

BEng (Hons) Electrical and Electronic Engineering - E430

1. Objectives

Electrical & Electronic Engineering encompasses a large variety of topics ranging from electrical machines, power systems, electronics, control and microprocessors, to computer systems and communications. The main objective of the course is to provide a strong foundation on the various major disciplines of electrical engineering and electronics. The course is designed to train students for a career in engineering whilst at the same time give them the opportunity to acquire in-depth knowledge so as to enable them to pursue postgraduate studies in the field of electrical and electronic engineering.

2. General Entry Requirements

As per General Entry Requirements for Admission to the University for Undergraduate Degrees.

3. Programme Requirements

2 GCE 'A' Level Passes in Mathematics and one of the following subjects: Physics, Physical Science, Engineering Science, Physics with Chemistry.

4. (i) Minimum Requirements For Degree Award

For the award of the BEng (Hons) Degree in Electrical and Electronic Engineering, the student must obtain at least 130 credits including 122 credits from all the core modules prescribed by the department and at least 8 credits from the elective modules.

MODULES	CREDITS
Humanities & Management	3
Basic Sciences & Mathematics	12
Engineering (Core)	95
Engineering (Electives)	8
Degree Project	12
TOTAL	130

- For the degree award all core modules prescribed by the department must be completed.
- Practical Training and Industrial training must be completed satisfactorily for the award of the degree.

(ii) Minimum Requirements For Diploma Award

A student may opt for a Diploma in Electrical and Electronic Engineering provided he/she satisfies the following minimum requirements. The Diploma project would normally be of 8 weeks duration for an input of at least 90 hours.

MODULES	CREDITS
Humanities & Management	3
Basic Sciences & Mathematics	6
Engineering	45
Diploma Project (ELEC 2000(3))	6
TOTAL	60

- 5. Programme Duration:** Normal 4 years
Maximum 7 years

- 6. Credits per Year:** Minimum 18, Maximum 48 subject to Regulation 5.

7. Assessment

Continuous and Written Assessment of Modules

Assessment will be based on a written examination of 2 to 3-hour duration (normally a paper of 2 hour duration for modules carrying less or equal to 3.5 credits and 3 hour paper for modules carrying four-six credits) and on continuous assessment done during the semester or year.

Written examinations for all modules, whether taught in semester 1 or in semester 2 or both, will be carried out at the end of the academic year (unless otherwise stated).

The continuous assessment will count for **20% to 30%** of the overall percentage mark of the module(s), except for a Programme where the structure makes for other specific provision(s). Continuous assessment may be based on laboratory work, seminars and/or assignments and **should include at least two (2) assignments/ tests per semester/year per module.**

There will be at least one compulsory class test for all modules taught in semester 1 at the end of semester 1 of the given academic year unless stated otherwise in the Programme Structure.

An overall total of **40%** for combined assessment and written examination components would be required to pass the module, without minimum thresholds within the individual continuous assessment and written examination.

Special examinations (e.g. class tests) will be arranged at the end of semester 1 or semester 2 for exchange students who have registered only for one semester. In case of yearly modules, credits will be assigned on a pro-rata basis.

8. Repeat and Termination of Registration

If the CPA of a student is <40% for an academic year, s/he will have to repeat the entire academic year, and retake modules as and when offered. However, s/he will not be required, if s/he wishes, to retake modules for which Grade C or above has been obtained.

Students will be allowed to repeat only once over the entire duration of the Programme of Studies.

Registration of a student will be terminated if

- (i) the CPA < 40% at the end of an academic year and the student has already repeated one year of study; or
- (ii) the maximum duration allowed for completion of the Programme of Studies has been exceeded.
- (iii) If s/he is a year 1 student who has scored a CPA of <25% at the end of an academic year (for yearly programmes). However the Board of Examiners might allow a repeat if there are evidence of compelling circumstances or valid medical grounds.

9. List of Modules - BEng (Hons) Electrical and Electronic Engineering

CORE MODULES

		Hrs/Wk	
		L+P	Credits
BASIC SCIENCES & MATHEMATICS			
ELEC 1006Y(1)	Mathematics for Electrical Engineers 1	3+0	6
ELEC 2007Y(3)	Mathematics for Electrical Engineers 2	3+0	6
ENGINEERING			
ELEC 1002Y(1)	Electronics 1	3+1	7
ELEC 1003Y(1)	Electrical Engineering	2+1	5
CSE 1018Y(1)	Computer Programming	1.5+2	5
ELEC 1005Y(1)	Measurement Systems	2+1	5
ELEC 1200	Practical Training/Software Development	8 weeks	0
ELEC 2002Y(3)	Electronics 2	2+1	5
ELEC 2003Y(3)	Electromagnetics & Analog Communications	3+1	7
ELEC 2004Y(3)	Circuits, Signals and Systems	3+0	6
ELEC 2005Y(3)	Power Systems 1	2+0	4
ELEC 2006Y(3)	Electrical Machines	2+1	5
ELEC 3001Y(5)	Microprocessors	2+2	6
ELEC 3002Y(5)	Control Systems 1	2+0	4
ELEC 3003Y(5)	Power Electronics	2+1	5
ELEC 3004Y(5)	Digital Communications	2+1	5
ELEC 3005Y(5)	Electronic Systems Design	2+1	5
ELEC 3006Y(5)	Digital Signal Processing	2+2	6
ELEC 3201(5)	Engineering Design	2+2	3
ELEC 3200	Industrial Training	10 weeks	0
ELEC 4000(5)	Degree Project	-	12
ELEC 4001Y(5)	Power Systems 2	2+0	4
ELEC 4002Y(5)	Power Electronic Drives	2+0	4
ELEC 4003Y(5)	Control Systems 2	2+0	4
HUMANITIES & MANAGEMENT			
COMS 1010(1)	Communication Skills	D.E.	3

ELECTIVES

ENGINEERING

ELEC 4021Y(5)	Data Communications and Networking	2+0	4
ELEC 4022Y(5)	Mobile Communications	2+0	4
ELEC 4011Y(5)	Instrumentation Systems	2+0	4
ELEC 4013Y(5)	Antenna Theory	2+0	4
ELEC 4014Y(5)	Optoelectronics	2+0	4
ELEC 4015Y(5)	RF and Microwave Engineering	2+0	4
ELEC 4016Y(5)	Image Processing	2+0	4
ELEC 4035Y(5)	Nanoelectronics	2+0	4

NOTE 1: Engineering Electives

Students are required to take a minimum of 8 credits from Year 4 elective modules in the engineering elective category.

NOTE 2:

Students are allowed to choose any elective module contained in GEMs list available at the Faculty's Office. However, the offer of the electives would be subject to availability of resources and existence of a critical mass of demand for the modules. Students are requested to contact their Programme Coordinator before entering any module under the GEMs in their module registration form.

NOTE 3:

For a student to clear the modules ELEC 1200 and ELEC 3200, s/he must achieve Grade S (Satisfactory) in each of these modules.

NOTE 4: Core module for Diploma

ELEC 2000(3): Diploma Project (6 credits)

10. Programme Plan - BEng (Hons) Electrical and Electronic Engineering

LEVEL 1			
Code	Semester 1 & 2 Module	Hrs/Wk L+P	Credits
CORE			
ELEC 1002Y(1)	Electronics 1	3+1	7
ELEC 1003Y(1)	Electrical Engineering	2+1	5
ELEC 1005Y(1)	Measurement Systems	2+1	5
ELEC 1006Y(1)	Mathematics for Electrical Engineers 1	3+0	6
CSE 1018Y(1)	Computer Programming	1.5+2	5
ELEC 1200	Practical Training/Software Development	8 weeks	0
COMS 1010(1)	Communication Skills	D.E	3
LEVEL 2			
Code	Semester 1 & 2 Module	Hrs/Wk L+P	Credits
CORE			
ELEC 2002Y(3)	Electronics 2	2+1	5
ELEC 2003Y(3)	Electromagnetics & Analog Communications	3+1	7
ELEC 2004Y(3)	Circuits, Signals and Systems	3+0	6
ELEC 2005Y(3)	Power Systems 1	2+0	4
ELEC 2006Y(3)	Electrical Machines	2+1	5
ELEC 2007Y(3)	Mathematics for Electrical Engineers 2	3+0	6
LEVEL 3			
Code	Semester 1 & 2 Module	Hrs/Wk L+P	Credits
CORE			
ELEC 3001Y(5)	Microprocessors	2+2	6
ELEC 3002Y(5)	Control Systems 1	2+0	4
ELEC 3003Y(5)	Power Electronics	2+1	5
ELEC 3004Y(5)	Digital Communications	2+1	5
ELEC 3005Y(5)	Electronic Systems Design	2+1	5
ELEC 3006Y(5)	Digital Signal Processing	2+2	6
ELEC 3201(5)	Engineering Design	2+2	3
ELEC 3200	Industrial Training	10 weeks	0
LEVEL 4			
Code	Semester 1 & 2 Module	Hrs/Wk L+P	Credits
CORE			
ELEC 4000(5)	Degree Project	-	12
ELEC 4001Y(5)	Power Systems 2	2+0	4
ELEC 4002Y(5)	Power Electronic Drives	2+0	4
ELEC 4003Y(5)	Control Systems 2	2+0	4
ELECTIVES*			
ELEC 4021Y(5)	Data Communications and Networking	2+0	4
ELEC 4022Y(5)	Mobile Communications	2+0	4
ELEC 4011Y(5)	Instrumentation Systems	2+0	4
ELEC 4013Y(5)	Antenna Theory	2+0	4
ELEC 4014Y(5)	Optoelectronics	2+0	4
ELEC 4015Y(5)	RF and Microwave Engineering	2+0	4
ELEC 4016Y(5)	Image Processing	2+0	4
ELEC 4035Y(5)	Nanoelectronics	2+0	4

NOTE: * Students should choose a minimum of 2 electives

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