

Liverpool John Moores University

Title: Electrical Engineering Practice 1
Status: Definitive
Code: **4305ELE** (121418)
Version Start Date: 01-08-2021

Owning School/Faculty: Engineering
Teaching School/Faculty: Engineering

Team	Leader
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Academic Level: FHEQ4 **Credit Value:** 20 **Total Delivered Hours:** 94
Total Learning Hours: 200 **Private Study:** 106

Delivery Options

Course typically offered: Standard Year Long

Component	Contact Hours
Lecture	12
Off Site	24
Practical	54
Seminar	4

Grading Basis: 40 %

Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Portfolio	AS1	Fieldwork and Lab Activities	50	
Future Focus e-learning task	AS2	Personal Development	10	
Report	AS3	Prototype Product	40	

Aims

To enhance knowledge and understanding of electrical and electronic circuits by completing a set of practical experiments. To gain experience in practical design of electronic circuits including prototyping and PCB design and manufacture. To develop professional practical skills to undertake experimental laboratory work, to test design ideas in laboratories or through simulation, to analyse and critically evaluate technical issues, and to present and document ideas and results. To develop the ability in data manipulation and sorting. To develop a personal development plan and understand the impact engineering has on the environment.

Learning Outcomes

After completing the module the student should be able to:

- 1 Safely carry out a range of basic Laboratory procedures using standard processes.
- 2 Process data collected during an experiment, use CAD tools for design and simulation, and produce a formal written report with conclusions.
- 3 Demonstrate their commitment to undertake the on-going personal development required to become a professional engineer. Identify and reflect upon the following aspects of personal development: strengths and weaknesses, motivations and values, ability to work with others.
- 4 Work as a team to gather data analyse the results and discuss the benefits and issues of various renewable energy systems.

Learning Outcomes of Assessments

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

Fieldwork and Lab Activities	1	3	4
Personal Development	3		
Prototype Product	2		

Outline Syllabus

Laboratory and Experimental Practice

- *Practical workshop skills*
- *Health, safety and risk assessment*
- *Reading schematic drawings*
- *Use of Instruments and taking measurement*
- *Experimental data presentation and analyses*
- *Complete a series of experiments including Basic Electrical Principles; Kirchhoff's law, superposition and Thevenin's Theorem; Transients AC circuits; Proteus Simulation; PCB design and soldering; Diodes; Transistors; Operational Amplifiers; Sequential Logic Circuits; Digital Binary Counters*
- *Keeping a logbook to record notes, measurements and observations.*
- *Product prototyping*

- *Analysis of results, and the formulation of conclusions*
- *Report writing*

Personal Development

- *World of Work: Bronze Award*
- *Environmental & ethical responsibilities*
- *Team working*
- *Introduction to research skills*
- *Professional body requirements*

Learning Activities

Laboratory experiments, tutorials, and residential field trip.

Notes

The personal development portion of the module is assessed on a pass/fail basis. Students must complete the assessment exercises to a satisfactory standard in order to achieve a pass grade in this module.