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:

A1   A knowledge and understanding of a total of 6 advanced topics in the field of Microelectronics selected from: System-on-Chip Test Strategies, Semiconductor Electronic Devices, Semiconductor Device Fabrication, Low-Power VLSI Design, Reconfigurable Hardware Design, Embedded Systems Architecture and Programming.

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.

Practical Skills

On completing the programme students should be able to:

C1   Use relevant test and measurement equipment

C2   Use software packages relevant to Microelectronics

C3   Plan, execute and report a project

C4   Design a system or component in selected areas of Microelectronics

C5   Search for and retrieve information from a wide range of sources

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:

D1   Communicate effectively
D2   Critically appraise information from a wide range of sources

D3   Create and innovate in problem solving

D4   Use general IT tools such as word processors, spreadsheets D5   Manage time and

       resources

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.

12   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)

13   Support for Student Learning
Generic information regarding University provision is available at the following link. Generic Information

14   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*

15	Regulation of assessment
Generic information regarding University provision is available at the following link. [Generic Information](#)	

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

The University Prospectus: https://www.ncl.ac.uk/postgraduate/
Degree Programme and University Regulations: http://www.ncl.ac.uk/regulations/docs/