

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 will have the option to graduate with a Diploma in Mechatronics Engineering Technology upon the successful completion of 78 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

Bachelor of Mechatronics Engineering Technology

Students must successfully complete a minimum of 146 credits, including:

Code	Title	Credit Hours
Program Core Courses		80
Program Elective Courses		12
Mathematics and Science Courses		21
General Studies course		33
Total Credit Hours		146

Code	Title	Credit Hours
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Mechatronics Engineering Core Courses

Required Credits: 80		
EGN 1133	Design Thinking in Technology	3
EGN 2712	Applied Programming 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

LSC 1103, AES 1013, AES 1033 and LSC 2193

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	146
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
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

AES 1013	Arabic Communications I	3
AES 1033	Islamic Culture	3
CHM 1103	Engineering Chemistry	3
MTH 1113	Statistics for Engineering	3
MTH 1203	Calculus I	3
PHY 1203	Physics II	3
	Credit Hours	18

Summer

MCE 2303	Material Selection and Testing	3
MTH 2103	Calculus II	3
	Credit Hours	6

Year 2

Semester 3

ELE 2153	Electrical Eng Fundamentals	3
ICT 2013	Computational Thinking and Coding	3
MCE 2203	Applied Statics	3
MCE 2311	Solid Modelling	1
MCE 2323	Manufacturing Technology I	3
MTE 2403	Thermofluid Systems	3
	Credit Hours	16

Semester 4

AES 1003	Emirati Studies	3
MTE 2602	Mechatronics Measurements and Troubleshooting	2
MTE 2903	Sophomore Design Project	3
MCE 3613	Fluid Power	3
MTE 3603	Electronics Systems and Circuits	3
MCE 3343	Industrial Plant Maintenance	3
	Credit Hours	17

Summer

EGN 2806	Work Placement I	6
	Credit Hours	6

Year 3

Semester 5

EGN 2712	Applied Programming for Engineers	2
EGN 3012	Project Management	2
LSC 2193	Applied Skills Capstone	3
MCE 2213	Mechanics of Materials	3
MCE 2223	Applied Dynamics	3

MTH 2503	Introduction to Differential Equations	3
	Credit Hours	16
Semester 6		
MCE 3203	Applied Mechanical Vibrations	3
MCE 3503	Mechanical Design	3
MTE 3503	Electronics Product Design	3
MTE 3611	Electronics Systems and Circuits Lab	1
MTE 3623	Microcontroller Systems	3
MTE 3633	Sensors and Actuators	3
	Credit Hours	16
Summer		
EGN 3806	Work Placement II	6
	Credit Hours	6
Year 4		
Semester 7		
EGN 3212	Economics for Engineering	2
LSS 1123	Basic Research Methods	3
MCE 4603	Control Systems	3
MTE 4603	Robotics Technology	3
MTE 4902	Capstone Design Project I	2
MTH 3013	Calculus III	3
	Credit Hours	16
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	146

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

Lanka Udawatta, PhD Engineering Technology, Saga University, Japan

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

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