

Liverpool John Moores University

Title: PRINCIPLES OF ELECTRICAL AND ELECTRONIC ENGINEERING
Status: Definitive
Code: **4501ICBTME** (127028)
Version Start Date: 01-08-2021
Owning School/Faculty: Engineering
Teaching School/Faculty: ICBT, Colombo

Team	Leader
Alison Cotgrave	Y

Academic Level: FHEQ4
Credit Value: 15
Total Delivered Hours: 71
Total Learning Hours: 150
Private Study: 79

Delivery Options

Course typically offered: Semester 1

Component	Contact Hours
Lecture	45
Practical	9
Tutorial	15

Grading Basis: 40 %

Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Report	AS1	Practical Assignment (1500 words)	30	
Exam	AS2	Exam	70	2

Aims

This module introduces the fundamental concepts and principles of electrical and electronic engineering so that student will be able to relate and integrate mechanical engineering systems with electrical and electronic components and systems.

Learning Outcomes

After completing the module the student should be able to:

- 1 Identify the basic laws of electrical principles and solve simple problems of KCL and KVL.
- 2 Explain the basic principles of electromagnetism, basic principles of DC machines, AC machines, single phase transformers and 3 phase systems and solve simple problems.
- 3 Describe and identify the basic electronic components, electronic principles.
- 4 Simulation of DC and AC circuits in the laboratory with the use of computer software and use of Electrical and Electronics laboratory equipment.

Learning Outcomes of Assessments

The assessment item list is assessed via the learning outcomes listed:

(1500 words)	4		
Exam	1	2	3

Outline Syllabus

Electrical circuits and Conservation laws
Circuit elements and Solving circuits
Network theorems and Circuit Equivalentts - Example Norton Equivalentts
Op-amps and feedback
Electro-magnetism
Transformers and electrical distribution
Principles of domestic wiring and installation
Construction and working principles of dc and three phase motor and generator and its characteristics Applications of DC machines
Measuring Instruments
Semi-conductor materials and development
Introduction to transistors, diodes etc
Analog & Digital signals, AND, OR, NOT, NAND, NOR & XOR gates, Boolean algebra.
Standard representation of Logical functions, K-map representation and simplification of logical functions, X-OR & X-NOR simplification of K-maps.
Application of electronics in mechanical systems and the interdisciplinary nature

Learning Activities

Students will be supported in their learning, to achieve the above learning outcomes, in the following ways:

Electrical and electronic engineering theories, concepts and formulas related to functioning and designing of systems and machines will be acquired through lectures, seminars, tutorials and in class group work

Notes

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