Principles of Electrical and Electronic Engineering

Module Information

2022.01, Approved

Summary Information

Module Code	4501ICBTME
Formal Module Title	Principles of Electrical and Electronic Engineering
Owning School	Engineering
Career	Undergraduate
Credits	15
Academic level	FHEQ Level 4
Grading Schema	40

Teaching Responsibility

LJMU Schools involved in Delivery
LJMU Partner Taught

Partner Teaching Institution

Institution Name
International College of Business and Technology

Learning Methods

Learning Method Type	Hours
Lecture	45
Practical	9
Tutorial	15

Module Offering(s)

Display Name	Location	Start Month	Duration Number Duration Unit
APR-PAR	PAR	April	12 Weeks

| JAN-PAR | PAR | January | 12 Weeks |
| SEP-PAR | PAR | September | 12 Weeks |

Aims and Outcomes

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.

After completing the module the student should be able to:

Learning Outcomes

Code	Number	Description
MLO1	1	Identify the basic laws of electrical principles and solve simple problems of KCL and KVL.
MLO2	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.
MLO3	3	Describe and identify the basic electronic components, electronic principles.
MLO4	4	Simulation of DC and AC circuits in the laboratory with the use of computer software and use of Electrical and Electronics laboratory equipment.

Module Content

Outline Syllabus	Electrical circuits and Conservation lawsCircuit elements and Solving circuitsNetwork theorems and Circuit Equivalents - Example Norton EquivalentsOp-amps and feedbackElectro-magnetismTransformers and electrical distributionPrinciples of domestic wiring and installationConstruction and working principles of dc and three phase motor and generator and its characteristics Applications of DC machinesMeasuring Instruments Semi-conductor materials and developmentIntroduction to transistors, diodes etcAnalog & 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
Module Overview	
Additional Information	

Assessments

Assignment Category	Assessment Name	Weight	Exam/Test Length (hours)	Module Learning Outcome Mapping
Report	(1500 words)	30	0	MLO4
Exam	Exam	70	2	MLO1, MLO2, MLO3

Module Contacts

Module Leader

Contact Name	Applies to all offerings	Offerings
Karl Jones	Yes	N/A

Partner Module Team

Contact Name	Applies to all offerings	Offerings