

PROGRAMME SPECIFICATION

1	Awarding Institution	Newcastle University
2	Teaching Institution	Newcastle University
3	Final Award	MSc
4	Programme Title	Microelectronics
5	UCAS/Programme Code	5060
6	Programme Accreditation	
7	QAA Subject Benchmark(s)	
8	FHEQ Level	M
9	Date written/revised	October 2007

10 Programme Aims

The programme aims:

- To gain an advanced knowledge and understanding of specialist topics in Microelectronics.
- To develop transferable skills in research and knowledge acquisition.
- 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.
- 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.

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: Digital Electronics, Semiconductor Devices, Fabrication Technology, Design of VLSI, DSP, Data Communications, Optoelectronics and Power Electronics.
- 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
<p>The primary means of assessing factual knowledge is through closed book written examination. This is supported through assessed coursework and case studies.</p> <p>In depth individual learning forms part of the project, which is assessed by a literature survey, a presentation exercise, dissertation and <i>viva-voce</i> examination.</p>
Intellectual Skills
<p>On completing the programme students should be able to:</p> <p>B1 Select and apply appropriate methods for modelling and analysing problems in Microelectronics</p> <p>B2 Produce engineering solutions to problems in microelectronics through the application of knowledge, understanding and scientific principles.</p> <p>B3 Create new designs in Microelectronics through synthesis of ideas from a wide range of sources</p> <p>B4 Develop ideas and opinions through the critical appraisal of information from a wide range of sources</p>
Teaching and Learning Methods
<p>Acquisition of B1 to B4 is through a combination of distance learning, intensive residential courses, coursework and project work.</p>
Assessment Strategy
<p>Intellectual abilities are assessed through a mixture of written examinations, coursework assignments. The project, which is assessed by dissertation and <i>viva voce</i> examination, provides evidence of the ability to carry out a project.</p>
Practical Skills
<p>On completing the programme students should be able to:</p> <p>C1 Use relevant test and measurement equipment</p> <p>C2 Use software packages relevant to Microelectronics</p> <p>C3 Plan, execute and report a project</p> <p>C4 Design a system or component in selected areas of Microelectronics</p> <p>C5 Search for and retrieve information from a wide range of sources</p>
Teaching and Learning Methods
<p>Acquisition of C1 to C5 is through a combination of distance learning, intensive residential courses, coursework and project work</p>
Assessment Strategy
<p>C1 to C5 are not explicitly assessed but are necessary for successful completion of coursework and project</p>
Transferable/Key Skills
<p>A successful student will be able to:</p> <p>D1 Communicate effectively</p>

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
<p>MSc students select 6 modules (90 credits) from the following: Digital Electronics, Semiconductor Devices, Fabrication Technology, Design of VLSI Systems, Digital Signal Processing, Data Communications, Optoelectronics, Power Electronics, plus 10 credits of Laboratory based Course Work. MSc students also complete an individual project with dissertation, which will usually be undertaken in the University (80 credits).</p> <p>The course is offered once per year in a three semester structure with all lectured material being in semesters one and two. The project starts mid way through semester one (10 credits), and continues part-time in semester two (10 credits). Semester three is devoted to completion of the project.</p>
Key features of the programme
<p>This programme is aimed at students who wish to pursue advanced studies in the area of Microelectronics.</p> <p>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</p> <p>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)</p> <p>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).</p>
Programme regulations
<p>http://www.ncl.ac.uk/regulations/programme/2007-2008/programme/5060_including_preliminary_year_5065.php</p>

13 Criteria for admission

Entry qualifications

Students should normally have at least a 2.2 honours degree in electrical engineering from a British University. A lower qualification may be considered if applicant has a significant period of relevant industrial experience.

Non-standard Entry Requirements

GPA: 2.5/4 (63%) or equivalent. China 65%, India 60%. Will accept a higher Diploma for Libyan students at 65%.

Level of English Language capability

5.5 IELTS or equivalent.

14 Support for Student Learning

Induction

During the first week of the first semester students attend an induction programme. New students will be given a general introduction to University life and the University's principal support services and general information about the School and their programme, as described in the Degree Programme Handbook. The International Office offers an additional induction programme for overseas students (see

http://www.ncl.ac.uk/international/coming_to_newcastle/orientation.phtml)

Study skills support

Students will learn a range of Personal Transferable Skills, including Study Skills, as outlined in the Programme Specification.

Academic support

The initial point of contact for a student is with a lecturer or module leader, or their tutor (see below) for more generic issues. Thereafter the Degree Programme Director or Head of School may be consulted. Issues relating to the programme may be raised at the Staff-Student Committee, and/or at the Board of Studies.

Pastoral support

All students are assigned a personal tutor whose responsibility is to monitor the academic performance and overall well-being of their tutees. Details of the personal tutor system can be found at <http://www.ncl.ac.uk/undergraduate/support/tutor.phtml>

In addition the University offers a range of support services, including the Student Advice Centre, the Counselling and Wellbeing team, the Mature Student Support Officer, and a Childcare Support Officer, see <http://www.ncl.ac.uk/undergraduate/support/welfare.phtml>

Support for students with disabilities

The University's Disability Support Service provides help and advice for disabled students at the University - and those thinking of coming to Newcastle. It provides individuals with: advice about the University's facilities, services and the accessibility of campus; details about the technical support available; guidance in study skills and advice on financial support arrangements; a resources room with equipment and software to assist students in their studies. For further details see <http://www.ncl.ac.uk/disability-support/>

Learning resources

The University's main learning resources are provided by the Robinson and Walton Libraries (for books, journals, online resources), and Information Systems and Services, which

supports campus-wide computing facilities, see <http://www.ncl.ac.uk/undergraduate/support/acfacilities.phtml>

All new students whose first language is not English are required to take an English Language test in the Language Centre. Where appropriate, in-session language training can be provided. The Language Centre houses a range of resources for learning other languages which may be particularly appropriate for those interested in an Erasmus exchange. See <http://www.ncl.ac.uk/undergraduate/support/facilities/langcen.phtml>

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

Module reviews

All modules are subject to review by questionnaires which are considered by the Board of Studies. Changes to, or the introduction of new, modules are also considered at the Board of Studies. Student opinion is sought at the Staff-Student Committee and/or the Board of Studies. New modules and major changes to existing modules are subject to approval by the Faculty Teaching and Learning Committee.

Programme reviews

The Board of Studies conducts an Annual Monitoring and Review of the degree programme and reports to Faculty Teaching and Learning Committee.

External Examiner reports

External Examiner reports are considered by the Board of Studies. The Board responds to these reports through Faculty Teaching and Learning Committee. External Examiner reports are shared with institutional student representatives, through the Staff-Student Committee.

Student evaluations

All modules, and the degree programme, are subject to review by student questionnaires. Informal student evaluation is also obtained at the Staff-Student Committee, and the Board of Studies. The National Student Survey is sent out every year to final-year undergraduate students, and consists of a set of questions seeking the students' views on the quality of the learning and teaching in their HEIs. Further information is at www.thestudentsurvey.com/ With reference to the outcomes of the NSS and institutional student satisfaction surveys actions are taken at all appropriate levels by the institution.

Mechanisms for gaining student feedback

Feedback is channelled via the Staff-Student Committee and the Board of Studies.

Faculty and University Review Mechanisms

The programme is subject to the University's Internal Subject Review process, see http://www.ncl.ac.uk/aqss/qsh/internal_subject_review/index.php

16 Regulation of assessment

Pass mark

The pass mark is 50

Course requirements

Progression is subject to the University's Masters Degree Progress Regulations, Taught and Research (<http://www.ncl.ac.uk/calendar/university.regs/tpmdepr.pdf>) and Examination Conventions for Taught Masters Degrees (<http://www.ncl.ac.uk/calendar/university.regs/tpmdeprexamconv.pdf>). Limited compensation up to 45 credits of the taught element and down to a mark of 40 is possible and there are reassessment opportunities, with certain restrictions.

Common Marking Scheme

The University employs a common marking scheme, which is specified in the Taught Postgraduate Examination Conventions, namely:

Summary description applicable to postgraduate Masters programmes

<50	Fail
50-59	Pass
60-69	Pass with Merit
70 or above	Pass with Distinction

Summary description applicable to postgraduate Certificate and Diploma programmes

<50	Fail
50 or above	Pass

Role of the External Examiner

An External Examiner, a distinguished member of the subject community, is appointed by Faculty Teaching and Learning Committee, after recommendation from the Board of Studies.

The External Examiner is expected to:

- See and approve examination papers
- Moderate examination and coursework marking
- Attend the Board of Examiners
- Report to the University on the standards of the programme

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

The University Prospectus (see <http://www.ncl.ac.uk/postgraduate/>)

The School Brochure (contact enquiries@ncl.ac.uk)

The University Regulations (see <http://www.ncl.ac.uk/calendar/university.regs/>)

The Degree Programme Handbook

Please note. This specification provides a concise summary of the main features of the programme and of the learning outcomes that a typical student might reasonably be expected to achieve if she/he takes full advantage of the learning opportunities provided. The accuracy of the information contained is reviewed by the University and may be checked by the Quality Assurance Agency for Higher Education.

Mapping of Intended Learning Outcomes onto Curriculum/Modules

Intended Learning Outcome	Module codes (Comp/Core in Bold)
A1	EEE8004, EEE8018, EEE8019, EEE8020 , <i>plus optional modules</i>
A2	EEE8094
A3	EEE8004, EEE8018, EEE8019, EEE8020 , <i>plus optional modules</i>
A4	EEE8094
B1	EEE8004, EEE8018, EEE8019, EEE8020, EEE8094 , <i>plus optional modules.</i>
B2	EEE8094, EEE8059
B3	EEE8094, EEE8059
B4	EEE8094
C1	EEE8094, EEE8059
C2	EEE8094, EEE8059
C3	EEE8094
C4	EEE8094, EEE8059
C5	EEE8094
D1	EEE8094, EEE8059
D2	EEE8094, EEE8059
D3	EEE8094, EEE8059
D4	EEE8094, EEE8059
D5	EEE8094