

Programme Regulations: 2022/23

Programme Titles:

Degree of Master of Engineering with Honours in Microelectronic Engineering with Industrial Project - UCAS Code: H612 (with Foundation Year – UCAS Code: H606)

Degree of Master of Engineering with Honours in Microelectronic Engineering with Industrial Project with Placement Year - Code: 1185U

Notes

- (i) *These programme regulations should be read in conjunction with the University's Taught Programme Regulations and Examination Conventions..*
- (ii) *All optional modules are offered subject to the constraints of the timetable and to any restrictions on the number of students who may be taught on a particular module. Not all modules may be offered in all years and they are listed subject to availability.*
- (iii) *A compulsory module is a module which a student is required to study.*
- (iv) *All modules are delivered in Linear mode unless stated otherwise as Block, eLearning or distance learning.*

See also:

Stage 0 (Foundation Year) for all Degrees of Bachelor of Engineering with Honours and Master of Engineering with Honours

1. Stage 0

Candidates who do not meet the requirements for entry into Stage 1 may with approval of the Degree Programme Director commence this degree programme at Stage 0 and shall proceed under the regulations relating to Stage 0.

2. Stage 1

All candidates shall take the following compulsory modules:

| <i>Code</i> | <i>Descriptive title</i> | <i>Total Credits</i> | <i>Credits Sem 1</i> | <i>Credits Sem 2</i> | <i>Level</i> |
|-------------|---|----------------------|----------------------|----------------------|--------------|
| ENG1001 | Engineering Mathematics I | 20 | 10 | 10 | 4 |
| ENG1002 | Sustainable Design, Creativity, and Professionalism | 30 | 10 | 20 | 4 |
| ENG1003 | Electrical and Magnetic Systems | 15 | 15 | | 4 |
| ENG1004 | Electronics & Sensors | 10 | | 10 | 4 |
| ENG1005 | Thermofluid Mechanics | 15 | 5 | 10 | 4 |
| ENG1006 | Properties and Behaviour of Engineering Materials | 15 | 15 | | 4 |
| ENG1007 | Mechanics I | 15 | 5 | 10 | 4 |

3. Stage 2

(a) All candidates shall take the following compulsory modules:

| <i>Code</i> | <i>Descriptive title</i> | <i>Total Credits</i> | <i>Credits Sem 1</i> | <i>Credits Sem 2</i> | <i>Level</i> |
|-------------|--------------------------------------|----------------------|----------------------|----------------------|--------------|
| EEE2007 | Computer Systems and Microprocessors | 20 | 10 | 10 | 5 |

| | | | | | |
|---------|--|----|----|----|---|
| EEE2008 | Project and Professional Issues | 20 | | 20 | 5 |
| EEE2009 | Signals and Communications | 20 | 20 | | 5 |
| EEE2014 | Semiconductor Devices and Analogue Electronics | 20 | 20 | | 5 |
| ENG2026 | Automatic Control Systems | 10 | | 10 | 5 |
| ENG2025 | Digital Electronics | 10 | | 10 | 5 |
| ENG2029 | AC Electrical Power and Conversion | 10 | | 10 | 5 |
| ENG2031 | Mathematical Modelling and Statistical Methods for Engineering | 10 | | 10 | 5 |

(b) To progress to Stage 3 of this degree programme, candidates are required to obtain an average over all modules taken at Stage 2 of at least 55 at the first attempt.

4. Stage 3

(a) All candidates shall take the following compulsory modules:

| <i>Code</i> | <i>Descriptive title</i> | <i>Total Credits</i> | <i>Credits Sem 1</i> | <i>Credits Sem 2</i> | <i>Level</i> |
|-------------|---|----------------------|----------------------|----------------------|--------------|
| EEE3009 | Real Time and Embedded Systems | 10 | | 10 | 6 |
| EEE3020 | Electronic Devices | 10 | 10 | | 6 |
| ENG2001 | Accounting, Finance and Law for Engineers | 10 | 5 | 5 | 5 |
| EEE3022 | Introduction to Machine Learning | 10 | | 10 | 5 |

(b) All candidates shall take **one** of the following optional modules:

| <i>Code</i> | <i>Descriptive title</i> | <i>Total Credits</i> | <i>Credits Sem 1</i> | <i>Credits Sem 2</i> | <i>Level</i> |
|-------------|--|----------------------|----------------------|----------------------|--------------|
| EEE3095 | Individual Project and Technical Paper | 40 | 20 | 20 | 6 |
| EEE3096 | Individual Project and Technical Paper | 40 | 10 | 30 | 6 |
| EEE3097 | Individual Project and Technical Paper | 40 | 30 | 10 | 6 |

(d) All candidates shall take 40 credits of optional modules normally selected from the following list:

| <i>Code</i> | <i>Descriptive title</i> | <i>Total Credits</i> | <i>Credits Sem 1</i> | <i>Credits Sem 2</i> | <i>Level</i> |
|-------------|--|----------------------|----------------------|----------------------|--------------|
| EEE3001 | Linear Controller Design and State Space Analysis | 10 | 10 | | 6 |
| EEE3003 | Introduction to the Basics of Modern Power Electronics | 10 | 10 | | 6 |
| EEE3004* | Digital Signal Processing | 10 | 10 | | 6 |
| EEE3008 | Industrial Automation and PLCs | 10 | 10 | | 6 |
| EEE3011 | Electric Drives | 10 | | 10 | 6 |
| EEE3013 | Image Processing and Machine Vision | 10 | | 10 | 6 |
| EEE3014 | Power System Operation | 10 | | 10 | 6 |
| EEE3015* | Telecommunication Networks | 10 | | 10 | 6 |
| EEE3018 | Digital Control Systems | 10 | | 10 | 6 |
| EEE3021 | Renewable Energy Systems and Smart Grids | 10 | | 10 | 6 |

Notes:

Modules marked * are recommended

With the approval of the Degree Programme Director alternative optional modules to those listed above may be selected.

5. Year 4 (Placement Year)

On completion of Stage 3 and before entering Stage 4, candidates may as part of their studies for the degree spend a year in a placement with an approved organisation. Permission to undertake a placement is subject to the approval of the Degree Programme Director. Students who are required to re-sit their Stage 3 assessment must delay the start of their placement until they have done so. Students who fail Stage 3 may not complete a placement year.

| <i>Code</i> | <i>Descriptive title</i> | <i>Total Credits</i> | <i>Credits Sem 1</i> | <i>Credits Sem 2</i> | <i>Level</i> |
|-------------|---------------------------------------|----------------------|----------------------|----------------------|--------------|
| NCL3000 | Careers Service Placement Year Module | 120 | 60 | 60 | 6 |

6. Stage 4

(a) All candidates shall take the following compulsory modules:

| <i>Code</i> | <i>Descriptive title</i> | <i>Total Credits</i> | <i>Credits Sem 1</i> | <i>Credits Sem 2</i> | <i>Level</i> |
|-------------|--|----------------------|----------------------|----------------------|--------------|
| EEE8106 | Extended Course Work on Applications and Design (ECAD) | 10 | 10 | | 7 |
| EEE8113 | Group Design Project | 30 | | 30 | 7 |
| EEE8114 | Industrial Project | 40 | 40 | | 7 |

(b) All candidates shall take the following specialist module:

| <i>Code</i> | <i>Descriptive title</i> | <i>Total Credits</i> | <i>Credits Sem 1</i> | <i>Credits Sem 2</i> | <i>Level</i> | <i>Mode</i> |
|-------------|--------------------------------|----------------------|----------------------|----------------------|--------------|-------------|
| EEE8088 | Reconfigurable Hardware Design | 20 | | 20 | 7 | Block |

(c) All candidates shall take a 20 credit optional module from the table below.

| <i>Code</i> | <i>Descriptive title</i> | <i>Total Credits</i> | <i>Credits Sem 1</i> | <i>Credits Sem 2</i> | <i>Level</i> | <i>Mode</i> |
|-------------|--|----------------------|----------------------|----------------------|--------------|-------------|
| EEE8116 | Bioelectronics | 20 | | 20 | 7 | Block |
| EEE8124 | Low Power VLSI Design | 20 | | 20 | 7 | Block |
| EEE8125 | Advanced Device Fabrication | 20 | | 20 | 7 | Block |
| EEE8151 | Distributed Control Systems | 20 | | 20 | 7 | Block |
| EEE8158 | Robust & Adaptive Control Systems | 20 | | 20 | 7 | Block |
| EEE8155 | Designing sustainable electric propulsion and generation systems | 20 | | 20 | 7 | Block |

With the approval of the Degree Programme Director alternative optional modules to those listed above may be selected.

7. Assessment Methods

Details of the assessment pattern in each module are explained in the module outline. To satisfy IET accreditation requirements, a module comprising two assessment modes (coursework and examination) that assess different learning outcomes and each mode contributes more than 30% to the overall module mark, can only be passed if neither assessment mode is awarded a mark that is no more than 10% below the normal module pass mark.

8. Compensation and Condonement

For students entering the programme* in 2021/22 onwards, the Engineering Council's policy on compensation and condonement will apply to marks awarded for modules at all stages, to satisfy accreditation requirements. To be awarded an accredited honours degree, only a maximum of 30 credits can be compensated over the duration of the degree programme, where the final mark is up to 5 percentage points below the pass mark**. Core modules cannot be compensated. Individual projects and group projects worth more than 20 credits cannot be compensated.

There is no condonement of modules delivering Accreditation of Higher Education Programmes (AHEP) learning outcomes.

Any student not satisfying the accreditation requirements, but satisfying the University's Degree and Assessment regulations, will have the opportunity to be awarded a non-accredited honours degree with its classification based on the overall final stage averages beyond stage one.

*Note that for Electrical & Electronic Engineering programmes, the above text on compensation and condonement has been applicable for students who started stage one from 2018/19.

**Note that for IET-accredited Electrical and Electronic Engineering degree programmes, a module comprising assessed components worth at least 30% of the overall module mark can only be passed if the overall module mark achieved is at least the pass mark and none of those assessed components have a mark that is more than 10 marks below the pass mark.

9. Degree classification

Candidates will be assessed for the degree classification on the basis of all the modules taken at Stages 2, 3 and 4 with the weightings of the stages being 1:3:3 for Stage 2, Stage 3 and Stage 4 respectively.