

Module Title Introduction To Electrical Engineering Keywords Electric circuits, Alternating current, Direct current, Electromagnetism	Reference	EN1560
	SCQF	SCQF 7
	Level	
	SCQF Points	15
	ECTS Points	7.5
	Created	January 2004
	Approved	March 2004
	Amended	June 2014
	Version No.	3

This Version is No Longer Current

The latest version of this module is available [here](#)

Prerequisites for Module

None in addition to course entry requirements.

Corequisite Modules

None.

Precluded Modules

None.

Reasons for use of alternating current for light and heavy current applications, choice of sinusoidal waveform. Amplitude, frequency and phase concepts. Inductive capacitive impedance concepts, simple time domain analysis of ac circuits, phasor representation of ac quantities, rms representation of voltage and current.

Aims of Module

To provide the student with the ability to understand electrostatic and electromagnetic concepts and the principles of electric circuit analysis.

Indicative Student Workload

	Full Time	Part Time
<i>Contact Hours</i>		
Assessment	2	2
Lectures	24	24
Tutorials	24	24

Directed Study

48	48
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Learning Outcomes for Module

Private Study

On completion of this module, students are expected to be able to:

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- 1.Explain basic electrostatic concepts, describe the physical structure of a capacitor and calculate the capacitance of a simple capacitor.
- 2.Explain basic electromagnetism concepts, calculate the inductance of a simple magnetic circuit.
- 3.State the basic dc circuit theorems and use the theorems to analyse a simple dc circuit.
- 4.Solve simple ac circuits problems having R, L and C elements.

Indicative Module Content

Basic concepts of electrostatics, electric charge, electric flux, electric field strength, potential and potential difference; Definition of capacitance, parallel plate capacitor.

Basic concepts of electromagnetism, magnetic field, magnetic field density, magnetic field strength, Ampere's law, principles of magnetic circuits and inductance of a simple magnetic circuit. Faraday's law of electromagnetic induction.

Electric circuits, circuit concepts, voltage and current sources.

Mode of Delivery

This is a lecture based course supplemented with tutorial sessions and directed study.

Assessment Plan

	Learning Outcomes Assessed
Component 1	1,2,3,4
Component 2	1,2,3,4

Component 2: formal closed-book examination - weighted 70%

Component 1: assessed tutorial work - weighted 30%

Indicative Bibliography

- 1.BIRD, J.O., 2017. Electrical and Electronic Principles and Technology. 6th ed. Oxford: Routledge.
- 2.STOREY, N., 2017. Electronics - A Systems Approach. 6th ed. Harlow: Pearson.
- 3.MAXFIELD C. et al., 2008. Electrical Engineering: Know it all. Oxford: Newnes.
- 4.MORRIS, N., 1994. Electrical and Electronic Engineering Principles. Harlow: Pearson/Prentice Hall.

voltage and current sources, resistance, current flow and potential distribution. Ohm's and Kirchhoff's laws, simple circuit analysis using Kirchhoff's laws.

Additional Notes

An Indicative Bibliography will normally reference the latest edition of a text. In some cases, older editions are equally useful for students and therefore, those are the editions that may be stocked.