

### Summary Information

|                     |                                |
|---------------------|--------------------------------|
| Module Code         | 7551WCSST                      |
| Formal Module Title | Digital Communications Systems |
| Owning School       | Engineering                    |
| Career              | Postgraduate Taught            |
| Credits             | 20                             |
| Academic level      | FHEQ Level 7                   |
| Grading Schema      | 50                             |

### Teaching Responsibility

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

### Partner Teaching Institution

|                                |
|--------------------------------|
| Institution Name               |
| Sri Lanka Technological Campus |

### Learning Methods

| Learning Method Type | Hours |
|----------------------|-------|
| Lecture              | 22    |
| Practical            | 11    |
| Tutorial             | 11    |

### Module Offering(s)

| Display Name | Location | Start Month | Duration Number Duration Unit |
|--------------|----------|-------------|-------------------------------|
| SEP-PAR      | PAR      | September   | 12 Weeks                      |

## Aims and Outcomes

|      |  |
|------|--|
| Aims | To develop knowledge and technical skills in the field of digital communications |
|------|--|

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

### Learning Outcomes

| Code | Number | Description   |
|------|--------|---|
| MLO1 | 1      | Simulate and critically analyse aspects of a communications system.   |
| MLO2 | 2      | Analyse advanced principles of Digital Communications systems         |
| MLO3 | 3      | Critically analyse digital communications scenarios                   |
| MLO4 | 4      | Develop detailed solutions to complex digital communications problems |

## Module Content

|                        |  |
|------------------------|--|
| Outline Syllabus       | Signals and channels<br>Baseband and pass band systems<br>Information Theory; channel capacity.<br>Coding - Source coding, Line coding, Channel coding<br>Modulation - AM, FM, PM, Higher order schemes and consequences for digital signals<br>Multiple Access<br>Multiplexing<br>Single and multicarrier systems<br>Noise and interference<br>5G   |
| Module Overview        |  |
| Additional Information | This module develops skills and knowledge in the area of digital communications. Students completing this module will have a comprehensive understanding of the complex relationship between bandwidth, modulation, coding, noise and interference, and effective data transfer rate.<br>UNESCO Sustainable Development Goals:<br>4. Quality Education<br>8. Decent Work and Economic Growth<br>9. Industry, Innovation and Infrastructure |

## Assessments

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

## Module Contacts

### Module Leader

| Contact Name  | Applies to all offerings | Offerings |
|---------------|--------------------------|-----------|
| Ronan McMahan | Yes                      | N/A       |

### Partner Module Team

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

