

Liverpool John Moores University

Title: Linear Electronics
Status: Definitive
Code: **5004ELE** (120049)
Version Start Date: 01-08-2019

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

Team	Leader
Zhigang Ji	Y
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Academic Level: FHEQ5 **Credit Value:** 10 **Total Delivered Hours:** 38
Total Learning Hours: 100 **Private Study:** 62

Delivery Options

Course typically offered: Standard Year Long

Component	Contact Hours
Lecture	24
Practical	12

Grading Basis: 40 %

Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Exam	Exam	Exam	70	2
Report	Report	Report	30	

Aims

The module aims to broaden the students' knowledge and understanding of linear electronic circuit design, and also to provide students with practical skills necessary to design, analyse and simulate and manufacture electronic circuits.

Learning Outcomes

After completing the module the student should be able to:

- 1 Discuss analogue circuit operations and design for signal measurement, data acquisition and processing
- 2 Design, evaluate and produce op-amp based filter, amplifier, D/A, and A/D circuits
- 3 Use CAD tools for circuit design and simulation
- 4 Use CAD tools for PCB-level, simulation

Learning Outcomes of Assessments

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

Exam	1	2		
Report	1	2	3	4

Outline Syllabus

1. Amplifier circuits

Review of transistors: modeling, biasing and amplifiers.

Linear integrated circuits: differential amplifiers, current mirrors. Power control: regulation, rectification and power amplification.

2. Op-amp applications

Design of analogue systems using op-amps: active filters, oscillators, A/D converters for measurement, instrumentation and data acquisition, understanding relevant parameters such as bandwidth, precision, slew rate, feedback, stability.

Learning Activities

A combination of lectures, and practical work.

Notes

This Level 5 module will provide undergraduate students in electronic design with intermediate level tools and skills necessary to design, test and implement and manufacture electronic circuits.