ELECTRICAL ENGINEERING TECHNOLOGY: BACHELOR

Overview

Program Mission

The Electrical Engineering Technology program produces highly qualified Electrical Engineers and technicians with state of the art knowledge, technical and leadership skills. The program prepares its graduates to embrace innovation and discovery, strive for lifelong learning, and constantly seek professional development to best serve the Electrical Engineering profession and society.

Program Description

The Bachelor of Electrical Engineering Technology program provides an excellent broad education to cater for the global UAE industry. The program graduates are trained to support power generation, transmission, distribution, and control of electric energy systems and related equipment. HCT Electrical engineers are trained to use state of the art software and hardware to rapidly prototype and test potential product design. They gain experience in circuits, semiconductor devices, digital systems, programming, micro-controllers, power systems, industrial instrumentation, and system control. The Bachelor of Electrical 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.

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

Program Goals

The Program Educational Objectives of the Bachelor of Electrical Engineering Technology program are to:

1. Provide electrical engineering technology professionals with the technical knowledge and skills required by the industry to develop, design, and maintain electrical systems to the 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 global, ethical and social implications of the industry and electrical engineering technology 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 Electrical Engineering Technology should demonstrate an ability to:

1. Apply knowledge, techniques, skills and modern tools of mathematics, science, engineering, and technology to solve broadly-defined engineering problems appropriate to the Electrical Engineering Technology.
2. Design systems, components, or processes meeting specified needs for broadly-defined engineering problems appropriate to the Electrical Engineering Technology.
3. 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. Conduct standard tests, measurements, and experiments and to analyze and interpret the results to improve processes;
5. Function effectively as a member as well as a leader on technical teams.
6. 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 Electrical Engineering Technology

Students must successfully complete a minimum of 132 credits, including:

Code	Title	Credit Hours
Program Core Courses		81
Program Elective Courses		6
Mathematics and Science Courses		12
General Studies course		33
Total Credit Hours		**132**

Code	Title	Credit Hours
Electrical Engineering Core Courses		
Required Credits: 81		
EGN 1001	Engineering Workshop	1
EGN 1133	Design Thinking in Technology	3
EGN 2712	Applied Programing for Engineers	2
EGN 2803	Work Placement I	3
EGN 3012	Project Management	2
EGN 3212	Economics for Engineering	2
EGN 3803	Work Placement II	3
EGN 4873	Data Analytics	3
EGN 4883	Introduction to Artificial intelligence	3
ELE 2114	Electrical Circuits	4
ELE 2181	Circuit Lab	1
ELE 2213	Digital Circuits	3
ELE 2303	Power Generation and Transmission	3
ELE 2314	Principles of Machines and Power	4
ELE 2403	Electronics I	3
ELE 2573	Electric Circuit Design and PCB Manufacturing	3

ELE 2603	Instrumentation and Control	3
ELE 2613	Industrial Automation	3
ELE 2903	Sophomore Design Project	3
ELE 3203	Communication Systems	3
ELE 3323	Electrical Machines	3
ELE 3413	Electronics II	3
ELE 3613	Signals and Systems	3
ELE 3614	Microcontroller Systems	4
ELE 4343	Advanced Power Systems	3
ELE 4623	Control Systems	3
ELE 4653	Digital Signal Processing	3
ELE 4902	Capstone Design Project I	2
ELE 4912	Capstone Design Project II	2
Mathematics and Science Required Courses		
Required Credits: 12		
MTH 1203	Calculus I	3
MTH 2103	Calculus II	3
MTH 2503	Introduction to Differential Equations	3
PHY 1203	Physics of Electricity and Magnetism	3
Electrical Engineering Elective Courses		
Required Credits: 6		
EGN 4333	Renewable Energy Systems	3
EGN 4863	Virtual, Augmented and Mixed Reality	3
ELE 4213	Digital Communication	3
ELE 4223	Data Communication and Network	3
ELE 4233	Mobile Communications	3
ELE 4333	Electrical Power Distribution	3
ELE 4353	System Protection and Coordination	3
ELE 4363	Power Electronics	3
ELE 4373	Electric Drives	3
ELE 4383	Electrical Maintenance Operation	3
ELE 4423	Embedded System Design	3
ELE 4613	Programmable Devices	3
ELE 4633	Digital Control Systems	3
ELE 4643	Intelligent Systems	3
ELE 4663	Robotics Technology	3
ELE 4713	Digital image processing	3
ELE 4863	Special Topics in Electrical Engineering	3
ELE 4893	Directed Study	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 Art		
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	132
Maximum Duration of Study	6 years
Minimum Duration of Study	4 years
Cost Recovery Program	No
Program Code	BELET
Major Code	ELE

Ideal Study Plan
Recommended Sequence of Study

Year 1		
Semester 1		**Credit Hours**
AES 1003	Emirati Studies	3
EGN 1001	Engineering Workshop	1
LSC 1103	Professional Communication and Reporting	3
MTH 1113	Statistics for Engineering	3
MTH 1203	Calculus I	3
PHY 1103	Physics of Mechanics and Motion	3
	Credit Hours	**16**
Semester 2		
AES 1013	Arabic Communications	3
EGN 1133	Design Thinking in Technology	3
ICT 2013	Computational Thinking and Coding	3
MTH 2103	Calculus II	3
PHY 1203	Physics of Electricity and Magnetism	3
	Credit Hours	**15**
Year 2		
Semester 3		
AES 1033	Islamic Culture	3
EGN 2712	Applied Programing for Engineers	2
ELE 2114	Electrical Circuits	4
ELE 2181	Circuit Lab	1
ELE 2213	Digital Circuits	3
LSS 1003	Life and Future Skills	3
	Credit Hours	**16**
Semester 4		
ELE 2314	Principles of Machines and Power	4
ELE 2403	Electronics I	3
ELE 2603	Instrumentation and Control	3
ELE 2903	Sophomore Design Project	3
MTH 2503	Introduction to Differential Equations	3
	Credit Hours	**16**
Summer		
EGN 2803	Work Placement I	3
	Credit Hours	**3**
Year 3		
Semester 5		
EGN 3012	Project Management	2
ELE 2303	Power Generation and Transmission	3
ELE 2573	Electric Circuit Design and PCB Manufacturing	3
ELE 2613	Industrial Automation	3
ELE 3413	Electronics II	3

LSS 1123	Basic Research Methods	3
	Credit Hours	**17**
Semester 6		
BUS 2403	Innovation and Entrepreneurship	3
EGN 3212	Economics for Engineering	2
EGN 4873	Data Analytics	3
ELE 3323	Electrical Machines	3
ELE 3613	Signals and Systems	3
LSC 2193	Applied Skills Capstone	3
	Credit Hours	**17**
Summer		
EGN 3803	Work Placement II	3
	Credit Hours	**3**
Year 4		
Semester 7		
EGN 4883	Introduction to Artificial intelligence	3
ELE 3203	Communication Systems	3
ELE 3614	Microcontroller Systems	4
ELE 4623	Control Systems	3
ELE 4902	Capstone Design Project I	2
	Credit Hours	**15**
Semester 8		
ELE 4343	Advanced Power Systems	3
ELE 4653	Digital Signal Processing	3
ELE 4912	Capstone Design Project II	2
2 Elective Courses		6
	Credit Hours	**14**
	Total Credit Hours	**132**

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