MODULE DESCRIPTOR

Module Title

Electrical Systems

Reference	EN2562	Version	9
Created	March 2023	SCQF Level	SCQF 8
Approved	March 2004	SCQF Points	15
Amended	August 2023	ECTS Points	7.5

Aims of Module

To provide the student with the necessary skills to analyse practical ac electric circuits and simple electromagnetic problems.

Learning Outcomes for Module

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

1	Compute the capacitance of conductor systems.
2	Study the magnetic circuit and self-inductance principles of simple conductor arrangements.
3	Calculate AC circuits by applying electric circuit theorems.
4	Use the understanding and performance behaviour of an electrical system in a laboratory setup or using a software package.

Indicative Module Content

Calculation of capacitance and inductance for practical conductor systems. Force between current carrying conductors, analysis of series and parallel magnetic circuits, relationships between magnetic and electric circuits, concept of leakage flux and leakage inductance. Electric circuit theorems, including mesh and nodal analysis methods, applied to DC & AC circuits. Solution of transient problems in RL and RC circuits. Series and parallel resonance, Q factor, bandwidth and gain-bandwidth product. Introduction to an engineering software package (e.g. MATLAB/Simulink, COMSOL Multiphysics, ANSYS)

Module Delivery

Full-time students: This module is delivered by a combination of lectures and tutorials. It will be supported by practical examples and activities including computer based laboratory exercises. Part-time students: This module is delivered by a combination of lectures and tutorials online. It will be supported by drop-in evening sessions and labs on campus. Assessments will primarily be online although exams will be held on campus with the full-time cohorts.

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Indicative Student Workload	Full Time	Part Time
Contact Hours	50	50
Non-Contact Hours	100	100
Placement/Work-Based Learning Experience [Notional] Hours	N/A	N/A
TOTAL	150	150
Actual Placement hours for professional, statutory or regulatory body		

ASSESSMENT PLAN

If a major/minor model is used and box is ticked, % weightings below are indicative only.

Component 1

Type:	Coursework	Weighting:	100%	Outcomes Assessed:	1, 2, 3, 4
Description:	Report or online quiz based on lab activities				

MODULE PERFORMANCE DESCRIPTOR

Explanatory Text

Component 1 comprises 100% of module grade. To pass the module, a D grade is required.

Module Grade	Minimum Requirements to achieve Module Grade:
A	A
B	B
C	C
D	D
E	E
F	F
NS	Non-submission of work by published deadline or non-attendance for examination

Module Requirements

Prerequisites for Module	Introduction to Electrical Engineering (EN1560) or equivalent.
Corequisites for module	None.
Precluded Modules	None.

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.

INDICATIVE BIBLIOGRAPHY

1. BIRD, J.O., 2017. Electrical Circuit Theory and Technology. 6th ed. Oxford: Newnes.
2. EDMINSTER, J.A., 2013. Electromagnetics Crash Course. 4th ed. New York, NY: Schaums/McGraw Hill.
3. MORRIS, N., 1994. Electrical and Electronic Engineering Principles. Harlow: Pearson/Prentice Hall.
4. NAHVI, M., 2013. Electric Circuits. 6th ed. New York, NY: Schaums/McGraw Hill.