

# Analogue Electronics

## Module Information

2022.02, Approved

### Summary Information

Module Code	4404ELE
Formal Module Title	Analogue Electronics
Owning School	Engineering
Career	Undergraduate
Credits	20
Academic level	FHEQ Level 4
Grading Schema	40

### Teaching Responsibility

LJMU Schools involved in Delivery
Engineering

### Learning Methods

Learning Method Type	Hours
Lecture	11
Practical	22
Tutorial	11

### Module Offering(s)

Display Name	Location	Start Month	Duration Number Duration Unit
JAN-CTY	CTY	January	12 Weeks

### Aims and Outcomes

Aims	To provide an introduction to diodes, transistors and the small-signal equivalent circuits, the use of operational amplifiers.
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**After completing the module the student should be able to:**

**Learning Outcomes**

Code	Number	Description
MLO1	1	Understand the principles of diode and transistor characteristics.
MLO2	2	Analyse electronics by using diode and transistor for simple amplifier design.
MLO3	3	Identify operational amplifier circuits and applications
MLO4	4	Describe circuits design for analogue signal processing

**Module Content**

Outline Syllabus	Analogue Fundamentals. Review of fundamental notations and relations, SI units, Ohms Law, measurement of voltage, current and resistance, series and parallel circuit equivalences. Quantitative discussion of capacitors, transients in R-C circuits, and time constants. Diode and transistor operation and simple models. Operational amplifiers and feedback; basic inverting and non-inverting amplifier. Stability in feedback amplifiers; frequency response and gain-bandwidth product; input and output impedance. Operational amplifier applications such as small signal amplifier and applications
Module Overview	
Additional Information	This Level 4 module is devised for students to gain fundamental knowledge and practical skills in analogue electronics circuit analysis and design. General Notes UNESCO Sustainable Development Goals1. Quality Education2. Gender Equality3. Affordable and Clean Energy4. Industry, Innovation and Infrastructure5. Partnerships for the GoalsUK SPEC AHEP 4CEng. M11 Adopt an inclusive approach to engineering practice and recognise the responsibilities, benefits and importance of supporting equality, diversity and inclusion.M13 Select and apply appropriate materials, equipment, engineering technologies and processes, recognising their limitations.IEng.B1 Apply knowledge of mathematics, statistics, natural science and engineeringprinciples to broadly-defined problems. Some of the knowledge will be informed by current developments in the subject of study.B2 Analyse broadly-defined problems reaching substantiated conclusions using first principles of mathematics, statistics, natural science and engineering principles.B3 Select and apply appropriate computational and analytical techniques to model broadly-defined problems, recognising the limitations of the techniques employed.B4 Select and evaluate technical literature and other sources of information to address broadly-defined problems.B5 Design solutions for broadly-defined problems that meet a combination of societal, user, business and customer needs as appropriate. This will involve consideration of applicable health and safety, diversity, inclusion, cultural, societal, environmental and commercial matters, codes of practice and industry standards.B6 Apply an integrated or systems approach to the solution of broadly-defined problems.B7 Evaluate the environmental and societal impact of solutions to broadly-defined problems.B8 Identify and analyse ethical concerns and make reasoned ethical choices informed by professional codes of conduct.B11 Recognise the responsibilities, benefits and importance of supporting equality, diversity and inclusion.B12 Use practical laboratory and workshop skills to investigate broadly-defined problems.B13 Select and apply appropriate materials, equipment, engineering technologies and processes.Where this module is part of a Degree Apprenticeship programme, the knowledge learning outcomes are K2, K3, K6 and K8, the skills learning outcomes is S1

**Assessments**

Assignment Category	Assessment Name	Weight	Exam/Test Length (hours)	Module Learning Outcome Mapping
Centralised Exam	Exam	70	2	MLO2, MLO1, MLO3, MLO4
Portfolio	Portfolio	30	0	MLO2, MLO1, MLO3, MLO4

## Module Contacts

### Module Leader

Contact Name	Applies to all offerings	Offerings
Yongqiang Qiu	Yes	N/A

### Partner Module Team

Contact Name	Applies to all offerings	Offerings
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