MECHATRONICS ENGINEERING TECHNOLOGY: BACHELOR

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 are eligible for a one year Work Experiential Learning experience during their study.

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

Bachelor of Mechatronics Engineering Technology

Students must successfully complete a minimum of 137 credits, including:

Code	Title	Credit Hours
Program Core Courses		86
Program Elective Courses		6
Mathematics and Science Courses		12
General Studies course		33
Total Credit Hours		**137**

Code	Title	Credit Hours
Mechatronics Engineering Core Courses		
Required Credits: 86		
EGN 1001	Engineering Workshop	1
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 3812	Work Placement	12
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 3343	Industrial Plant Maintenance	3
MCE 3503	Mechanical Design	3
MCE 3613	Fluid Power	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 3603	Electronics Systems and Circuits	3
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: 6		
EGN 4333	Renewable Energy Systems	3
EGN 4873	Data Analytics	3
EGN 4883	Introduction to Artificial intelligence	3
MCE 3203	Applied Mechanical Vibrations	3
MCE 4303	Computer Integrated Manufacturing	3
MTE 3503	Electronics Product Design	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
Mathematics and Science Courses		
Required Credits: 12		
CHM 1103	Engineering Chemistry	3
MTH 1203	Calculus I	3
MTH 2103	Calculus II	3
PHY 1203	Physics II	3
General Studies		
Required Credits: 33		
English, Arabic or other Languages		
Required Credits: 12		
LSC 1103, AES 1013, AES 1033 and LSC 2223		
Humanities or Arts		
Required Credits: 3		
AES 1003		
Information Technology and Mathematics		
Required Credits: 6		
ICT 2013 and MTH 1113		
The Natural Sciences		
Required Credits: 3		
PHY 1103		
The Social or Behavioral Sciences		
Required Credits: 9		
LSS 1003, LSS 1123 and BUS 2403		

Description	Data
Total Required Credits	137
Maximum Duration of Study	6 years
Minimum Duration of Study	4 years
Cost Recovery Program	No
Program Code	BMTET
Major Code	MTE

Ideal Study Plan

Recommended Sequence of Study

Year 1		
Semester 1		**Credit Hours**
AES 1013	Arabic Communications	3
EGN 1001	Engineering Workshop	1
EGN 1133	Design Thinking in Technology	3
LSC 1103	Professional Communication and Reporting	3
LSS 1003	Life and Future Skills	3
PHY 1103	Physics I	3
	Credit Hours	**16**
Semester 2		
CHM 1103	Engineering Chemistry	3
ICT 2013	Computational Thinking and Coding	3
MTH 1113	Statistics for Engineering	3
MTH 1203	Calculus I	3
PHY 1203	Physics II	3
	Credit Hours	**15**
Summer		
MCE 2303	Material Selection and Testing	3
MTH 2103	Calculus II	3
	Credit Hours	**6**
Year 2		
Semester 3		
EGN 2712	Applied Programing for Engineers	2
ELE 2153	Electrical Eng Fundamentals	3
MCE 2203	Applied Statics	3
MCE 2311	Solid Modelling	1
MCE 2323	Manufacturing Technology I	3
MTE 2403	Thermofluid Systems	3
	Credit Hours	**15**
Semester 4		
MCE 2223	Applied Dynamics	3
MCE 3343	Industrial Plant Maintenance	3
MCE 3613	Fluid Power	3
MTE 2602	Mechatronics Measurements and Troubleshooting	2
MTE 2903	Sophomore Design Project	3
MTE 3603	Electronics Systems and Circuits	3
	Credit Hours	**17**
Summer		
EGN 2806	Work Placement I	6
	Credit Hours	**6**
Year 3		
Semester 5		
AES 1003	Emirati Studies	3
EGN 3012	Project Management	2
LSS 1123	Basic Research Methods	3
MCE 2213	Mechanics of Materials	3
MTE 3623	Microcontroller Systems	3
	Credit Hours	**14**
Semester 6		
AES 1033	Islamic Culture	3
EGN 3812	Work Placement	12
	Credit Hours	**15**
Summer		
MCE 3503	Mechanical Design	3

MTE 3633	Sensors and Actuators	3
	Credit Hours	**6**
Year 4		
Semester 7		
EGN 3212	Economics for Engineering	2
LSC 2223	Future Skills Capstone	3
MCE 4603	Control Systems	3
MTE 4603	Robotics Technology	3
MTE 4902	Capstone Design Project I	2
	Credit Hours	**13**
Semester 8		
BUS 2403	Innovation and Entrepreneurship	3
MTE 4613	Industrial Control Systems	3
MTE 4912	Capstone Design Project II	2
2 Elective Courses		6
	Credit Hours	**14**
	Total Credit Hours	**137**

Faculty and Academic Staff

Dubai Men's

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

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

Mohanad Alatta, PhD Mechanical Engineering ,Concordia University,montreal Canada

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

Saleh Ahmad , PhD Aerospace Engineering / Avionics and Aerospace System (Robotics), Ryerson University, Canada

Ras Al Khaimah Men's

Laith Sawaqed, PhD Mechanical Engineering, University of Maryland, College Park, USA

Lanka Udawatta, PhD Engineering Technology, Saga University, Japan

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

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

Simon Hissem, PhD Electrical Engineering , University of Québec, Trois-Rivières, Canada