

Liverpool John Moores University

Title: ELECTRICAL AND ELECTRONIC PRINCIPLES
Status: Definitive
Code: **4036ENG** (116935)
Version Start Date: 01-08-2016

Owning School/Faculty: Electronics and Electrical Engineering
Teaching School/Faculty: Electronics and Electrical Engineering

Team	Leader
Ronan McMahon	Y
Colin Wright	

Academic Level: FHEQ4 **Credit Value:** 20 **Total Delivered Hours:** 84
Total Learning Hours: 200 **Private Study:** 116

Delivery Options

Course typically offered: Standard Year Long

Component	Contact Hours
Lecture	21
Practical	42
Tutorial	21

Grading Basis: 40 %

Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Portfolio	Port		100	

Aims

To provide a solid understanding of the concepts upon which electrical & electronic principles are based

Learning Outcomes

After completing the module the student should be able to:

- 1 Describe and solve basic problems using DC & AC circuit principles
- 2 Measure the properties of simple electrical and electronic circuits
- 3 Describe and analyze circuits containing discrete semiconductor devices and operational Amplifiers
- 4 Identify the operation of standard logic gates
- 5 Design a combinational logic circuit using standard logic gates
- 6 Design synchronous sequential circuits using flip-flops

Learning Outcomes of Assessments

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

Portfolio	1	2	3	4	5	6
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Outline Syllabus

Basic quantities and SI units

Ohms law, series & parallel resistors

Simple dc circuit analysis

Introduction to capacitance & inductance and usage in electrical circuit (descriptive)

Impedance of R,C,L components (descriptive)

Power

PN junction diodes. Forward and reverse biasing of a PN junction. Diode applications. Basic transistor operation. Transistor characteristics and operations, (Biasing and DC load line). Transistor applications.

Ideal operational amplifiers, Inverting, non-inverting, summing.

Boolean notation and truth tables. Gate networks. DeMorgan's theorem. Boolean Algebra. Karnaugh maps. Sequential logic: flip-flops.

Learning Activities

Lectures, tutorial and practical sessions

Notes

This module provides a fundamental understanding of electrical & electronic principles for level 4 BSc programmes.