Bachelor of Engineering Technology (Electrical)

Faculty of EDICT (Engineering,Design and ICT)

Programme Title (Arabic)	( )				
Acronym / Abbreviation *	BEngTech Electrical				
Nature	Major				
Programme Code	ENT8040	**Programme Duration**	4 Year/Cycle	**Programme Level**	Level 8
Programme Credits	480	**Award Category**	Bachelors		
Effective From	2018/2019 Sem 1				
Owner	School of Engineering				

Professional Body

Professional Body	*Recognition Status*	*Effective From*	*Interim Date*	*Professional Bodies*	*Contact Person*	*Evidence*
Employability Skills	Not Active	04 January 2021				

Target Groups *

High School Graduates

Qualification Completion Requirements Criteria	Awarded where candidates have met all of the requirements below: • Successful completion of, or exemption from, all courses listed in Schedule A below; • Accumulation of at least 30 credits from courses in Schedule B; • Accumulation of at least 15 credits from courses in Schedule C; Achieve the Bahrain Polytechnic General Qualification Requirements as found in Policy A/AB/004, Naming and Awarding Qualifications; • Completion of courses to accumulate a total of 480 credits from any Bahrain Polytechnic Qualification; • Completion of 80 days of work experience
	The Bachelor of Engineering Technology Programme offered at Bahrain Polytechnic is composed of three Qualifications; the Mechanical Major, the Electronics Major and the Electrical Major, all placed at NQF level 8. Each of these qualifications, also have their own exit qualification which is an Associate Degree in Engineering Technology at NQF level 7.

Programme Overview *	The BEngTech Qualifications are designed and delivered in such a way, after extensive interaction with the Bahrain Engineering environment and society, in order to provide work-ready engineering technology graduates. The graduates will acquire advanced technical knowledge in their respective fields, specialized practical skills and valuable employability skills that will allow them to provide the drive for the transformation towards a knowledge-based economy in Bahrain. All BEngTech Qualifications are delivered over a 4-year period consisting of 8 semesters. Students are expected to take 60 credits on average per semester and thus at the completion of their studies they should have accumulated a total of 480 credits. In those 480 credits, there exist 45 credits of Elective courses, 15 credits of National Requirement courses, 60 credits of English courses and the remaining 360 credits are taken from Core and Specialized Engineering Courses. Additionally, the students are required to complete a total of 80 work placement days. All Qualifications share a common 1st Year with courses that lay the foundations of Engineering Technology and provide the students with the required knowledge to succeed in their chosen specialization. The uniqueness of the BEngTech qualifications at Bahrain Polytechnic is the strong commitment of the Institution to deliver these qualifications using student-centred learning and more specifically, the Problem-Based Learning (PBL) Methodology. Using this learning methodology allows us to provide the required theoretical knowledge, practical skills and employability skills to our graduates and thus achieve our mission of producing enterprising and work-ready graduates for the Bahrain Society and Economy. The PBL methodology is implemented through the design of appropriate assignments that motivate the students to provide a solution to an Engineering design and/or analysis problem. Students are required to complete lab experiments, software practical assignments, design projects, controlled assignments such as theory tests and to provide rational justification for their work through the preparation of technical reports, presentations and posters. The theoretical knowledge given to the students is provided through a balanced combination of lectures, tutorials, experimental work, project work and one-to-one supervision with Faculty members.
Entry and Selection *	Entry Criteria General entry requirements such as secondary school achievements, English and Mathematics are described in the Student Admission Policy A/AB/010. Specific entry requirements for this Programme, beyond those described in the Student Admission Policy are as follows: Academic Successful completion of • AP4203 English 2 • AP4102 Mathematics 2 (Technical) or Passing English and Mathematics selection tests at the required level or equivalent.

Selection and Criteria and Process *	Where there are more applicants who meet the programme entry criteria than can be accepted, the following shall be used: **Selection Criteria** • Results from AP4203 English 2 and AP4102 Mathematics 2 (Technical) in the Foundation Programme at Bahrain Polytechnic. • Results from programme entry tests. • Work experience and prior educational achievement. **Selection Process** • Applicants may be required to attend an interview.
Major Selection Criteria *	
Accreditation / External Approval Requirements *	
Attendance Requirements *	Attendance requirements are described in the policy Student Attendance A/AB/010.
Qualification Overview *	The Electrical qualification is a technically-strong qualification that reflects the needs of the rapid and modern developments in Electrical Machines, Programmable Logic Controllers, Power Systems, Instrumentation and Control and Electrical Design for the Building Services sector that are happening nationally, regionally and internationally. It has a strong industrial focus on the Instrumentation and Control for the Petrochemical Process Industries and the Electrical Power Industries which are widely present in Bahrain. Students gain advanced theoretical knowledge and specialist practical skills in the areas of Electrical Machines, Instrumentation and Control, Programmable Logic Controllers, Power Systems (Generation, Transmission, Distribution), Electrical Installations Design for the Building Services sector and Engineering Programming using C++ and the important Engineering software packages MatLab and LabView.
	The aim of this qualification is to provide students with a comprehensive set of skills for employment as engineering technologists (an engineering technologist is defined by the Sydney Accord as being competent at analysing, solving, managing and taking responsibility for broadly-defined engineering problems and activities).

Qualification Aim *	The qualification will provide students with: • theoretical and practical skills to solve engineering problems and design engineering systems in the broad area of Instrumentation and Control, Programmable Logic Controllers, Power Systems and Electrical Machines and Electrical Design of installation and illumination systems for the Building Services Sector. • skills necessary for effective communication, analysis, team work, documentation and evaluation of systems through the inclusion of courses in English language, mathematics, project management, ethics and social responsibility.
Graduate Pathways and Destination *	This programme prepares students for the following careers and/or employment opportunities: • instrumentation and control technologist for the petrochemical industry • programmable logic controllers and industrial automation • Electrical Machines operation and maintenance • building automation systems • design of electrical installations and illumination systems for the building services sector • computer-aided design (CAD) for the Electrical sector Graduates from the Bachelor of Engineering Technology programme who wish to continue their studies may apply to any university for admission into their programme. For an engineering technology degree, it is common practice for a university to first enrol the student into a post-graduate diploma programme and based on progress made, transfer them to a full Masters programme.

16. Pathways Diagram

Master of Engineering*
Bachelor of Engineering*

	BEngTech			Associate Degree in Engineering Technology
			Exit	
	Certificate in Academic Preparation	Direct Entry	Associate Degree in Engineering*	

*Not currently offered by Bahrain Polytechnic

Other Information *

16. **Work Experience Requirements:**

- Students are required to complete 80 days of work experience in approved engineering companies. This work experience will normally be carried out during the academic year in 4 periods of 4 weeks each.
- Work experience will normally be arranged by the Faculty, but students can also apply to obtain work placement on their own.
- Records of attendance will be maintained at the workplace and forwarded to the Faculty following each work experience period.
- Work placements must be approved by the Programme Manager and involve the student in activity that will contribute to the student's knowledge of the engineering technology industry.
- To have the work experience credited, each student must also complete a work-placement logbook describing the work performed and the practices observed during each period of work experience along with an evaluation of the employability skills obtained by the work supervisor.

Exemption from work experience requirements:

- Students may be given partial or total exemption from the work experience requirements if they have completed appropriate alternative work experience.
- Applications for exemption must be made in writing to the Programme Manager.
- Supporting evidence and information (e.g. certificates awarded and workbooks or other evidence of work performed) must be submitted with the application.

17. Electrical Major Selection Requirements

Where the number of applicants for the Electrical Major exceeds the available places, the following criteria for selection apply:

- First priority to students who have completed all courses in the common first year of the degree.
- Second priority to those students with highest combined GPAs from EN6000 Electrical Fundamentals and EN6010 Engineering Computing Fundamentals.

Programme Learning Outcomes

On successful completion of this programme the learner will be able to :

Description
Apply knowledge of mathematics, science, engineering fundamentals, and an engineering specialisation to deal with defined and applied engineering procedures, processes, systems or methodologies.
Identify, formulate, research literature and solve broadly-defined engineering problems reaching substantiated conclusions using analytical tools appropriate to their discipline or area of specialisation.
Understand and commit to professional ethics, responsibilities and norms of engineering technology practice.
Understand the impact of engineering solutions in a societal context and demonstrate knowledge of the need for sustainable development.
Demonstrate understanding of the societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to engineering technology practice
Design solutions for broadly-defined engineering technology problems and contribute to the design of systems, components or processes to meet specified needs with appropriate consideration for public health and safety, cultural, societal, and environmental considerations.
Conduct investigations of broadly-defined problems; locate, search and select relevant data from codes, data bases and literature, design and conduct experiments to provide valid conclusions.
Select and apply appropriate techniques, resources, and modern engineering tools, including prediction and modeling tools, to broadly-defined engineering activities, with an understanding of their limitations.
Practice as a professional using 21st century skills
Demonstrate an awareness and understanding of management and business practices, such as risk and change management, and understand their limitations.
Provide solutions to electrical engineering problems factoring in sustainability, cost factors and engineering ethics principles.
Operate electrical testing and measurement instruments and present the results using industry standard documentation format.
Diagnose the performance of electrical systems in the presence of faults.

Semester Schedules

Year 1 / Semester 1

Core

Course Code	Title
EN6000	**Electrical Fundamentals**
EN6990	**Engineering Practice**
EN6990	**Engineering Practice**
EN6907	**Mathematics for Engineers 1**
EN6907	**Mathematics for Engineers 1**
EL5005	**Reading and Writing English for EDICT**

Year 1 / Semester 2

Core

Course Code	Title

EN6010	Engineering Computing Fundamentals
EN6010	Engineering Computing Fundamentals
EN6914	Mathematics for Engineers 2
EN6914	Mathematics for Engineers 2
EN6903	Mechanical Fundamentals
EL5006	Speaking and Listening English for EDICT
EL5006	Speaking and Listening English for EDICT

Year 2 / Semester 1

Core	
Course Code	**Title**
EN6080	Alternating Current (AC) Circuit theory
EN6080	Alternating Current (AC) Circuit theory
EN7061	Analogue Electronic Circuits
EN6001	Engineering Computing
EN6001	Engineering Computing
EL6001	English for EDICT 3
EL6001	English for EDICT 3

Year 2 / Semester 2

Core	
Course Code	**Title**
EN6020	Digital Devices and Systems
EL6002	English for EDICT 4
EL6002	English for EDICT 4
EN7230	Instrumentation and Automatic Control
NR	National Requirements

Optional	
Course Code	**Title**
NR-Arabic	**National Requirements- Arabic**

Year 3 / Semester 1

Core	
Course Code	**Title**
ELE1	**Electives 1**
EN7032	**Electrical Machines**
EN8007	**Electronic Circuit Design**
EN7008	**Power Electronics**

Year 3 / Semester 2

Core	
Course Code	**Title**
EN8151	**Low Voltage Electrical Systems**
EN7035	**PLC Programming & Applications**

Elective	
Course Code	**Title**
ELE1	**Electives 1**

Year 4 / Semester 1

Core	
Course Code	**Title**
EN8231	**Control System Design**
EN8033	**Electrical Drives**
EN8922	**Engineering Project Management and Quality**
EN8061	**Power Systems**
EN8913	**Project Proposal**

Year 4 / Semester 2

Optional

Course Code	Title
EN8008	**Advanced Power Electronics**
EN8914	**Co-operative Learning Project**
EN8152	**Electrical Lighting Design**
EN8911	**Engineering Research Project**
EN8153	**Renewable Energy Technology and Sustainability**

Elective	
Course Code	**Title**
ELE1	**Electives 1**