

MECHANICAL ENGINEERING TECHNOLOGY (BM CET) : BACHELOR

Overview

Bachelor of Mechanical Engineering Technology (BM CET)

Program Mission

Prepare graduates to be successful as technicians and engineers embracing innovation and discovery and striving for life-long learning and professional development in the field of Mechanical Engineering Technology.

Program Description

The Bachelor of Mechanical Engineering Technology program provides an excellent broad education with a focused area of specialization options to cater for the global UAE industry. Mechanical engineering technology graduates are trained to support the design, development, and maintenance of mechanical, static as well as rotating equipment. The program also teaches them to develop effective energy solutions, and manufacture and maintain state of the art equipment. HCT Mechanical Engineers are trained to use state of the art software and hardware to rapidly prototype and test potential product design, computerized testing and measurements, and computer control of machinery.

The Bachelor of Mechanical Engineering Technology curriculum produces high-quality engineers known for productivity, timeliness, dedication, and competence in the workplace. Graduates have the ability to work logically, accurately and efficiently; to gather and use information effectively; and to continue enhancing their careers through lifelong learning. The program stresses the effective use of technology, information resources and engineering tools. The program instills leadership qualities based on moral and ethical principles coupled with sound and rational judgment. Finally, the program is designed to prepare interested students for graduate studies in mechanical engineering technology and other areas of professional practice.

This program offers elective concentrations in Power and Design and Manufacturing. Students will have the option to graduate with a Diploma Mechanical in Engineering Technology upon the successful completion of 81 credits inclusive of the 8 week Work Placement.

Program Goals

1. Provide Mechanical Engineering professionals who are equipped with the technical knowledge and skills required by the industry to develop, design, and maintain mechanical systems to highest level of industry standards.
2. Prepare graduates for a successful career as effective decision makers with strong communication and teamwork skills and an understanding of the global, ethical and social implications of the industry and Mechanical Engineering profession.
3. Provide graduates with strong commitment to lifelong learning, continuing education, and professional growth.
4. Provide graduates with leadership qualities and commitment to contribute actively to achieving the Abu Dhabi Vision 2030.

Program Learning Outcomes

Upon graduation, a HCT graduate in Bachelor of Mechanical Engineering Technology should demonstrate:

1. An ability to apply knowledge, methods, techniques, skills and modern tools of mathematics, science, engineering, and technology to solve broadly-defined engineering problems appropriate to Mechanical Engineering Technology;
2. An ability to design systems, components, or processes meeting specified needs for broadly-defined engineering problems appropriate to Mechanical Engineering Technology;
3. An ability to apply written, oral, and graphical communication in broadly defined technical and non-technical environments, and an ability to identify and use appropriate technical literature
4. An ability to conduct standard tests, measurements, and experiments and to analyze and interpret the results to improve processes
5. An ability to function effectively as a member as well as a leader on technical teams.
6. An ability to develop and evaluate a business plan to transform an engineering design (systems, products ,services and solutions) into a business opportunity utilizing entrepreneurial skills and knowledge

Requirements

Completion Requirements

Students seeking the Bachelor of Mechanical Engineering Technology degree must successfully complete the following minimum requirements:

1. A minimum of 146 credits, as follows:
 - a. A minimum 92 credits of program major requirements as follows:
 - i. a minimum of 74 core courses including Work Placement for 16 weeks
 - ii. a minimum of 18 credits of program major electives
 - b. A minimum requirement of 21 credits in Math and Science courses.
 - c. A minimum requirement of 33 credits in General Studies, according to the General Studies breakdown and as advised in the study plan of the program.
2. A minimum CGPA of 2.00.

Code	Title	Credit Hours
Mechanical Engineering Core Courses		
Required Credits: 74		
EGN 1133	Design Thinking in Technology	3
EGN 2712	Applied Programing for Engineers	2
EGN 2806	Work Placement I	6
EGN 3012	Project Management	2
EGN 3212	Economics for Engineering	2
EGN 3806	Work Placement II	6
ELE 2153	Electrical Eng Fundamentals	3
MCE 2203	Applied Statics	3
MCE 2213	Mechanics of Materials	3
MCE 2223	Applied Dynamics	3

MCE 2303	Material Selection and Testing	3
MCE 2311	Solid Modelling	1
MCE 2323	Manufacturing Technology I	3
MCE 2332	Geometric Dimensioning and Tolerancing	2
MCE 2403	Thermodynamics	3
MCE 2903	Sophomore Design Project	3
MCE 3203	Applied Mechanical Vibrations	3
MCE 3303	Manufacturing Technology II	3
MCE 3403	Fluid Mechanics	3
MCE 3413	Applied Heat Transfer	3
MCE 3503	Mechanical Design	3
MCE 3513	Machine Elements and Mechanisms	3
MCE 3601	Engineering Measurements Lab	1
MCE 4603	Control Systems	3
MCE 4902	Capstone Design Project I	2
MCE 4912	Capstone Design Project II	2

Mathematics and Science Courses

Required Credits: 21

CHM 1103	Engineering Chemistry	3
MTH 1103	Pre Calculus	3
MTH 1203	Calculus I	3
MTH 2103	Calculus II	3
MTH 2503	Introduction to Differential Equations	3
MTH 3013	Calculus III	3
PHY 1203	Physics II	3

General Studies

Required Credits: 33

English, Arabic or other Languages

Required Credits: 12

Humanities or Arts

Required Credits: 3

Information Technology and Mathematics

ICT 2013 and MTH 1113

Required Credits: 6

The Natural Sciences

PHY 1103

Required Credits: 3

The Social or Behavioral Sciences

Required Credits: 9

Concentrations

Concentration Name: Design and Manufacturing Concentration

Total Credit Hours: 18

Concentration Curriculum:

Code	Title	Credit Hours
MCE 4303	Computer Integrated Manufacturing	3
MCE 4313	Advanced Geometric Dimensioning and Tolerancing	3
MCE 4513	Integrated Design for Manufacture and Assembly	3
Concentration Code: DMF		

Concentration Electives:

Code	Title	Credit Hours
MCE 3343	Industrial Plant Maintenance	3
MCE 3613	Fluid Power	3
MCE 4323	Non Destructive Testing	3
MCE 4333	Production Planning and Control	3
MCE 4503	Finite Element Analysis	3
MCE 4613	Robotics and Automation	3
MCE 4623	Introduction to Mechatronics	3
MCE 4863	Special Topics in Mechanical Engineering	3
MCE 4893	Directed Study	3

Concentration Name: Power Concentration

Total Credit Hours: 18

Concentration Curriculum:

Code	Title	Credit Hours
MCE 3343	Industrial Plant Maintenance	3
MCE 4403	Refrigeration and Air Conditioning System	3
MCE 4413	Turbomachinery	3
MCE 4423	Power Plant Engineering	3

Concentration Code: MPR

Concentration Electives:

Code	Title	Credit Hours
EGR 4333	Renewable Energy Systems	3
MCE 4433	Internal Combustion Engines	3
MCE 4443	Computational Fluid Dynamics	3
MCE 4453	Desalination Engineering	3
MCE 4463	Energy Conservation and Management	3
MCE 4503	Finite Element Analysis	3
MCE 4863	Special Topics in Mechanical Engineering	3
MCE 4893	Directed Study	3

Description	Data
Total Required Credits	146
Maximum Duration of Study	6 years
Cost Recovery Program	No
Minimum Duration of Study	4 years
Program Code	BMCET
Major Code	MCE

Ideal Study Plan

Recommended Sequence of Study

Year 1		Credit Hours
Semester 1		
EGR 1133	Design Thinking in Technology	3
LSC 1103	Professional Communication and Reporting	3
LSS 1003	Life and Future Skills	3
MTH 1103	Pre Calculus	3
PHY 1103	Physics I	3
Credit Hours		15
Semester 2		
LSC 2103	Academic Reading and Writing II	3

LSS 1123	Basic Research Methods	3
MTH 1113	Statistics for Engineering	3
MTH 1203	Calculus I	3
PHY 1203	Physics II	3
	Credit Hours	15
Summer		
AES 1013	Arabic Communications I	3
CHM 1103	Engineering Chemistry	3
	Credit Hours	6
Year 2		
Semester 1		
AES 1003	Emirati Studies	3
ELE 2153	Electrical Eng Fundamentals	3
MCE 2203	Applied Statics	3
MCE 2303	Material Selection and Testing	3
MCE 2311	Solid Modelling	1
MTH 2103	Calculus II	3
	Credit Hours	16
Semester 2		
ICT 2013	Computational Thinking and Coding	3
MCE 2213	Mechanics of Materials	3
MCE 2323	Manufacturing Technology I	3
MCE 2332	Geometric Dimensioning and Tolerancing	2
MCE 2403	Thermodynamics	3
MCE 2903	Sophomore Design Project	3
	Credit Hours	17
Summer		
EGN 2806	Work Placement I *	6
MCE 2223	Applied Dynamics	3
MTH 2503	Introduction to Differential Equations	3
	Credit Hours	12
Year 3		
Semester 1		
EGN 2712	Applied Programing for Engineers	2
MCE 3303	Manufacturing Technology II	3
MCE 3403	Fluid Mechanics	3
MCE 3503	Mechanical Design	3
MTH 3013	Calculus III	3
	Credit Hours	14
Semester 2		
EGN 3212	Economics for Engineering	2
BUS 2403	Innovation and Entrepreneurship	3
MCE 3203	Applied Mechanical Vibrations	3
MCE 3413	Applied Heat Transfer	3
MCE 3513	Machine Elements and Mechanisms	3
MCE 3601	Engineering Measurements Lab	1
	Credit Hours	15
Summer		
EGN 3806	Work Placement II	6
	Credit Hours	6
Year 4		
Semester 1		
EGN 3012	Project Management	2
MCE 4603	Control Systems	3
MCE 4902	Capstone Design Project I	2
3 Elective Courses		9
	Credit Hours	16
Semester 2		
AES 3003	Professional Arabic	3
MCE 4912	Capstone Design Project II	2

3 Elective Courses	9
Credit Hours	14
Total Credit Hours	146

*Work Placement I shall start after Year 2 Summer Semester is completed.

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