# Programme Specification

## 1 Awarding Institution
Newcastle University

## 2 Teaching Institution
Newcastle University

## 3 Final Award
MSc

## 4 Programme Title
Microelectronics: Systems and Devices
Electronic Engineering (exit award)

## 5 UCAS/Programme Code
5393F
5468F (exit award)

## 6 Programme Accreditation
IET

## 7 QAA Subject Benchmark(s)
N/A

## 8 FHEQ Level
7

## 9 Date written/revised
May 2023

## 10 Programme Aims

The programme aims:

1. To gain an advanced knowledge and understanding of specialist topics in Microelectronic systems and devices.
2. To develop transferable skills in research and knowledge acquisition.
3. To satisfy the professional development needs of the individual and his/her employers; providing relevant training to engineering graduates who wish to pursue a career as design and development engineers in the design, test and fabrication of microelectronic devices or systems.
4. To provide a foundation for further postgraduate studies.

## 11 Learning Outcomes

The programme provides opportunities for students to develop and demonstrate knowledge, understanding, skills and other attributes associated with the theme of Microelectronics, covering both systems and devices aspects.

### Knowledge and Understanding
A successful student will have gained and be able to demonstrate:


A2 The technical expertise that underpins informed project planning, design and decision making in the area of Microelectronics

A3 Computer aided design and analysis techniques appropriate to Microelectronics, for example the use of software packages such as CADENCE

A4 A particular topic connected with Microelectronics studied in-depth as part of a research or design project

**Teaching and Learning Methods**

Acquisition of A1 to A4 is through a combination of lectures, tutorials, student-centred learning, coursework and project work.

**Assessment Strategy**

The primary means of assessing factual knowledge is through closed book written examination. This is supported through assessed coursework and case studies.

In depth individual learning forms part of the project, which is assessed by a literature survey, a presentation exercise, dissertation and viva-voce examination.

**Intellectual Skills**

On completing the programme students should be able to:

B1 Select and apply appropriate methods for modelling and analysing problems in Microelectronics

B2 Produce engineering solutions to problems in microelectronics through the application of knowledge, understanding and scientific principles.

B3 Create new designs in Microelectronics through synthesis of ideas from a wide range of sources

B4 Develop ideas and opinions through the critical appraisal of information from a wide range of sources

**Teaching and Learning Methods**

Acquisition of B1 to B4 is through a combination of classroom teaching, laboratory-based coursework and project work.

**Assessment Strategy**

Intellectual abilities are assessed through a mixture of written examinations, coursework assignments. The project, which is assessed by dissertation and viva voce examination, provides evidence of the ability to carry out a project.
On completing the programme students should be able to:

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<tbody>
<tr>
<td>C1</td>
<td>Use relevant test and measurement equipment</td>
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<tr>
<td>C2</td>
<td>Use software packages relevant to Microelectronics</td>
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<tr>
<td>C3</td>
<td>Plan, execute and report a project</td>
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<tr>
<td>C4</td>
<td>Design a system or component in selected areas of Microelectronics</td>
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<tr>
<td>C5</td>
<td>Search for and retrieve information from a wide range of sources</td>
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**Teaching and Learning Methods**

Acquisition of C1 to C5 is through a combination of distance learning, intensive residential courses, coursework and project work.

**Assessment Strategy**

C1 to C5 are not explicitly assessed but are necessary for successful completion of coursework and project.

**Transferable/Key Skills**

A successful student will be able to:

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<tr>
<td>D1</td>
<td>Communicate effectively</td>
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<tr>
<td>D2</td>
<td>Critically appraise information from a wide range of sources</td>
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<tr>
<td>D3</td>
<td>Create and innovate in problem solving</td>
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<tr>
<td>D4</td>
<td>Use general IT tools such as word processors, spreadsheets</td>
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<tr>
<td>D5</td>
<td>Manage time and resources</td>
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### Teaching and Learning Methods

D1 to D5 are introduced and developed via a combination of tutorial examples, coursework and project work.

### Assessment Strategy

Skills D1 to D3 are necessary to complete examinations and assignments to a satisfactory standard. Skills D4 and D5 are essential for satisfactory completion of the project.

### Programme Curriculum, Structure and Features

#### Basic structure of the programme

The course comprises 100 taught credits, plus 20 credits of laboratory based coursework. MSc students also complete an individual project with dissertation (60 credits).

The course is offered once per year in a three semester structure with all lectured material being in semesters 1 and 2. The project will take place in Semester 3.

#### Key features of the programme

This programme is aimed at students who wish to pursue advanced studies in the area of Microelectronics, covering broad topics related to systems and devices.

Advanced knowledge and understanding (A1 to A3) of specialist topics in Microelectronics are gained primarily through the selected modules. This is reinforced through tutorial exercises and coursework assignments.

Intellectual abilities (B1 to B4) are introduced through the chosen modules and are reinforced through tutorial exercises and coursework assignments. Tutorial exercises and coursework assignments also develop practical skills (C1, C2, C4, C5) and transferable skills (D1 to D5).

The project involves individual acquisition of knowledge and abilities (A2 to A4, B1 to B4), project planning and execution (C3). Experience is also gained of practical skills (C1 to C5). Satisfactory completion of the dissertation and examination requires command of the transferable skills (D1 to D5).

#### Programme regulations

[R5393F.pdf (ncl.ac.uk)](R5393F.pdf)

### Support for Student Learning

Generic information regarding University provision is available at the following link.

Generic Information

### Methods for evaluating and improving the quality and standards of teaching and learning

Generic information regarding University provision is available at the following link.

Generic Information

Accreditation reports

Additional mechanisms
## Regulation of assessment

Generic information regarding University provision is available at the following link. [Generic Information](https://www.ncl.ac.uk/postgraduate/)

In addition, information relating to the programme is provided in:

- The University Prospectus: [https://www.ncl.ac.uk/postgraduate/](https://www.ncl.ac.uk/postgraduate/)
- Degree Programme and University Regulations: [http://www.ncl.ac.uk/regulations/docs/](http://www.ncl.ac.uk/regulations/docs/)