

# Linear Electronics

## Module Information

2022.01, Approved

### Summary Information

|                     |                    |
|---------------------|--------------------|
| Module Code         | 5503EDLBHG         |
| Formal Module Title | Linear Electronics |
| Owning School       | Engineering        |
| Career              | Undergraduate      |
| Credits             | 10                 |
| Academic level      | FHEQ Level 5       |
| Grading Schema      | 40                 |

### Teaching Responsibility

|                                   |
|-----------------------------------|
| LJMU Schools involved in Delivery |
| LJMU Partner Taught               |

### Partner Teaching Institution

|                   |
|-------------------|
| Institution Name  |
| Beaconhouse Group |

### Learning Methods

| Learning Method Type | Hours |
|----------------------|-------|
| Online               | 22    |
| Practical            | 11    |

### Module Offering(s)

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

## Aims and Outcomes

|      |   |
|------|---|
| 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. |
|------|---|

**After completing the module the student should be able to:**

### Learning Outcomes

| Code | Number | Description  |
|------|--------|--|
| MLO1 | 1      | Discuss analogue circuit operations and design for signal measurement, data acquisition and processing |
| MLO2 | 2      | Design, evaluate and produce op-amp based filter, amplifier, D/A, and A/D circuits                     |
| MLO3 | 3      | Use CAD tools for circuit design and simulation  |
| MLO4 | 4      | Use CAD tools for PCB-level, simulation  |

## Module Content

|                        |   |
|------------------------|---|
| Outline Syllabus       | 1. Amplifier circuits<br>Review of transistors: modelling, biasing and amplifiers.<br>Linear integrated circuits: differential amplifiers, current mirrors. Power control: regulation, rectification and power amplification.<br>2. Op-amp applications<br>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. |
| Module Overview        |   |
| Additional Information | 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.  |

## Assessments

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

## Module Contacts

### Module Leader

| Contact Name    | Applies to all offerings | Offerings |
|-----------------|--------------------------|-----------|
| Russell English | Yes                      | N/A       |

### Partner Module Team

| Contact Name | Applies to all offerings | Offerings |
|--------------|--------------------------|-----------|
|              |                          |           |

