

Liverpool John Moores University

Title: Engineering and Technology Practice
Status: Definitive
Code: **3101CIT** (125321)
Version Start Date: 01-08-2020

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

Team	Leader
Clifford Mayhew	Y

Academic Level: FHEQ3 **Credit Value:** 20 **Total Delivered Hours:** 32
Total Learning Hours: 200 **Private Study:** 168

Delivery Options

Course typically offered: Semester 2

Component	Contact Hours
Lecture	8
Practical	24

Grading Basis: 40 %

Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Portfolio	AS1	Practical skills portfolio	90	
Presentation	AS2	Presentation	10	

Aims

This module aims to develop the practical skills of students by applying what they learn in their mathematics and physics modules. It will provide an experience of experimental planning, execution and report writing, as well as activities aimed at developing problem solving skills. It also embeds the study skills which are required for students to become effective and independent learners.

Learning Outcomes

After completing the module the student should be able to:

- 1 Use the common electronic products functional module design processes and methods, and carry out laboratory exercises
- 2 Research a topic in electronic engineering, and write a summary report according to the literature review and engineering practice findings
- 3 Apply principles of mathematics and science to solve a problem in an engineering and technology context
- 4 Use the academic and professional skills to achieve the design goals and requirements by individual or teamwork.
- 5 Present work, describing mission objectives, design ideas, implementation processes and results, and summarize statements

Learning Outcomes of Assessments

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

Portfolio	1	2	3	4
Presentation	2	3	4	5

Outline Syllabus

1. *Identification of electronic components and simple circuit debugging*
 - *Preliminary identification, differentiation and use of common electronic components*
 - *Basic operating methods of experimental instruments*
 - *The first order RC circuit used in the delay circuit operator,*
 - *Several methods of driving light - emitting diodes*
2. *Visible light and infrared light sensor applications*
 - *Visible light sensor types and characteristics*
 - *Photo-resistor characteristics and principles*
 - *Infrared light sensor characteristics and principles*
 - *Principle and Application of Photo-resistor and Visible Light Sensor*
3. *Design of circuit for distance measurement and barrier*
 - *The basic principle of ultrasonic distance measurement*
 - *The basic principle of infrared sensor distance measurement*
 - *The design principle of distance measurement and barrier circuit*
4. *Experiences of RFID and Short Range Wireless Communication Technology*
 - *Basic concepts and working principles of RFID*
 - *The working principle and use method of simple point - to - point common short - range wireless communication module*
 - *Short distance wireless communication technology overview including ZigBee, Bluetooth and so on*

5. Motor drive and toy car production

- *The basic concept of small DC motor and motor drive*
- *The basic principle and application method of typical DC motor drive circuit*
- *The construction method of simple toy car*

6. Integrated training topics

- *The basic characteristics and methods of electronic system construction*
- *Basic methods of electronic system problem analysis and module decomposition*
- *Related topics and principles of analysis*

Learning Activities

A series of lectures with some laboratory activities. Students are divided into several groups. Each group has two members. They collaborate to complete each stage of the task, and submit the stage report. The final report is to show the results.

Notes

Teaching should reflect the teaching and practice of the cross, to help students step by step to master the skills. Teaching arrangements should be unified theory and experimental courses. Four contact hours for a teaching activity is appropriate.