions to a real-world digital marketing problem. This course encourages students to think analytically, logically, and creatively to integrate experience and knowledge in real world digital and social media marketing situations.

MRKG 515 Marketing Management & Strategy

This course explores a wide array of topics in marketing management and strategy, including elements of marketing strategy, planning, competition, and consumer behavior. Special emphasis is placed on developing students' analytical and creative understanding of the intricacies of marketing management in a business environment that is defined by vast advances in technology and increased attention to ethics and sustainability.

MRKG 630 Digital Marketing Strategy and Analytics

This course aims to equip DBA researchers with a comprehensive framework for developing a digital marketing strategy and fostering a structured, strategic approach to digital marketing practices. The course explores emerging trends in the field, including AI applications, marketing automation, content marketing, and the use of digital analytical tools, as well as strategies to address privacy regulations and customer trends.

MSYSM 101 / MSYS 201 Principles of Management Information System

An information system collects, stores, manages, and processes data to provide relevant and timely information for decision-making, operations, and business processes. This course equips students with a thorough understanding of MIS concepts and their significance in organizational contexts. Participants will learn to analyze and address the benefits and challenges of information technology within a business framework. Emphasis is placed on leveraging MIS principles to improve business processes through the application of reengineering principles and adept use of information technology.

College of Engineering and Computing

CIVL 121 Computer Graphics for the Built Environment

The building industry is increasingly reliant upon information systems to manage, implement, and operate interdisciplinary projects. Learn the fundamentals of current and future means of using computer-aided design systems to analyze, collaborate, develop, and communicate solutions to civil engineering projects.

CIVL 200 Engineering Mechanics - Statics

A vector treatment of the concepts and characteristics of forces and couples. Distributed forces. Center of mass; centroid of area. Equilibrium of particles and rigid bodies. Trusses and frames. Internal forces. Shear and moment distribution in beams. Area moment of inertia. The main purpose of this course is to develop the engineering student's ability to analyze static equilibrium problems in a logical manner. Emphasis is placed on an understanding of principles employed in the solution of problems rather than reliance on a rote process of substitution in numerous formulas.

CIVL 210 Statistical Methods for the Built Environment

This course consists of the application of statistical methods to civil and environmental engineering problems in construction, hydrology, water quality, air pollution, and other related areas. (Prerequisite: MATH 154)
CIVL 218 Surveying for Civil Engineering and Construction
This course is an introduction to the principles of plane surveying. Topics include measurement of horizontal distance; difference in elevation and angles; traverse surveys and computations; horizontal and vertical curves; principles of stadia; topographic surveys; and earthwork. (Prerequisites: CIVL 210)

CIVL 302 Mechanics of Materials

Students will be introduced to the concepts of stress, strain, deflection; axial force, torsion, bending, combined stress, Mohr's circle, failure theories; design concepts, application to machines and vehicles (Prerequisite: CIVL 200)

CIVL 302L Mechanics of Materials Laboratory

This course provides students an introduction to solid mechanics and laboratory procedure. More specifically the course involves studies in solid mechanics, experimental stress analysis and experimental confirmation of theory. (Co-requisite: CIVL 302)

CIVL 303 Engineering Geology

This course focuses on concepts of physical geology and the geologic processes relevant to civil and environmental engineering practices. Topics include: the nature and structure of earth, earth's history, formation of rocks, chemical and physical properties of minerals, and basic techniques for geologic field and site characterization. This course satisfies the requirement for a Science Elective for Civil Infrastructure and Environmental Engineering students. (Prerequisites: PHYS 101)

CIVL 321 Structural Analysis I

This course is an analysis of beams, frames, trusses and three-dimensional frameworks. Topics also include influence lines, deflections, introduction to statically indeterminate structures and moment distribution. (Prerequisites: CIVL 302)

CIVL 330 Construction Engineering and Management

This course offers a sampler of the broad construction engineering and project management topics. It covers the project management tools and practices as performed throughout the construction processes, including bidding; contract format and construction administration; construction documents; reading and interpreting contract plans; project planning and scheduling; resource management and project control; cash flow analysis; risk management and safety in construction. Prerequisites: ENGR 100

CIVL 355 Environmental Engineering

This course provides students with a background in the fundamental science and engineering principles of environmental engineering. A broad range of topics will be covered: water quality and treatment, atmospheric pollution, solid and hazardous waste management, noise pollution, soil contamination, climate change and clean energy, and green building design. (Prerequisite: CHEM 101)

CIVL 406 Civil Engineering Internship

This is a supervised internship course that provides Civil engineering students with the opportunity to gain practical, hands-on experience in a professional work environment. The internship allows students to apply and further develop their knowledge and skills acquired throughout their academic studies. Under the guidance of industry professionals and academic supervisors, students engage in real-world projects, tasks, and responsibilities relevant to the field of civil engineering. (Prerequisite: 86 Credits, CGPA 2.0)

CIVL 421 Reinforced Concrete Design

this course explores the properties and characteristics of reinforced concrete, the design of structural components, plastic theory and limit design. (Prerequisite: CIVL 321)

CIVL 430 Advanced Project Management

This course emphasizes the fundamental principles of modern management methods of planning and scheduling for construction projects. Covered topics include pre-bid planning; construction project planning using WBS; project network; estimating activity duration, CPM scheduling; resource management using resource allocation and leveling; project time-cost trade-offs; project monitoring and control; and, earned value analysis integrating cost and schedule. The course will also provide students with knowledge of the principles and practices of construction cost estimating. The course covers techniques used in estimating including: the principles of the estimating process, creating unit costs for labor and equipment resources, estimating earthwork and excavation, highways and pavements, concrete and steel structures, and masonry. (Prerequisites: CIVL 330)

CIVL 441 Structural Analysis II

This course explores statically indeterminate structures by virtual work. Topics also include advanced treatment of slope deflection, moment distribution, arch analysis, secondary stresses in trusses, advanced treatment of influence lines, and matrix analysis of structures. (Prerequisite: CIVL 321)

CIVL 444 Applied Hydraulics
This course provides students with concept of definition and differences between pipe flow and open channel flow, Properties of open channel, Velocity distribution in open channel, Best hydraulic sections for uniform flow, Specific energy and specific force and Dynamic equations of gradually varied and spatially varied flows. (Prerequisite: MECH 451)

CIVL 445 Applied Hydrology
This course focuses on hydrologic principles, hydrologic measurements, small and midsize catchment hydrology, frequency analysis, regional analysis, reservoir, stream channel and catchment routing, and hydrologic design. (Prerequisite: MECH 451)

CIVL 462 Geotechnical Engineering
This course focuses on the mechanics of soil as applicable to engineering problems, soil classification, compaction, swelling, consolidation, strength and permeability. Applications to geotechnical and environmental engineering problems are also discussed. (Prerequisite: CIVL 302)

CIVL 462L Geotechnical Engineering Laboratory
This course is a laboratory experience that focuses on procedures of soil testing for geotechnical and environmental engineering problems. The Geotechnical Engineering Laboratory intends to train the students in the field of testing of soils to determine their physical, index and engineering properties. (Prerequisite/concurrent: CIVL 462)

CIVL 465 Foundation Engineering and Earth Retaining Structures
This course focuses on soil mechanic theories applied to design of shallow and deep foundations, as well as lateral pressure of soil and design of retaining walls. Review on physical and engineering properties of soils of principal interest for the analysis and design of foundation elements shall be considered (Prerequisites: CIVL 462)

CIVL 481 Transportation Engineering
This course focuses on the physical design of transportation facilities, traffic analysis and control for different modes, planning and demand analysis, environmental impacts of transportation systems and intelligent transportation systems. (Prerequisite: CIVL 218)

CIVL 483 Traffic Engineering Design
This course focuses on sizing and configuration of highway facilities based on capacity analysis. Topics covered also include traffic signal design, impact and mitigation studies, parking and safety design. (Prerequisite: CIVL 481)

CIVL 491 Construction Methods
This course focuses on the components and methods of construction, including earthwork, foundations, wood, steel and concrete construction, roofing and cladding as well as interior construction. (Prerequisite: CIVL 321)

CIVL 499A Engineering Design: Capstone Project I
This course serves as the first part of a two-semester sequence. It provides students with the opportunity to apply their accumulated knowledge and skills in Civil engineering to a substantial, real-world project. Emphasizing teamwork, project management, and interdisciplinary collaboration, this course lays the foundation for the completion of a comprehensive engineering design project in the subsequent semester. (Prerequisite: Senior level (90 credits), CGPA 2.0)

CIVL 499B Engineering Design: Capstone Project II
Building upon the foundation established in Capstone Project I, this course focuses on the implementation, testing, and refinement of the engineering design developed in the earlier phase. Working in teams, students will apply their technical knowledge and skills to design, build, and evaluate a solution to the identified problem or opportunity. They will follow a systematic approach to prototype development, perform rigorous testing, and iterate on the design based on feedback and evaluation results. Throughout the course, students will engage in critical analysis, problem-solving, and effective project management to address any challenges that arise during the implementation phase. Successful completion of this course will culminate in a fully functional and validated engineering solution, along with comprehensive documentation and a final presentation. (Prerequisite: CIVL 499A)

CMPE 215 Communication Networks
The aim of the course is to understand the principles of operation and design choices of communication networks, as well as to learn the basic characteristics of the prevailing network technologies. The focus of the course is the Internet, covering issues related to the planning, implementation and operation of communication networks with emphasis on fundamental concepts and principles. (Prerequisite: COSC 125)

CMPE 270 Digital Systems
Digital technology has become the core business of almost every manufacturing industry. This course gives an overview of circuitry, logic, and system design for understanding the impact of electrical and computer engineering solutions in a global, economic, and societal context. It focuses on modeling, analysis, and design of digital systems, primarily at the logical design level. (Prerequisite: Math 153)

CMPE 270L Digital Systems Laboratory
This course focuses on practical modelling, analysis, and design of digital systems, primarily at the logic design level. Digital electronic topics include: the basic logic gates, Boolean algebra, number systems, digital arithmetic, combinational logic circuits, multiplexers, decoders and flip-flops, counters, and registers. (Corequisite: CMPE 270)

CMPE 271 Computer Organization
In our lifetimes, we have seen unprecedented expansion of computational capabilities fueled both by advanced processing and architectural innovations to exploit that processing capability. As a result of these capabilities automatic computation is having a huge impact on the way we live, work, communicate, and especially how we do science and engineering. This course examines in-depth the inner-workings of modern digital computer systems and the tradeoffs present at the hardware-software interface. It provides insights in the design process of complex hardware systems. A digital design background is considered fundamental, and it is mandatory. (Prerequisite: COSC 102 and CMPE 270)

CMPE 406 Computer Engineering Internship
This is a supervised internship course that provides computer engineering students with the opportunity to gain practical, hands-on experience in a professional work environment. The internship allows students to apply and further develop their knowledge and skills acquired throughout their academic studies. Under the guidance of industry professionals and academic supervisors, students engage in real-world projects, tasks, and responsibilities relevant to the field of computer engineering. (Prerequisite: 80 Credits, CGPA 2.0)

CMPE 410L Computer Engineering Professional Certificate
This course prepares students for a globally recognized professional certification that establishes the needed credentials in IT support and computer hardware. This course provides a comprehensive overview of the essential knowledge and skills required to become a proficient computer technician. Students will learn about hardware and software troubleshooting, networking, operating systems, and security, gaining the necessary expertise to excel and launch a successful career in the IT industry. (Prerequisite: Senior Level (90 credits))

CMPE 412 Microprocessors
This course focuses on memory and Bus design, interrupt structures, and input/output for microprocessor-based systems. Topics include memory map and addresses, low-level/assembly language programming, Bus architecture, input/output systems, interrupts, and other related topics. Upon completion, students should be able to interpret, analyze, and troubleshoot fundamental microprocessor circuits and programs using appropriate techniques and test equipment. (Prerequisite: CMPE 271)

CMPE 425 Advanced IoT
The Internet of Things (IoT) is a networking paradigm consisting of sensors embedded in devices and in the environment. This course provides a comprehensive understanding of IoT systems and their applications. Topics include IoT devices programming, wireless network design and optimization, edge-cloud IoT platforms, and IoT security. The course also covers applications of IoT such as smart cities, smart homes, environmental monitoring and health monitoring. (Prerequisite: CMPE 412)

CMPE 467 Network Management
This course covers the concepts and principles related to network management including network operation, security, and troubleshooting. The aim of the course is to give students the knowledge needed to securely establish, maintain, and troubleshoot the essential networks that businesses rely on. (Prerequisite: CMPE 215)

CMPE 470 Digital Circuits
With the rapid development in digital Hardware technology, digital design needs to be adaptive and fast to implement. This course introduces the design of digital systems using programmable logic devices such as memories, SPLDs, CPLDs and FPGAs. In this course, students acquire the knowledge to describe the behavior of logic systems, using finite state machine and ASM charts, and design methodologies for partitioning a digital system into a Datapath and controller. The course emphasizes modelling digital systems with VHDL and their implementation with FPGA. Students will learn to use industrial EDA tools such as Intel Quartus/Xilinx Vivado and ModelSim. (Prerequisite: CMPE 270)

CMPE 478 Embedded Systems Programming
This course focuses on embedded system's architecture. Topics include I/O programming using parallel ports, serial ports, timers, and D/A and A/D converters, as well as interrupts and real-time programming, program development and debugging tools, and C language and assembler. (Prerequisite: CMPE 412)

CMPE 482 Robotics
This course provides students with a solid foundation in the field of robotics, with a focus on essential concepts of construction and programming of robots using Robotics Operating System (ROS) which provides an effective platform for robot software development. This course covers a variety of topics, such as: current state of the art research and applications in robotics, as well as designing, building, programming, and controlling robots. (Prerequisite: COSC 372L)

CMPE 499A Engineering Design: Capstone Project I
This course focuses on embedded system's architecture. Topics include I/O programming using parallel ports, serial ports, timers, and D/A and A/D converters, as well as interrupts and real-time programming, program development and debugging tools, and C language and assembler. (Prerequisite: CMPE 412)

CMPE 499B Engineering Design: Capstone Project II
Building upon the foundation established in Capstone Project I, this course focuses on the implementation, testing, and refinement of the engineering design developed in the earlier phase. Working in teams, students will apply their technical knowledge and skills to design, build, and evaluate a solution to the identified problem or opportunity. Students are expected to follow a systematic approach to prototype development, perform rigorous testing, and iterate on the design based on feedback and evaluation results. Throughout the course, students will engage in critical analysis, problem-solving, and effective project management to address any challenges that arise during the implementation phase. Successful completion of this course will culminate in a fully functional and validated engineering solution, along with comprehensive documentation and a final presentation. (Prerequisite: CMPE 499A)

COSC 102 Object-Oriented Programming

This course introduces the fundamental concepts of Object-Oriented Programming (OOP). Students will learn how to design, implement, and test software using the OOP paradigm. The course covers topics such as encapsulation, inheritance, polymorphism, abstraction, and object-oriented design patterns. The course will be taught using a high-level programming language. (Prerequisite: COSC 101)

COSC 125 Data Structure and Programming Techniques

Data structures are essential building blocks for designing efficient algorithms. This course will introduce the fundamentals of data structures and will provide a thorough understanding of how to systematically organize data in a computer system. In addition, this course will introduce students to analytical tools for comparing data structures in terms of their time and space complexities. Students will appreciate the importance of programming structures, abstractions, and algorithms for improving the efficiency of computer programs. Topics include linked lists, stacks, trees, queues, graphs and analysis of efficiency. The course also covers searching, sorting, and hashing techniques. (Prerequisite: COSC 102)

COSC 210 Management Information Systems

The main objective of this course is the investigation of the role and impact of information systems in organizational functions, through the examination of management information systems used in today's business environment. The course highlights the role of information systems in organizations using computer tools and technology in solving business problems. Topics include information technology hardware, software, networks, security, and ethics. The course uses a conceptual approach through case studies of a series of information systems such as Enterprise Resource Planning Systems (ERP), Customer Relationship Management Systems (CRM), Supply Chain Management Systems (SCM) and Decision Support Systems. Students will also engage in computing exercises using common business information system tools. (Prerequisite: COSC 101)

COSC 248 Algorithms and Complexity

The course covers topics on technical analysis and runtime algorithms, asymptotic notation, some data structures such as graphs, sorting and searching algorithms and algorithm design techniques. The course covers the application of standard algorithmic approaches, including greedy, divide and conquer, and dynamic programming. Students will also learn about basic graph algorithms and NP-completeness. (Prerequisite: MATH 203, COSC 125)

COSC 312 Design and Usage of Databases

This course introduces the fundamental concepts necessary for designing, implementing, and using database systems and database applications. It will teach students about data modeling techniques, relational database design, use of normalization to design normalized relational databases, Structured Query Language's (SQL), data definition (DDL), data manipulation (DML), and web database development. (Prerequisite: MATH 203, COSC 125)

COSC 372 Operating Systems

This course provides an in-depth understanding of modern operating systems, covering core concepts and principles. Key topics include operating system structures, process management, thread management, CPU scheduling, process synchronization, deadlock handling, memory management, virtual memory, mass storage, and file system management. The course aims to teach students about the operating system's role as an interface between the user and computer hardware, focusing on both high-level functionality and low-level implementation details of CPU scheduling, processes, memory management, file system management, and virtualization. It emphasizes how operating systems act as a critical bridge in computer systems, delving into the intricate workings of these components at a detailed level. (Prerequisite: CMPE 271)

COSC 372L Operating Systems Laboratory

This course covers the Unix system administration and practical concepts and principles that underlie modern operating systems including Processes, Thread, Synchronization, Inter-Process Communication, Deadlock and Disk Scheduling. (Co-requisite: COSC 372)

COSC 390 Introduction to Machine Learning and Data Analytics

Machine learning is the science of getting computers to act without being explicitly programmed. In the past decade, machine learning has given us self-driving cars, practical speech recognition, effective web search, a vastly improved understanding of the human genome, and progress towards human-level AI. Topics include effective machine learning techniques and techniques for implementation. (Prerequisite: ENGR 105, Math 260)

COSC 406 Computer Science Internship

This is a supervised internship course that provides computer science students with the opportunity to gain practical, hands-on experience in a professional work environment. The internship allows students to apply and further develop their knowledge and skills acquired throughout their academic studies. Under the guidance of industry professionals and academic supervisors, students engage in real-world projects, tasks, and responsibilities relevant to the field of computer science. (Prerequisite: 83 Credits, CGPA 2.0)

COSC 410L Computer Science Professional Certificate

This is a comprehensive course designed to prepare students for IT Project management certification. The course covers project management principles, methodologies, and best practices. Students will learn how to plan, execute, monitor, and close projects successfully. Through hands-on projects and real-world scenarios, students will develop their project management skills and become proficient in managing projects in various industries. (Prerequisite: Senior Level (90 credits))

COSC 412 Implementation of Database Systems

This course delves into advanced topics in database management, providing an in-depth exploration of NoSQL databases, REST API development for NoSQL databases, Big Data technologies, Object-Oriented databases, concurrency control, distributed databases, database recovery, data warehousing, and database security. Students will gain a comprehensive understanding of these crucial aspects of modern database management to excel in data-driven environments. By the end of this course, students should be well-equipped to address complex database challenges in a data-driven world, and effectively apply their knowledge to tackle complex challenges associated with modern databases effectively. (Prerequisite: COSC 312)

COSC 415 Cloud Computing

This is an advanced course that explores the concepts, technologies, and practical aspects of cloud computing. Students will gain a deep understanding of cloud architectures, services, deployment models, and security considerations. Through hands-on exercises and projects, students will learn to design, deploy, and manage cloud-based solutions. (Prerequisite: COSC 372)

COSC 485 Web Engineering

This course introduces a structured methodology utilized in software engineering to Web development projects. The course addresses the concepts, methods, technologies, and techniques of developing Web sites that collect, organize and expose information resources. Topics covered include requirements engineering for Web applications, design methods and technologies, interface design, usability of web applications, accessibility, testing, metrics, operation and maintenance of Web applications, security, and project management. (Prerequisite: COSC 312)

COSC 486 Mobile Programming

The aim of this course is to equip students with a solid foundation in specialized mobile programming concepts. Throughout this course, students will develop the skills to apply design principles in the creation of user-centered mobile applications that align with business requirements. Hands-on activities will allow them to gain practical experience in a mobile programming language, enabling them to become proficient in mobile app development. (Prerequisite: COSC 312)

COSC 499A Computer Science Design Project A

This course serves as the first part of a two-semester sequence. It provides students with the opportunity to apply their accumulated knowledge and skills in computer science to a substantial, real-world project. Emphasizing teamwork, project management, and interdisciplinary collaboration, this course lays the foundation for the completion of a comprehensive computer science design project in the subsequent semester. (Prerequisite: Senior level (90 credits), GPA 2.0, SWEN 360/L)

COSC 499B Computer Science Design Project B

Building upon the foundation established in Capstone Project A, this course focuses on the implementation, testing, and refinement of the computer science design developed in the earlier phase. Working in teams, students will apply their technical knowledge and skills to design, build, and evaluate a solution to the identified problem or opportunity. They will follow a systematic approach to prototype development, perform rigorous testing, and iterate on the design based on feedback and evaluation results. Throughout the course, students will engage in critical analysis, problem-solving, and effective project management to address any challenges that arise during the implementation phase. Successful completion of this course will culminate in a fully functional and validated computing solution, along with comprehensive documentation and a final presentation. (Prerequisite: COSC 499A)

CYBR 310 Introduction to Cybersecurity

This course provides an overview of the fundamental concepts and principles of cybersecurity. The course covers topics such as information security, network security, and cybersecurity policies and practices. The course is designed to provide students with an understanding of the importance of cybersecurity in modern society and the tools and techniques used to protect against cyber-attacks. (Prerequisite: CMPE 215)

CYBR 315 Network Security and Forensics Analysis

This course on network forensics focuses on the nuances and challenges unique to network environments within digital forensic investigations. It includes advanced exploration of network-based evidence, emphasizing the practical application of network forensics. The course integrates hands-on examples and case studies to deepen the understanding of network forensics, highlighting its importance in the context of modern network-centric computing environments. The course is structured to provide a comprehensive overview of the basics of computer and network forensics. (Prerequisite: CMPE 215)

CYBR 362 Security Vulnerabilities and Threats

This course provides an in-depth analysis of the various security vulnerabilities and threats that modern computer systems and networks face. The course covers topics such as cryptography, malware, network security, social engineering, and ethical hacking. The course is designed to provide students with an understanding of the different types of security vulnerabilities and threats, the techniques used by attackers, and the strategies for defending against these attacks. (Prerequisite: CYBR 310)

CYBR 375 Cybercrime

This course offers an in-depth exploration of cybercrime, covering key aspects such as the technology used in cyber offenses, law enforcement challenges, privacy concerns, hacking, malware, digital piracy, online fraud, cyberbullying, cyberstalking, cyberterrorism, and cyberwarfare. It also delves into the criminological theories behind cybercrimes, the evolution of digital forensics, legal challenges in forensic investigations, and future trends in cybercrime and policy. This curriculum is designed to equip students with a comprehensive understanding of the complexities and evolving nature of cybercrime methods. (Prerequisite: CYBR 310)

CYBR 405 Cybersecurity Internship
This course provides students with the opportunity to apply their knowledge and skills in a real-world environment. The internship is typically offered by companies, government agencies, or non-profit organizations with a focus on cybersecurity. (Prerequisite: 86 Credits, CGPA 2.0)

CYBR 410L Cybersecurity Professional Certificate
This course provides students with the knowledge and skills required to protect and defend computer systems and networks from cyber threats. It will prepare students to take a professional certificate in cybersecurity that covers a range of topics related to cybersecurity, including network security, cryptography, security standards, and cybercrime. The course also includes hands-on laboratory exercises and real-world case studies to provide students with practical experience in cybersecurity. (Prerequisite: Senior Level (90 Credits))

CYBR 415 Cloud Security and Privacy
The course provides a deep and critical understanding of the Cloud security architecture. The learners explore the guiding security design principles, design patterns, industry standards, applied technologies and addressing regulatory compliance requirements critical to design, implement, deliver, and manage secure cloud-based services. The course instills the specialist skills into the learners to dive into the secure cloud architectural aspects. It is regarding identifying and mitigating risks, protection and isolation of physical & logical infrastructures including compute, network and storage, comprehensive data protection, end-to-end identity management & access control, monitoring and auditing processes and meeting compliance with industry and regulatory mandates. (Prerequisite: CMPE 215)

CYBR 460 Secure Software Design and Engineering
This course provides specialized knowledge about secure software design and engineering. It exposes the knowledge of vast horizon of software assurance during the whole software development lifecycle, hence enabling the students to apply specialist knowledge for secure software development and management. The course also provides the learners, the ability to carry out some critical tasks such as risk assessment, drawing security requirements, designing through threat modeling approach, utilizing security design patterns and testing using static and dynamic analysis as well as code review. This way the students will be able to develop critical security artifacts throughout SDLC phases. (Prerequisite: SWEN 360)

CYBR 462 Information System Risk Management
This course focuses on the identification, analysis, and management of risks associated with information systems. The course covers topics such as risk management frameworks, risk assessment methodologies, risk mitigation strategies, and risk monitoring and control. The course is designed to provide students with an understanding of the principles and techniques for managing information system risks and ensuring the confidentiality, integrity, and availability of information. (Prerequisite: CYBR 362)

CYBR 465 Web application Security
This course will examine web applications from an offensive security standpoint. The course covers in-depth; the critical web application vulnerabilities defined by OWASP and uncovers underlying attacks and their mitigations. Topics will cover infiltration, injections, authentication violations, web design related vulnerabilities, configurations and privilege escalation, and security compliance of web application. Each portion of the course will involve core understanding of the complex web application architecture and hardening a vulnerable application using specialist methods. (Prerequisite: COSC 312, CYBR 310)

CYBR 467 Ethical Hacking
This Ethical Hacking course introduces students to the principles and practices of ethical hacking, starting with an overview of the field and its significance in cybersecurity. Key topics include Footprinting, Reconnaissance, Network Scanning, Enumeration, and System Hacking, with practical insights into Sniffing, Social Engineering, and Denial-of-Service attacks. Advanced modules cover Evading IDS, Firewalls, Honeypots, Hacking Web Applications, SQL Injections, and Wireless Network vulnerabilities. (Prerequisite: CYBR 362)

CYBR 470 Cryptography
This course focuses on the study of techniques for secure communication in the presence of adversaries. The course covers topics such as classical ciphers, modern symmetric and asymmetric key cryptographic systems, cryptographic protocols, and cryptanalysis. The course is designed to provide students with an understanding of the principles and techniques for designing and analyzing secure communication systems. (Prerequisite: MATH 203)

CYBR 475 Cyber Incident Handling and Response
This course provides an in-depth examination of Incident Response and Management, focusing on key areas such as Incident Response Theory, Pre-incident Preparation, and Remediation. It covers the dynamics of Incident Investigation, Scope Determination, and the strategic use of Tools and Technologies in incident response. The course includes essential elements like Incident Report Writing, Post-Incident Analysis, and Crisis Communication, along with effective management strategies for Cybersecurity Incident Response Teams (CIRT). Additionally, students will explore the latest Emerging Trends and Future Challenges in incident response across various environments. (Prerequisite: CYBR 310)

CYBR 480 Security Standards and Audits
This course focuses on the study of security standards, regulations, and compliance audits in the context of information security. The course covers topics such as security frameworks, standards, regulations, and best practices, as well as audit methodologies, tools, and techniques. The course is designed to provide students with an understanding of the importance of security standards and audits in maintaining the confidentiality, integrity, and availability of information. (Prerequisite: CYBR 362)

CYBR 482 Information Technology Audit and Control
This course introduces the principles and practices of auditing and controlling information technology systems. The course covers the legal, ethical, and regulatory aspects of IT auditing and control, as well as the tools and techniques used by IT auditors and control professionals. (Prerequisite: CYBR 310)

CYBR 487 Cybersecurity Framework and Management
This course provides an overview of cybersecurity frameworks, their application, and management in organizations. The course covers the various cybersecurity frameworks, standards, and guidelines used to assess and manage cybersecurity risks, as well as the best practices for implementing cybersecurity frameworks in organizations. (Prerequisite: CYBR 310)

CYBR 495A Cybersecurity Design Project A
This course is a project-based course that allows students to apply their knowledge and skills in cybersecurity to a practical project. The course focuses on developing a cybersecurity solution to a real-world problem, and students work in teams to design and implement a comprehensive cybersecurity solution. (Prerequisite: Senior Level (90 Credits), and GPA greater than or equal 2.0)

CYBR 495B Cybersecurity Design Project B
This course is a continuation of Cybersecurity Design Project A, where students continue to work on their cybersecurity project from the previous course. The focus of the course is on implementing and testing the cybersecurity solution designed in Cybersecurity Design Project A, as well as evaluating the effectiveness and security of the implemented system. (Prerequisite: CYBR 395A)

DSAI 310 Introduction to Data Science
This course serves as an introduction to the multifaceted field of Data Science, providing students with foundational knowledge and skills necessary for working with data, in addition to foundational concepts in machine learning. The course covers essential concepts, techniques, and tools employed in the data science workflow, including data collection, cleaning, exploration, analysis, and visualization. Students will gain hands-on experience with popular data science tools and languages, fostering an understanding of how data science is applied in various domains. (Prerequisite: MATH 260, COSC 102)

DSAI 370 Data Analytics Ethics
This is a specialized course focusing on the ethical considerations and challenges within data analytics. This course delves into the complex intersection of data, technology, and ethical decision-making. Students will explore the ethical implications of data collection, analysis, and utilization, with a particular emphasis on maintaining privacy, ensuring fairness, and addressing societal impacts. (Prerequisite: DSAI 310)

DSAI 380 Data Visualization
This is a specialized course focusing on the principles, techniques, and applications of data visualization. In an era of vast and complex datasets, effective data visualization is essential for conveying insights and supporting decision-making. This course explores various visualization tools, design principles, and methods for creating compelling visual representations of data. (Prerequisite: DSAI 310)

DSAI 406 Data Science Internship
This is a supervised internship course that provides data science and artificial intelligence students with the opportunity to gain practical, hands-on experience in a professional work environment. The internship allows students to apply and further develop their knowledge and skills acquired throughout their academic studies. Under the guidance of industry professionals and academic supervisors, students engage in real-world projects, tasks, and responsibilities relevant to the field of data science and artificial intelligence. (Prerequisite: 86 Credits, CGPA 2.0)

DSAI 410L Data Science Professional Certificate
This course is designed to prepare students for a Data Science Professional Certificate. The course delves into the fundamental concepts, methodologies, and practical applications of data science. It covers a range of topics related to data science and artificial intelligence, including data analysis, machine learning, and data visualization. The course also includes hands-on laboratory exercises and real-world case studies to provide students with practical experience in data science and artificial intelligence. (Prerequisite: Senior Level (90 Credits))

DSAI 420 Marketing Analytics
This is an advanced course that provides an in-depth exploration of concepts and methods of marketing analytics. Students will learn how to apply data science techniques to measure and optimize marketing performance and outcomes. The course covers topics such as customer analysis, segmentation, targeting, preference measurement, demand estimation, customer lifetime value, retention, price optimization, advertising effectiveness, A/B testing and personalization. The course provides hands-on experience with various data sources, tools, and software for marketing analytics. (Prerequisite: DSAI 310)

DSAI 422 Data Mining
This is an advanced course that delves into the field of Data Mining, exploring techniques and methodologies for discovering patterns, trends, and valuable insights within large datasets. The course covers a range of data mining algorithms, statistical models, and machine learning approaches to extract meaningful information from complex data sources. Students will engage in hands-on projects to apply data mining techniques in various domains and gain practical experience in uncovering hidden knowledge from diverse datasets. (Prerequisite: DSAI 310)

DSAI 448 Sports Analytics
This course introduces the concepts and methods of sports analytics, which is the use of data and quantitative techniques to analyze performance and make decisions in sports. The course covers topics such as measuring and predicting player and team performance, decision-making and strategy in sports, artificial intelligence, and machine learning in sports. The course also provides hands-on experience with various data sources, tools, and software for sports analytics. (Prerequisite: DSAI 310)

DSAI 450 Business Intelligence

This Business Intelligence course provides an in-depth exploration of BI's role in modern organizations, focusing on practical applications and current technologies. Students will engage with BI tools and advanced techniques, developing skills in data visualization and predictive analytics. The syllabus covers real-time analytics, mobile BI applications, and cloud computing in BI, enhancing students' understanding of dynamic data analysis and decision-making processes. Additionally, the course addresses data quality management, ethical considerations, and BI governance, preparing students to effectively manage and utilize BI systems across various industries. Through practical exercises and industry-specific case studies, the course equips students with the skills to apply BI concepts effectively, ensuring a comprehensive and practical understanding of Business Intelligence in a real-world context.

DSAI 460 Internet of Things Analytics

This course introduces the concepts and methods of IoT analytics, which is the analysis of data generated by connected devices and sensors in the Internet of Things (IoT). The course covers topics such as IoT data sources, types, and characteristics, IoT data collection, storage, and processing, IoT data quality, security, and privacy, IoT data analysis techniques and tools, IoT data visualization and communication, and IoT data applications and use cases. The course provides hands-on experience with various IoT data sets, platforms, and software.

DSAI 462 Advanced Computational Statistics

This is an advanced course that delves into the intricate aspects of computational statistics. It is designed for students seeking a deep understanding of advanced statistical techniques and their computational implementations. Topics include advanced probability distributions, Bayesian statistics, Monte Carlo methods, and advanced statistical modeling.

DSAI 465 Artificial Intelligence

Artificial Intelligence is a growing area of research and application. This course gives an overview of Artificial Intelligence concepts and techniques, with a focus on solving real-world computational problems. Topics include models of knowledge representation, search-based and knowledge-based problem solving, natural language processing and generative AI. By the end of the course, students will be able to understand and apply appropriate AI algorithms for several problem domains.

DSAI 472 Social and Behavioral Analytics

The course aims to provide students with a comprehensive understanding of the principles, data sources and methods of social and behavioral data analytics. Students will learn to use data science methods to obtain digital social data and answer research questions in psychology and social sciences. The course will cover topics such as research design, data acquisition through APIs and web scraping, data cleaning and processing, data analysis with advanced techniques, and the interpretation and presentation of results. The course will also focus on research integrity and ethics in social data science projects.

DSAI 474 Computer Vision

This course is a broad and comprehensive introduction to computer vision. The course covers computational techniques and methods for extracting meaningful information from visual inputs. Topics include image analysis, object detection, image segmentation, feature extraction and pattern classification. Students will also be introduced to modern real-world applications of computer vision in various fields such as robotics, graphics, medicine and manufacturing.

DSAI 482 Big Data Technologies

This is an advanced course that provides an in-depth exploration of the principles, technologies, and practical applications of Big Data. As organizations grapple with the challenges posed by massive volumes of data, this course equips students with the skills to navigate and harness the power of Big Data technologies. The curriculum encompasses key concepts in distributed computing, storage systems, and data processing frameworks

DSAI 499A Data Science Design Project A

This course is a project-based course that allows students to apply their knowledge and skills in data science and artificial intelligence to a practical project. The course focuses on developing a data science and artificial intelligence solution to a real-world problem, and students work in teams to design and implement a comprehensive data science solution.

DSAI 499B Data Science Design Project B

This course is a continuation of Data Science Design Project A, where students continue to work on their data science and artificial intelligence project from the previous course. The focus of the course is on implementing and testing the data science and artificial intelligence solution designed in data science Design Project A, as well as evaluating the performance and effectiveness of the implemented solution.

ELEC 204 Principles of Electrical Engineering

This course provides an overview of circuit analysis by reduction methods, source transformations, and mesh and nodal analysis. This course introduces the fundamentals of DC (Direct Current) machines (Motors, Generators) and transformers. The students will be able to define, identify and categorize the devices that make up rotating machinery. The students will also learn the distinctive characteristics of rotating machinery and transformers along with electric power transmission.

ELEC 320 Circuit Analysis

This course introduces students to the principles and techniques of DC and AC circuit analysis. The circuit analysis is performed in both time and frequency domains. The students are also introduced to the transient and steady-state behaviour, with a focus on first order and second order passive circuits. The Laplace transform is introduced to solve circuit analysis problems with a variety of input functions, illustrating the use of electrical circuits as frequency-selective filters. An Illustrative use of computer simulation software is adopted in parallel with classical problem-solving approaches.

ELEC 330 Fundamentals of Engineering Electronics

The rapid evolution of electronics has revolutionized every aspect of human life. This course develops the principles and the applications of solid-state electronic devices such as diodes, JFETs, MOSFETs, and BJTs in typical electronic circuits. The students are expected to acquire a full analysis and design of circuits such as AC signal rectifiers, filters, and simple amplifiers using diodes, transistors and operational amplifiers. Theoretical understanding will be consolidated using a dedicated software for circuit design and analysis. (Prerequisite: ELEC 320)

ENGM 411 Foundation in Research Methods

This course is designed to provide students with essential knowledge and skills to conduct research in engineering management. It covers the entire research process from defining research problems and designing methodologies to data collection, analysis, and reporting. Emphasis is placed on critical literature review, ethical research practices, and effective proposal writing and presentation for academic and professional audiences.

ENGM 511 Financial and Cost Accounting

This course empowers candidates with essential proficiencies in financial and managerial accounting, framed within a strategic context. It facilitates the development of expertise in analyzing financial data by interpreting financial statements and employing managerial accounting reports to make well-informed decisions. As a result, participants will possess the capacity to navigate business determinations and undertake leadership responsibilities. The primary objective is to nurture aspiring managers and executives who are capable of harnessing accounting and finance information to construct sound strategic evaluations and to proficiently guide organizations.

ENGM 512 Project Management

The course focuses on ways of developing an understanding of the critical issues and applications of project management. Students will look at the tools, techniques and body of knowledge involved in each stage of the project management life cycle, including project initiation, planning, executing, monitoring and controlling, and closing. They will consider how project management is applicable to all types of organizations and essential to corporate strategy.

ENGM 513 Managing People and Organizations

This course provides an understanding of organizational design principles, specialization, coordination and cooperation, and the role of incentives and control. Students will examine the importance of systematic strategic planning processes typical of corporations with separate business units. The managerial importance of administrative layers and continuous feedback will also be examined.

ENGM 514 Technology Management

This course offers a strategic exploration of leadership behaviors, decision-making disciplines, and organizational principles that drive exceptional performance. Students will engage with concepts such as Level 5 Leadership, the Hedgehog Concept, and the Flywheel Effect, applying them to technology-intensive environments. Through case analyses and practical frameworks, the course cultivates the skills needed to lead innovation, manage technological change, and execute long-term strategies for organizational excellence.

ENGM 525 Concept to Commercialization

The objective of this course is to develop an understanding of the fundamental management concepts, tools and steps involved in successfully setting up and financing high tech start-ups. The course examines how highly successful tech entrepreneurs have developed technology, and considers the role of intellectual property protection, new product development, commercialization and business plan preparation.

ENGM 528 Engineering and Sustainable Development

This course explores the intersection of engineering and sustainable development, focusing on how engineering practices can contribute to achieving sustainability goals. Students will gain a holistic understanding of sustainability principles and their applications in engineering contexts. Key topics include sustainability in design, life cycle assessment (LCA), green engineering practices, and the development of sustainable solutions that balance environmental, economic, and societal factors.

ENGM 529 Environmental, Social and Governance (ESG)

This course is designed to provide students with a comprehensive understanding of the growing importance of ESG factors in the corporate and investment decision-making processes. ESG considerations have gained significant momentum as businesses, investors, and policymakers recognize the impact of environmental, social, and governance practices on financial performance, sustainability, and societal well-being.

ENGM 532 Product Design and Innovation

This course explores the critical role of innovation in engineering and the structured processes involved in developing new products and services. Emphasizing both analytical and practical perspectives, students will learn to manage product development decisions effectively, from idea generation and concept development to product design and the market launch. The course bridges theoretical foundations with practical applications, preparing students to address real-world challenges in innovation and product development.

ENGM 535 Analytics for Engineering Managers

This course equips engineering managers with the necessary analytical tools and methodologies to make informed decisions and boost operational efficiency. It integrates principles of data and statistical analysis, data management, and predictive modelling, with a focus on their application in operational research and addressing engineering management challenges.

ENGM 536 Financial Management

This course provides students with a comprehensive understanding of financial principles essential for effective decision-making in engineering and technology-driven organizations. It explores the operation of capital markets, the various methods companies use to raise funds, and the techniques employed to evaluate investment opportunities and manage financial risks. The course integrates mathematical, statistical, and spreadsheet models to support financial analysis and decision-making. Through case studies, students will apply theoretical concepts to real-world financial scenarios, enhancing their ability to assess financial strategies in an engineering management context.

ENGM 599 Master Thesis

In this course, students will write a final thesis project applying the knowledge and skills they have learned in the classroom. The topics chosen will reflect the students' aspirations to contribute novel insights to the field of engineering management, with the potential to influence real organizational decisions and strategies. Throughout the course, students will identify a research question or a problem within an organization, conduct a comprehensive literature review, and apply appropriate research methodologies and tools to address the research question or problem. Lastly, students will draw meaningful interpretations from the data and relate findings back to the literature or broader business implications.

ENGR 100 Introduction to Engineering

This course is designed to introduce students to explore the professional responsibilities and challenges faced by engineers, designers, and professionals. Students explore the emerging issues and approaches to sustainability and the complex nature of the design problems they will encounter in professional practice. Students engage in research and problem-solving task that addresses environmental and social sustainability imperatives and fosters fundamental research, design, and communication skills. Special emphasis is placed on lifelong learning, academic literacy, and professional skills, including information literacy, project management and teamwork that will equip students for subsequent academic and professional contexts.

ENGR 105 Programming for Engineers

The primary goal in this course is to equip students with the tools they need to be successful when faced with computer programming assignments as a practicing engineer. In the context of engineering applications, basic procedural programming concepts will be covered including input/output, branching, looping, functions, file input/output, data structures (arrays, strings, and structures), pointers, and memory management. Emphasis will be on programming style, debugging, top-down design and modular code. Specific topics are listed in the course syllabus. This course covers introductory programming and problem solving in MATLAB and Python.

ENGR 202 Engineering Mathematics

This course involves selected topics—from ordinary differential equations, the Laplace transform, Fourier series, and Linear Algebra—with engineering applications using mathematical software.

ENGR 205 Multidisciplinary Research Methods

This course provides an interdisciplinary approach to research methods used in various engineering fields. The course covers quantitative, qualitative, and mixed methods approaches, and their application in engineering research. It also introduces students to ethical considerations and data analysis techniques specific to engineering research. (Prerequisite: ENGL 102)

ENGR 342 Engineering Economic Analysis

The systematic evaluation of the economic benefits and costs of projects involving engineering design and analysis. Economic decision-making in an environment of limited resources and uncertainty. Present economy, the economy of multi-year projects, selection among competing and independent alternatives, sensitivity of outcomes to input parameters, before- and after-tax analyses, replacement economy, inflation, and breakeven analysis in production environments. Application to examples and cases involving various engineering disciplines, i.e., mechanical engineering, civil engineering, etc. (Prerequisites: MATH 154).

ENGR 401 Entrepreneurship for Engineers

This course provides students with the knowledge and skills required to start and manage their own technology-based ventures. The course covers topics such as ideation, business model development, market research, intellectual property, and funding. The course is designed to provide students with an understanding of the entrepreneurial process and to develop their skills in identifying, evaluating, and pursuing entrepreneurial opportunities. (Prerequisite: ENGR 205)

MECH 101 Solid Modeling I

The course is designed to teach the student sketching and visualization skills that will be used throughout their academic years and their professional career. Students will be introduced to different tools used in engineering drafting and will learn to draw of views in orthographic projection using first and third angle projections, as well as isometric drawings. Linework: Visible, Hidden, Centre Axis, Dimension and Section Lines. Dimensioning Principles: Appropriate dimensions in engineering drawings. Sections and Sectional Views: Include appropriate sectional views in engineering drawings. Then students are introduced to SolidWorks, a computer aided design program predominately used in the mechanical and aerospace industry. Students will learn the basic steps in a computer aided design environment, Dimensioning,2D &3D creating and design. Students will have an introduction to assembly. (Prerequisite MATH 153)

MECH 204 Thermofluids

An introduction to engineering thermodynamics dealing with the application of the first and second laws of thermodynamics to the thermodynamic design and performance analysis of a typical thermo-mechanical plant using condensable vapors and gases as the working fluid. Basic fluid mechanics including: kinematics and dynamics of fluid flows; conservation laws applied to fluid flow; Euler, Bernoulli, Navier-Stokes equations; dimensional analysis; differential and integral flow analysis; flow visualization. (Prerequisite: PHYS 101)

MECH 204L Thermofluids Laboratory

The Thermofluids laboratory aims to provide students with hands on experience about Thermofluids field by setting up experiment, learn data acquisition theory, instrumentation, sensors, statistical and uncertainty analysis. The concepts of designing, performing and reporting experiments on thermal systems. Students will also learn technical report writing and work in teams. (Concurrent MECH 204)

MECH 220 Engineering Mechanics - Dynamics

The purpose of the course is to present the foundations and applications of the relationship between forces acting on an object and its motion. This knowledge is essential for the detailed study of further courses such that fluid dynamics, flight dynamics and structural dynamics. The course is also designed to emphasize the critical importance of good problem-solving skills. (Prerequisite: CIVL 200)

MECH 241 Engineering Materials

This course will enable students to get the fundamental knowledge about materials structure and their mechanical properties in order to select the appropriate materials for engineering applications and design. The course will also provide basic understanding on various modes of materials strengthening and failure. It will cover various types of materials namely metals, polymers and composites. (Prerequisite: CHEM 101, CIVL 200)

MECH 241L Engineering Materials Laboratory

This course introduces students to experimental methods used to characterize engineering materials and mechanical behavior. Topics/experiments Included: experiments in mechanical properties, heat treatment, metallography, corrosion properties and X-ray diffraction.

MECH 310 Introduction to Engineering Design

This course introduces a professional approach to engineering design problems. The course content focuses on problem definition, information gathering, feasibility studies, analysis, final design and communication. Several design studies and projects are also introduced. The course will also focus on the advanced applications of the CAD software. (Prerequisite: CIVL 302)

MECH 313 Numerical Analysis of Engineering Systems

This course introduces students to the concepts of modeling, simulation, and analysis of various mechanical systems, including dynamic, vibrational, electromechanical, and circuits for monitoring and controlling mechanical systems. Topics covered include an introduction to MATLAB, nonlinear algebraic equations, linear algebraic systems of equations, eigenvalue problems, regression and curve fitting, numerical differentiation and integration and ordinary differential equations. (Prerequisite: MECH 220, ENGR 105)

MECH 314 Engineering Design: Mechanical Components

This course involves the application of mechanics, physical properties of materials and solid mechanics to the design of machine elements such as chains, spur gears, shafts, bearings, connections, and other mechanical power transmission devices. (Prerequisite: CIVL 302)

MECH 341 Manufacturing Processes

This course provides students with a comprehensive overview of the fundamental principles, techniques, and technologies utilized in modern manufacturing processes. This program emphasizes manufacturing concepts like Workshop safety, materials behaviour under a range of design conditions, material selection techniques and shaping techniques so that graduates are equipped to design, control and innovate within this sector. The purpose of this course is to introduce students to various manufacturing processes and their underlying principles; develop understanding between material properties and manufacturing method selection; foster innovation while encouraging exploration of emerging technologies within manufacturing; as well as foster an innovative culture and investigate emerging technologies in manufacturing. (Prerequisite: MECH 241)

MECH 350 Thermodynamics

This course introduces students to the scientific principles that deal with energy conversion among different forms, such as heat, work, internal, electrical, and chemical energy. The physical science of heat and temperature, and their relations to energy and work, are analyzed on the basis of the four fundamental thermodynamic laws (zeroth, first, second, and third). These principles are applied to various practical systems, including heat engines, refrigeration cycles, air conditioning, and chemical reacting systems. (Prerequisite: MATH 252)

MECH 406 Mechanical Engineering Internship

This is a supervised internship course that provides mechanical engineering students with the opportunity to gain practical, hands-on experience in a professional work environment. The internship allows students to apply and further develop their knowledge and skills acquired throughout their academic studies. Under the guidance of industry professionals and academic supervisors, students engage in real-world projects, tasks, and responsibilities relevant to the field of mechanical engineering. (Prerequisite: (88 credits), CGPA 2.0)

MECH 410 Heating, Ventilating and Air-Conditioning

This course will build on concepts learned in Heating, Ventilating and Air-Conditioning. Students will learn a wide range of topics including: Air conditioning systems, Properties of moist air, Moist air processes, Space air conditioning, Indoor air quality--comfort and health, Heat transfer from human body, Heat transfer in building envelopes, Infiltration heat load and weatherizing, Computation of the heating load, Heat gain by solar radiation, Computation of the cooling load, Energy requirements for HVAC systems; building energy audit, Fans-- performance, selection, and installation, Air flow in ducts and fittings, Design of duct systems, Codes & standards for building energy systems, Annual energy consumption. (Prerequisite: MECH 350 and MECH 453)

MECH 430 Industrial Management

This course introduces the different levels of management, productivity, and the importance of quality circle. Topics included: modern production management system, Lean manufacturing, and Total quality management (TQM), total productive maintenance (TPM), Human Resources and Management, and Industrial Relations and Legislations.

MECH 440 Computer-Aided Manufacturing

This course introduces students to the comprehensive introduction to Computer-Aided Manufacturing (CAM), covering key concepts, tools, and techniques for integrating computer technology into modern manufacturing processes.

MECH 451 Fluid Mechanics

Starting with an overview of fluid mechanics applications, then the fundamental fluids and flows properties are introduced. Fluid statics including pressure measurement devices are discussed. The Eulerian and Lagrangian approaches are presented along with some real-life applications. Integral formulation of fluid flow equations is discussed. Venturi meter and orifice meter are discussed as an application to the Bernoulli equation.

MECH 451L Fluid Mechanics Laboratory
Introduction to fluid mechanics laboratory and design of experiments, including experiments on Redwood Viscometer, Bernoulli's Theorem, Minor Losses, Orifice meter and Venturi meter and V-notch. Students will also technical report writing and work in teams (Co-requisite: MECH 451)

MECH 453 Heat Transfer
This course focuses on the analytical and numerical solutions of steady and transient one and two-dimensional conduction problems, forced and natural convection in external and internal flows, as well as thermal radiation. (Prerequisites: MECH 451)

MECH 454 Renewable Energy and Sustainable Technology
This course covers Focuses on the practical application of renewable energy technologies. Topics included: energy and resource conservation and project siting, economics, financing, renewable energy and tax credits, technical and engineering aspects, regulatory issues, energy storage, monitoring and verification. Students study the advantages, limitations and potential of various energy sources. Wind, solar, small-scale hydro, ground-source heat pumps, combined heat and power, biofuels, fuel cells, and other technologies are examined. Students will learn the strategies and cost/benefit analyses employed by energy analysts to meet demand with clean energy production. Discussions of economic, environment, politics and social policy are integral components of the course. Students will also complete their own study and proposal for a renewable energy project. (Prerequisites MECH 453)

MECH 457 Mechanical Vibrations
This course analyzes the concept of mechanical vibration. Topics covered also include single- and multi-degree of freedom systems, free and forced vibrations, vibration isolation, vibration absorbers and theory of vibration measuring instruments. (Prerequisite MECH 220, and CIVL 302)

MECH 458 Automatic Control Systems
The course introduces students to the dynamic characteristics of control components and systems. Stability and response of closed-loop systems and design of control systems are also covered. Emphasis is placed on operational characteristics of components and their effect on system design. Analysis and design of Control systems for Electrical, Mechanical, and Electromechanical systems. Computer simulation of system operation using MATLAB. (Prerequisite: MECH 313, and MATH 252)

MECH 458L Automatic Control Systems Laboratory
This course introduces students to control theory (e.g. block diagrams, signal flow, stability, feedback, PID control) with applications in control of dynamic, vibrational and mechatronic systems. Analysis of system's time-domain and frequency-domain tools and performance assessment is to be carried out. Lead and lag compensator design according to the requirements of the plant will be implemented. Proportional, integral, and derivative control for motor speed and position control will be introduced to the students. Appling Control Systems knowledge to simulate and plot various characteristics of a system using MATLAB and/or SIMULINK are also discussed. (Co-requisite: MECH 458)

MECH 460 Computational Fluid Dynamics
This course covers the fundamentals of numerical algorithms for modeling dynamics of fluid flow computationally. Includes various approaches to discretize time and space on structured and unstructured grids with a variety of boundary conditions. Involves programming of basic CFD codes in MATLAB or Python to test example problems in fluid mechanics with different discretization schemes. Solution techniques for system of algebraic equations; Grid generation techniques; Solution techniques for Navier-Stokes equation; Finite element method for heat transfer and fluid flow problems; Turbulence modeling. Uses software to investigate more complex geometries and numerical approaches. Introduction to simulation of multiphase flow. (Prerequisites MECH 451.)

MECH 470 Machinery Fault Diagnosis and Signal Processing
This course introduces signal processing techniques and their applications to mechanical systems. There will be demonstration of real time machinery health monitoring by various condition monitoring aspects. Specific topics will cover signal properties, time and frequency domain signal analysis, digital filtering, input/output relationships between signals, vibration and measurement, and applications to machinery fault detection in bearings, gears, and shafts. MATLAB will be used in programming. (Prerequisites: MATH 252.)

MECH 490L Mechanical And Thermal Systems Laboratory
This course introduces students to data acquisition theory, instrumentation, sensors, data reduction, statistical and uncertainty analysis, and experiment design. The concepts of designing, performing, and reporting experiments on mechanical and thermal systems, mechanisms, vibrations, structures, thermodynamics, and heat transfer are also introduced. (Prerequisite: MECH 350, and MECH 453)

MECH 496 Advanced Machine Design
This course focuses on the application of advanced mechanics of materials to the design and analysis of mechanical elements. Topics covered in the course also include probabilistic design and finite element methods as well as applications. Applications to the design of typical machine elements such as gears, linkages, and Cams. Design projects involve extensive use of finite element programs. (Prerequisite: MECH 314 and MECH 341)

MECH 498 Thermal Systems Analysis and Design
The primary goal of this course is to equip students with practical knowledge and skills related to thermal-fluid applications. The course is designed to offer students hands-on experience in designing thermal-fluid systems by tackling real-world design challenges. Additionally, the course aims to connect fundamental theories with practical engineering applications in the thermal-fluid field. (Prerequisite: MECH 350 and MECH 453)

MECH 499A Mechanical Engineering Design: Capstone Project I

This course serves as the first part of a two-semester sequence. It provides students with the opportunity to apply their accumulated knowledge and skills in Mechanical engineering to a substantial, real-world project. Emphasizing teamwork, project management, and interdisciplinary collaboration, this course lays the foundation for the completion of a comprehensive engineering design project in the subsequent semester. (Prerequisite: Senior level (90 credits), CGPA 2.0)

MECH 499B Mechanical Engineering Design: Capstone Project II

Building upon the foundation established in Capstone Project I, this course focuses on the implementation, testing, and refinement of the engineering design developed in the earlier phase. Working in teams, students will apply their technical knowledge and skills to design, build, and evaluate a solution to the identified problem or opportunity. They will follow a systematic approach to prototype development, perform rigorous testing, and iterate on the design based on feedback and evaluation results. Throughout the course, students will engage in critical analysis, problem-solving, and effective project management to address any challenges that arise during the implementation phase. Successful completion of this course will culminate in a fully functional and validated engineering solution, along with comprehensive documentation and a final presentation. (Prerequisite: MECH 499A)

NDSE 301 Operations Research: Modeling

This course focuses on nonlinear and linear concepts, programming, optimization, and problem formulation in one variable, convexity, unconstrained, constrained optimization, as well as optimality conditions, direct search and gradient methods, computational complexity, and major heuristic approaches. Other areas include annealing, neural networks, tabu search, and genetic algorithms, duality and sensitivity analysis, transportation, trans-shipment and assignment problems and project management. (Prerequisite: MATH 154)

NDSE 302 Stochastic and Probability Modeling

This course is a continuation of the first course on Operations Research. The students are expected to acquire the foundations of probabilistic modeling for resource optimization, decision, and Risk Analysis. Various models of queuing Systems and simulations are developed. (Prerequisite: NDSE 301 Operations Research Modeling, MATH 260 Probability and Statistics)

NDSE 306 Systems Simulation

This course introduces basic and advanced concepts of discrete-event simulation modeling and analysis. Topics include event- scheduling versus process-interaction approach, as well as random number and random variate generation, inverse transformation and other selected techniques, input data analysis and goodness-of-fit tests, specific computer simulation languages, and analysis of simulation output and model validation. (Prerequisite: MATH 260)

NDSE 404 Design and Analysis of Experiments

This is an advanced course that focuses on the principles, methodologies, and optimization of systems through experimental design. The course emphasizes the practical utility of experimental design to enhance product and process design, development, and optimization. Students will learn how to use experimental design techniques to improve the quality, efficiency, and performance of working systems. The course takes a balanced approach to both designing experiments and analyzing the obtained data. (Prerequisite: NDSE 301, ENGR 342, COSC 390)

NDSE 406 Industrial Engineering Internship

"The is a supervised internship course that provides industrial engineering students with the opportunity to gain practical, hands-on experience in a professional work environment. The internship allows students to apply and further develop their knowledge and skills acquired throughout their academic studies. Under the guidance of industry professionals and academic supervisors, students engage in real-world projects, tasks, and responsibilities relevant to the field of industrial engineering. (Prerequisite: (81 Credits), CGPA 2.0) "

NDSE 412 Facilities Design and Planning

This course is your gateway to understanding the intricate dance between functionality, aesthetics, and human well-being that breathes life into the buildings we inhabit. This course focuses on facilities design and planning in the intricate process of envisioning, creating, and managing the physical spaces where we work, learn, play, and live. It's a blend of art and science, weaving together functionality, aesthetics, and human well-being to craft environments that are not only efficient and productive, but also inspiring and comfortable. (Prerequisite: ENGR 100)

NDSE 415 Supply Chain Management

This course provides an overview of the fundamentals and advanced levels of supply chain management and enterprise resources planning (ERP). Topics also include aggregate production planning (static, dynamic, nonlinear, and lot sizing models), operations scheduling (flow shops and job shops), materials management and materials requirement planning (MRP), capacity resources planning (CRP), distribution system management, and implementation of manufacturing management strategies. (Prerequisite: NDSE 412).

NDSE 423 Quality Engineering

This course provides an overview of the principles of quality control systems, process control concepts, specification and tolerances, process capability studies, control charts, acceptance sampling plans, cost aspects of quality decisions, quality improvement programs, and quality information systems: Prerequisite: MATH 260)

NDSE 480 Project Management for Engineers

This course explores the concepts and techniques of managing projects in engineering, manufacturing, and service settings. Course content includes the following topics: project selection and evaluation; dynamics, motivation, and evaluation of team members; scheduling, budgeting, and closure. (Prerequisite: ENGR 205, ENGR 342)

NDSE 481 Safety Engineering
This course focuses on human protection systems, emergency and accident handling, hazard identification techniques, safety vs reliability and systems safety quantification. (Prerequisite: ENGR 100)

NDSE 499A Engineering Design: Capstone Project I
To conduct an independent state of the art applied research project on a variety of topics in the field of industrial engineering, that involves formulating a real-world problem, developing its specifications, designing, and implementing it. The outcome of the project is expected to address the performance of the proposed solution, present the findings of the project, and finally write a report to highlight the process and the viability of the proposed solution. (Prerequisite: Senior level (90 Credits), CGPA 2.0)

NDSE 499B Engineering Design: Capstone Project II
Building upon the foundation established in Capstone Project I, this course focuses on the implementation, testing, and refinement of the engineering design developed in the earlier phase. Working in teams, students will apply their technical knowledge and skills to design, build, and evaluate a solution to the identified problem or opportunity. They will follow a systematic approach to prototype development, perform rigorous testing, and iterate on the design based on feedback and evaluation results. Throughout the course, students will engage in critical analysis, problem-solving, and effective project management to address any challenges that arise during the implementation phase. Successful completion of this course will culminate in a fully functional and validated engineering solution, along with comprehensive documentation and a final presentation. (Prerequisite: NDSE 499A)

SWEN 320 Human Computer Interaction
This course provides an in-depth exploration of the principles and practices of Human-Computer Interaction (HCI) with a strong emphasis on User Experience Design (UXD). Through a combination of theory, case studies, and hands-on practices, students will learn about the design, evaluation, and implementation of interactive systems, with a focus on creating effective and user-friendly interfaces. (Prerequisite: COSC 125)

SWEN 360 Software Design and Engineering
This course provides students with an overview of Software Engineering, introducing theory and practical exercises with main focus on practical work in teams and individually. Concepts and techniques for systems engineering, requirements analysis, design, implementation and testing of computer systems. Principles of software engineering for production of reliable, maintainable and portable software products. Emphasis on object-oriented analysis and design techniques. This is a lecture portion of a course in software engineering involving the design and partial implementation of a software system as a group project. (Prerequisite: COSC 125)

SWEN 360L Software Design and Engineering Laboratory
This laboratory-based course provides students with practical experience in applying software engineering principles and techniques to real-world scenarios. Students will work individually and in teams to engage in various software engineering activities, including requirements analysis, design, implementation, testing, and maintenance of software systems. Through a series of guided projects and exercises, students will develop skills in problem-solving, critical thinking, and effective collaboration within a software engineering context. This laboratory course serves as a valuable opportunity for students to gain practical insights into the application of software engineering concepts and refine their skills in building reliable and maintainable software products. (Co-requisite: SWEN 360)

SWEN 370 Software Requirements Engineering
The course will discuss concepts for systematically establishing, defining and managing the requirements for large and complex software systems. The course will cover informal, semi-formal and formal approaches in requirements engineering. The course will involve building models concerning both functional and non-functional requirements using a systematic approach. (Prerequisite: SWEN 360)

SWEN 406 Software Engineering Internship
This is a supervised internship course that provides software engineering students with the opportunity to gain practical, hands-on experience in a professional work environment. The internship allows students to apply and further develop their knowledge and skills acquired throughout their academic studies. Under the guidance of industry professionals and academic supervisors, students engage in real-world projects, tasks, and responsibilities relevant to the field of software engineering. (Prerequisite: 86 Credits, CGPA 2.0)

SWEN 410L Software Engineering Professional Certificate
This course prepares students for a globally professional certification that recognized credential in the field of Software Engineering. This course provides a comprehensive overview of the essential knowledge and skills required to become a proficient Agile Scrum Development and Scrum Master. Students will learn about Scrum Framework, Various Roles and working with various tasks within the Scrum framework. By the end of this course, students will be able to prepare and acquire certifications such as Certified Scrum Developer and ScrumMaster provided by globally known ScrumAlliance. (Prerequisite: Senior Level (90 Credits))

SWEN 460 Software Testing and Quality Assurance
This course will teach students the core concepts and specialist skills needed for Software Quality Assurance and Testing. This course will focus on the processes, principles, and techniques of software testing and analysis. It covers a full spectrum of topics from basic principles and underlying specialist theory of software testing at all scales in real-world complex applications, both statically and dynamically. The emphasis is on critically analyzing and selecting practical techniques to achieve an acceptable level of quality at an acceptable cost. This course will provide software engineering professionals with realistic strategies for reliable and cost-effective software testing. (Prerequisite: SWEN 370)

SWEN 470 Software Design and Architecture

This course focuses on the core concepts necessary for designing the architecture for real-life software systems. It will deal with designing and applying the high-level building blocks that represent an underlying software system. This course will also teach students how to use modern processes, methods, and tools used in architecting, modeling, and designing software systems. Students will learn the importance of developing a sound software architecture as part of the overall software design. (Prerequisite: SWEN 370)

SWEN 475 Object Oriented Design

This course provides an in-depth exploration of Object-Oriented Design (OOD) principles and their application in software development. Students will acquire specialist skills to design and implement robust, scalable, and maintainable software systems using object-oriented methodologies. The course covers core knowledge of concepts, SOLID design principles, reusability, refactoring, design patterns, and best practices in object-oriented design. (Prerequisite: SWEN 360L)

SWEN 499A Software Engineering Design Project A

This course serves as the first part of a two-semester sequence. It provides students with the opportunity to apply their accumulated knowledge and skills in software engineering to a substantial, real-world project. Emphasizing teamwork, project management, and interdisciplinary collaboration, this course lays the foundation for the completion of a comprehensive software engineering design project in the subsequent semester. (Prerequisite: Senior level (90 credits), CGPA 2.0, SWEN 360/L)

SWEN 499B Software Engineering Design Project B

Building upon the foundation established in Software Engineering Design Project A, this course focuses on the implementation, testing, and refinement of the engineering design developed in the earlier phase. Working in teams, students will apply their technical knowledge and skills to design, build, and evaluate a solution to the identified problem or opportunity. They will follow a systematic approach to prototype development, perform rigorous testing, and iterate on the design based on feedback and evaluation results. Throughout the course, students will engage in critical analysis, problem-solving, and effective project management to address any challenges that arise during the implementation phase. Successful completion of this course will culminate in a fully functional and validated software engineering solution, along with comprehensive documentation and a final presentation. (Prerequisite: SWEN 499A)

College of Media and Design

DSGN 101 Visual Culture I

This course introduces the essential concepts of visual culture and the role that images can play in producing cultural meaning. It supports students' ability to understand and interpret images, color, design and pattern in the world around them. This course further introduces various forms of mixed media usage to the students through which they can apply the theoretical knowledge they learn in hands-on projects.

DSGN 102 Visual Culture II

This course focuses on the visual experience in the day to day life in the fields of art, cinema, advertising, television, music videos, and digital media, by using different approaches such as cultural studies, media and gender studies. Visual Culture II extends the exploration of visual media from its pre-requisite. This course delves into the progression of visual culture and media, highlighting how each period's unique cultural, historical, and technological contexts influenced the creation and interpretation of visual narratives and art throughout a wide variety of art forms. Students will immerse themselves in various artistic movements, media forms, and the thoughts of key thinkers, linking these elements to the broader cultural and intellectual landscapes of their times. Specifically, as we survey the history of visual art forms we will examine periods and movements such as: Renaissance period (Renaissance, Mannerism, Baroque, Rococo, Neoclassicism, Romanticism, Realism); Mid Century Movements (Impressionism, Post-Impressionism, Symbolism, Fauvism, Expressionism, Cubism, Futurism, Dada, Surrealism, Abstract Expressionism, Pop Art, Minimalism); Post Modern Movements (Postmodernism, Installation Art, Street Art and Graffiti, Digital Art, Performance Art, Relational Aesthetics, Social Practice Art; Contemporary Art Movements (New Media Art, Environmental Art, Generative Art, Augmented Reality Art, AI Art).

DSGN 111 Basic Design I

This course is designed to give students an introduction and overview of the basic and most important principles of design. From lines, and symmetry, to theme and application students start to understand how design intersects with the world around us. Throughout the semester students will apply the theoretical concepts they are learning to an ongoing semester-long design project that will force them to rise to a professional design challenge, while working with real world clients. Working with local business, students may even have the opportunity to see final design products being used in professional settings.

DSGN 112 Basic Design II

This course focuses on the text and the meaning and effects of visual language. Different aspects of art and design will be examined over the examples of two-and three-dimensional space by using a variety of tools.

DSGN 141 Computer Culture I

This course provides an overview of the role of the computer within the subject of creativity. The course content introduces extensive knowledge and skills on the use of vector-based graphics software and industry-leading layout design software for print and digital multimedia.

DSGN 142 Computer Culture II

The course content introduces extensive knowledge and skills on the use of raster graphics, digital imaging, motion graphics, and visual effects software for print and digital multimedia.

DSGN 201 Typography

This course focuses on the fundamentals of typography history, technology, and theory. Course content emphasizes the study of letterforms, typographic composition, typographic expression and communication, the power and role of typography in constructing meaning, and typography as a tool for representation of concepts.

DSGN 210 Digital Storytelling

Introduction to practical writing for visual and interactive media. Introduces concepts of interweaving traditional storytelling with digital platforms, interactivity, and narrative of digital media through the creation of visual, audio, and video projects in both fictional and non-fictional stories.

DSGN 211 Photography Techniques

This course will focus on the technical and photographic aspects of the digital image including the use of digital camera (DSLR), digital camera features, modes of operation, photography techniques (Exposure, Shutter Speed and Depth-of-field), composition, effective use of light, storage media, connecting and downloading images to the computer, enhancing images via editing software, file size (resolution) issues, and printing.

DSGN 212 Photography Workshop

This course focuses on intermediate and advanced photography techniques. Students will learn advanced editing of photographs by using industry standard software and to manipulate photographs in postproduction for both commercial and contemporary art photography. The course will introduce specialized workshops to cover different types of equipment for photography studio applications.

DSGN 223 Sound and Image

This course emphasizes combining and composing visual and audio media for timeline multimedia formats. Primary focus is given to the production of video which includes 2-D animation using any combination of music, sound effects, recorded live sounds, computer-generated "noise," digitized video, non-interlaced video, alpha masked video, sprite animations, still bitmap images, and vector images.

DSGN 232 Digital Vector Graphics
The course will focus on vector drawings and illustration development by using standard illustration application to create multimedia digital and printed vector graphics. Students will learn how to draw, edit, fill, transform, implement effects vector graphics shapes and typeface.

DSGN 241 Concept Development
This course focuses on the cultivation of ideas and problem-solving strategies for multimedia projects. Course content emphasizes the acquisition of skills for generating ideas and concepts through a variety of methodologies. Students will advance their skills in professional software.

DSGN 244 Digital Image Processing
During this course student will integrate set of tools to manipulate photographic imagery by using various image editing features, advance composting, and techniques to prepare multimedia artwork to be implemented digital or printed by using standard image application.

DSGN 261 Video Production I
This course is designed to help beginning level students learn the basics of video production. The course outcomes include competency in videography, editing, writing, storytelling, and ethics of media. This course will prepare students to further pursue a variety of media and Video Production career. Students will be graded strictly and are expected to produce a high level of work that could be used as the basis of their professional portfolios.

DSGN 262 Video Production II
Building upon foundational video production skills acquired in Video Production 1, this advanced course deepens students' understanding of the entire video production process. Students will focus on advanced pre-production, production, and post-production techniques, with an emphasis on storytelling, technical precision, and collaborative filmmaking. The course will culminate in the creation of high-quality video projects ready for public screening and professional critique. Additionally, students will work in groups to bring their creative visions to life while experiencing real-world production scenarios.

DSGN 301 Web Design
This course is a survey of the key design elements of publishing content on the World Wide Web. Course content includes processes such as concept development for interactive design works, information design, interface design, interaction design, optimization and integration for the Web, usability, beta-testing, etc., as well as the basic principles of publishing and managing visual content for hypermedia and an interactive portal site. Tools for creating and editing Web projects include browsers, browser helper applications, HTML editors, document management tools and image editors.

DSGN 302 Interactive Web Projects
This course expands upon the ideas introduced in DSGN 301 with further development in coding and software skills. The

focus is on the use of the web and social media applications in marketing and advertising. Topics include branding, user identification, user needs, project planning, developing rich media content, interface design, site promotion, and creating a social media campaign.

DSGN 319 Composition and Digital Effects
This course introduces the basics of image manipulation, title design, compositing, graphic design and special visual effects for digital postproduction using various software applications. Areas of application like chroma keying, CGI integration, and multilayer compositing are probed. Students will work with professional standard software.

DSGN 321 Introduction to Multimedia
This course is intended to give the students a broad foundational understanding of the multimedia design field along with an introduction to some of the essential tools. This course focuses on both the theory and production of the multimedia design process.

DSGN 331 Multimedia Design
The course focuses on multimedia design development, creating user experience design skills as well as interaction design skills. Students will be expected to design work that combines appropriate multimedia content to meet the design brief.

DSGN 332 Multimedia Production
This course continues the work begun in DSGN 331 and applies the process of multimedia production, and project management, culminating in a completed multimedia experience ready to be delivered to the end user. Every aspect of multimedia production is planned, designed, edited, programmed and tested. A user testing report will also be included in the process.

DSGN 341 3-D Computer Graphics
This course introduces 3-D modelling and rendering software, modelling concepts and techniques, methods on how to create materials, characters, scenes rendered with digital lights and cameras, and providing a perspective on the 3-D digital design and virtual environments.

DSGN 401 Capstone Project I
This course focuses on the methodological basis of a capstone project focusing on progression of the concept and developing the skills needed to understand and carry out a research-based visualization process.

DSGN 402 Capstone Project II
This course emphasizes the production of the project researched and proposed in DSGN 401 and allows the student to demonstrate the practical skills and academic studies accumulated during the degree program. Emphasis is on meeting deadlines and on eliminating challenges determined by the project committee. Solutions to obstacles are suggested accordingly. (Prerequisite: DSGN 401)

DSGN 405 Multimedia Design Internship

This course is a supervised professional experience in a professional workplace that provides hands on experience in multimedia and design, in either the private or public sector. At the conclusion of the internship each student will present a report summarizing the internship experience. Potentially, this experience may lead to generate ideas for capstone course.

DSGN 411 Physical Interaction Design

The course introduces physical interaction design in new media works with microcontroller and sensor technologies and explores interaction design practices adaptable for physical interaction, daily-life applications, and contemporary art works. Course content also introduces artistic strategies, structures, and methodologies for the creation of interactive installations and physical media-image-sound interaction projects.

Appendix

Previous Curriculum and Study Plans

Fall 2019 – Spring 2023

College of Business & Management:

[BBA in Finance](#)

[BBA in HR](#)

[BBA in Management](#)

[BBA in Digital Marketing & Social Media](#)

[MBA](#)

College of Engineering & Computing:

[BSC in COSC](#)

[BSC in CMPE](#)

[BSC in CIVL](#)

[BSC in MECH](#)

[BSC in NDSE](#)

College of Media & Design:

[BA in MMD](#)

Fall 2023 – Spring 2025

College of Business & Management:

[BBA in Finance](#)

[BBA in HR](#)

[BBA in Management](#)

[BBA in Digital Marketing & Social Media](#)

[MBA](#)

College of Engineering & Computing:

[BSC in COSC](#)

[BSC in CMPE](#)

[BSC in CYBR](#)

[BSC in Data Science & AI](#)

[BSC in SWEN](#)

[BSC in CIVL](#)

[BSC in MECH](#)

[BSC in NDSE](#)

[MS in ENGM](#)

College of Media & Design:

[BA in MMD](#)