

Liverpool John Moores University

Title: Electrical Engineering Practice 1
Status: Definitive
Code: **4305CIT** (125315)
Version Start Date: 01-08-2021

Owning School/Faculty: Engineering
Teaching School/Faculty: Changshu Institute of Technology

Team	Leader
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Academic Level: FHEQ4 **Credit Value:** 20 **Total Delivered Hours:** 32
Total Learning Hours: 200 **Private Study:** 168

Delivery Options

Course typically offered: Standard Year Long

Component	Contact Hours
Lecture	8
Practical	24

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	Report	20	
Report	AS3	Personal Development	30	

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, and get an electric shock first-aid method.
- 2 Use common electrician instruments and tools.
- 3 Assemble motor control circuits.
- 4 Correctly connect single strand wire and multi strand wire.
- 5 Process data collected during an experiment, use CAD tools for design and simulation, and produce a formal written report with conclusions.
- 6 Work as a team to gather data, analyse the results and discuss the benefits and issues of various renewable energy systems.
- 7 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.

Learning Outcomes of Assessments

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

Fieldwork and Lab Activities	1	2	3	4	5
Personal Development	5	6	7		
Prototype Product	1	6	7		

Outline Syllabus

1. Experiments

- *Basic electrical principle*
- *Kirchhoff's law, superposition principle and the the theorem*
- *Transient process of AC circuit*
- *Proteus simulation*
- *PCB design and soldering*
- *Diode;transistors;Operational amplifier; Sequential logic circuit; The digital binary counters*

2. Personal Skills and Development

- *Schematic diagram reading;*
- *Use of instruments and meters;*
- *Data acquisition and analysis of learning experiment;*

- *Master the practical skills of the workshop through the verification practice;*
- *Understanding health, safety and risk assessment methodologies;*

3. *Reports*

- *Log records of measurement and observation. Storage structure of array*
- *Carry out the result analysis, form the conclusion and write the report*
- *Operation of file open, close, read, write*

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.