MECHATRONICS ENGINEERING TECHNOLOGY (BMTET): BACHELOR

Bachelor of Mechatronics Engineering Technology (BMTET)

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 Mechatronics Engineering Technology.

Program Description

The Bachelor of Mechatronics Engineering Technology program provides an excellent broad education with a focused area of specializations options to cater for the global UAE industry. Mechatronics engineering technology graduates are trained to support design, development, and maintenance of mechatronics systems, develop effective solutions of industrial needs, and manufacture and maintain state of the art automated systems. HCT Mechatronics 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 Mechatronics 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 mechatronics engineering and other areas of professional practice.

Students will have the option to graduate with a Diploma in Mechatronics Engineering Technology upon the successful completion of 81 credits inclusive of the 8 week Work Placement.

Program Goals

1. Provide Mechatronics engineering professionals with the technical knowledge and skills required by the industry to develop, design, and maintain mechatronics 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 Mechatronics 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 Mechatronics 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 Mechatronics Engineering Technology;
2. An ability to design systems, components, or processes meeting specified needs for broadly-defined engineering problems appropriate to Mechatronics 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 Mechatronics Engineering Technology degree must successfully complete the following minimum requirements:

1. A minimum of 146 credits, as follows:
   a. A minimum requirement of 92 credits in program major as follows:
      i. a minimum of 80 core courses including Work Placement for 16 weeks
      ii. a minimum of 12 credits in electives of the program major
   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
Mechatronics Engineering Core Courses		
Required Credits: 80		
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 3203	Applied Mechanical Vibrations	3
MCE 3503	Mechanical Design	3
MCE 4603	Control Systems	3
MTE 2403	Thermofluid Systems	3
MTE 2602	Mechatronics Measurements and Troubleshooting	2
MTE 2903	Sophomore Design Project	3
MTE 3503	Electronics Product Design	3
MTE 3603	Electronics Systems and Circuits	3
MTE 3611	Electronics Systems and Circuits Lab	1
MTE 3623	Microcontroller Systems	3
MTE 3633	Sensors and Actuators	3
MTE 4603	Robotics Technology	3
MTE 4613	Industrial Control Systems	3
MTE 4902	Capstone Design Project I	2
MTE 4912	Capstone Design Project II	2
Mechatronics Engineering Elective Courses		
Required Credits: 12		
EGN 4333	Renewable Energy Systems	3
MCE 3343	Industrial Plant Maintenance	3
MCE 3613	Fluid Power	3
MCE 4303	Computer Integrated Manufacturing	3
MTE 4503	Design of Mechatronic Systems	3
MTE 4623	Industrial Automation	3
MTE 4633	Process Control	3
MTE 4643	Digital Control Systems	3
MTE 4653	Real Time Embedded Systems	3
MTE 4863	Special Topics in Mechatronics Engineering	3
MTE 4893	Directed Study	3
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		
AES 1003		
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		

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

Ideal Study Plan
Recommended Sequence of Study

Year 1

Semester 1		**Credit Hours**
EGN 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
MTE 2403	Thermofluid Systems	3
MTE 2602	Mechatronics Measurements and Troubleshooting	2
MTE 2903	Sophomore Design Project	3
	Credit Hours	17
Summer		
EGN 2806	Work Placement I	6
	Credit Hours	6

Year 3

Semester 1		
EGN 2712	Applied Programing for Engineers	2
MCE 2223	Applied Dynamics	3

MCE 3503	Mechanical Design	3
MTE 3603	Electronics Systems and Circuits	3
MTE 3611	Electronics Systems and Circuits Lab	1
MTH 2503	Introduction to Differential Equations	3
	Credit Hours	15
Semester 2		
EGN 3012	Project Management	2
MCE 3203	Applied Mechanical Vibrations	3
MTE 3503	Electronics Product Design	3
MTE 3623	Microcontroller Systems	3
MTE 3633	Sensors and Actuators	3
MTH 3013	Calculus III	3
	Credit Hours	17
Summer		
EGN 3806	Work Placement II	6
	Credit Hours	6
Year 4		
Semester 1		
EGN 3212	Economics for Engineering	2
BUS 2403	Innovation and Entrepreneurship	3
MCE 4603	Control Systems	3
MTE 4603	Robotics Technology	3
MTE 4902	Capstone Design Project I	2
1 Elective Course		3
	Credit Hours	16
Semester 2		
AES 3003	Professional Arabic	3
MTE 4613	Industrial Control Systems	3
MTE 4912	Capstone Design Project II	2
3 Elective Courses		9
	Credit Hours	17
	Total Credit Hours	146

Faculty and Academic Staff

Dubai Men's

Abdul Mannan Bhatti, Masters Industrial Engineering, University of New South Wales, Australia

Abraham Mansouri, PhD Mechanical Engineering (Thermofluids), University of Alberta, Canada

Amar Khoukhi, PhD Mechanical Engineering, University de Montreal, Canada

Fouad Mattar, Masters Control Systems and Information Technology, University of Manchester, UK

Govindaraju Kalimuthu, PhD Engineering Mechanics, University of Malaya, Malaysia

Mansoor Janjua, PhD Mechanical Engineering, New Jersey Institute of Technology, USA

Mohammad-Amin Al Jarrah, PhD Aeronautics and Astronautics, Stanford University, USA

Mohammad Almajali, PhD Engineering, University of Dayton, USA

Mohammad Molhim, PhD Mechanical Engineering, Concordia University, Canada

Nasir Akhtar, Masters Gun Systems Design, Cranfield University, UK

Najeeb Khan, PhD Mechanical Engineering, Kakatiya University, India

Pradeep Hegde, PhD Mechanical Engineering, University Sains Malaysia, Malaysia

Waseem Khan, PhD Mechanical Engineering, Wichita State University, USA

Ras Al Khaimah Men's

Josefa Wivou, Masters Manufacturing, University of New South Wales, Australia

Lanka Udawatta, PhD Engineering Technology, Saga University, Japan

Mesfin Gizaw Zewge, PhD STEP Compliant Approach for Turn-Mill Operations, Universiti Teknologi Petronas, Malaysia

Mohammad Al Wedian, Masters Industrial Automation Engineering, Yarmouk University, Jordan

Mohammed Khalik, Masters Mechanical Engineering, University of Technology, Iraq

Nitin Afzulpurkar, PhD Mechanical Engineering, University of Canterbury, New Zealand

Sabin Kumar Mishra, PhD Mechanical Engineering, Indian Institute of Technology, Roorkee, India

Silvia Miu, PhD Mechanical Engineering, Politehnica University of Bucharest, Romania

Ras Al Khaimah Women's

Sanjeeva Witharana, PhD Process, Environmental and Materials Engineering, University of Leeds, UK