UNIVERSITY
OF
NEWCASTLE UPON TYNE

DEGREE PROGRAMME SPECIFICATION

1	**Awarding Institution(s)**	University of Newcastle
2	**Teaching Institution(s)**	University of Newcastle
3	**Final Award**	MSc
4	**Programme Title**	MSc in Automation and Control
5	**Programmes Accredited by**:	
6	**UCAS Codes**	N/A
7	**QAA Benchmarking Group**	N/A
8	**Date of production/revision**	17th October 2004

9 Programme Aims:

(i) to gain an advanced knowledge and understanding of specialist topics in Automation and Control;

(ii) to develop transferable skills in research and knowledge acquisition.

(iii) 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 systems engineers in the fields of intelligent manufacturing, production units and distributed control systems, or in general modern control applications

(iv) to provide a foundation for further postgraduate studies.

(v) to provide a qualification which meets the designated learning outcomes at level 4 of the National Qualifications Framework.

10 Programme Learning Outcomes:

The programme provides opportunities for students to develop and demonstrate knowledge, understanding, skills and other attributes associated with the theme of Automation and Control. By the end of the programme the typical (modal) student will have:

A Knowledge and Understanding

Knowledge and understanding of:

1. A total of 6 advanced topics in the field of Automation and Control selected from: Computer Vision and Multimedia, Control Systems, Digital Control, Digital Signal Processing, Distributed Control Systems, Electric Drives Industrial Automation, Power Electronics, Power System Operation and Control.
2. The technical expertise that underpins informed project planning, design and decision making in the area of Automation and Control.
3. Computer aided design and analysis techniques appropriate to Automation and Control, for example the use of software packages such as MATLAB, Simulink, PSpice.
4. A particular topic connected with Automation and Control studied in-depth as part of a research project.

Teaching/learning methods and strategies

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

Assessment

Formative assessment in particular areas occurs through tutorial exercises (computer based and written) and coursework. 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 research project, which is assessed by a literature survey, a presentation exercise, dissertation and *viva-voce* examination.

B Intellectual Abilities

The ability to:

1. Select and apply appropriate methods for modelling and analysing problems in Automation and Control.
2. Use scientific principles in the modelling and analysis of engineering systems, processes and products.

3. Select and apply appropriate methods for developing Automation and Control solutions to practical problems.
4. Produce engineering solutions to problems through the application of knowledge and understanding in Automation and Control.
5. Create new designs in Automation and Control through synthesis of ideas from a wide range of sources.
6. Develop ideas and opinions through the critical appraisal of information from a wide range of sources.

Teaching/learning methods and strategies

Acquisition of B1 to B5 is through a combination of class examples, student centred learning, coursework and project work.

Assessment

Intellectual abilities are assessed through a mixture of written examinations, coursework assignments. The research project, which is assessed by dissertation and *viva voce* examination, provides evidence of the ability to carry out a research project.

C Practical Skills

The skills to:

1. Use relevant test and measurement equipment.
2. Use software packages relevant to Automation and Control.
3. Plan, execute and report a research project.
4. Design a system or component in selected areas of Automation and Control.
5. Search for and retrieve information from a wide range of sources.

Teaching/learning methods and strategies

Acquisition of C1 to C5 is through a combination of student centred learning, coursework and project work.

Assessment

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

D Transferable and Key Skills

The skills to:

1 Communicate effectively.
2 Critically appraise information from a wide range of sources.
3 Create and innovate in problem solving.
4 Use general IT tools such as word processors, spreadsheets.
5 Manage time and resources.

Teaching/learning methods and strategies

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

Assessment

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.

11 Programme Features, Curriculum and Structure

This programme is aimed at students who wish to pursue advanced studies in the area of Automation and Control.

MSc and diploma students select 6 modules (90 credits) from the following: Computer Vision and Multimedia, Control Systems, Digital Control, Digital Signal Processing, Distributed Control Systems, Electric Drives Industrial Automation, Power Electronics, Power System Operation and Control, plus 10 credits of Laboratory based Course Work. MSc students also complete an individual project with dissertation, which is usually undertaken in the University (80 credits). The Diploma project is of shorter duration.

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.

Module Lists

Compulsory Modules

Code	Credits	Descriptive Title
EEE807	15	Industrial Automation
EEE808	15	Distributed Control Systems
EEE809	15	Digital Control
EEE818	15	Control Systems
EEE997	10	Laboratory Work
EEE895	80	Individual Project

Optional Modules in an approved combination, to a total value of 30 credits from:

Code	Credits	Descriptive Title
EEE816	15	Power Electronics
EEE813	15	Computer Vision and Multimedia
EEE819	15	Electric Drives
EEE801	15	Digital Signal Processing
EEE827	15	Power System Operation and Control

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

Intellectual abilities (B1 to B6) are introduced through the chosen modules and are reinforced through tutorial exercises, coursework assignments. Tutorial exercises and coursework assignments also develop practical skills (C1, C2, C4, C5) and transferable skills (D1 to D5)

The research project involves individual acquisition of knowledge and abilities (A2 to A4, B1 to B5), 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).

12 Support for Students and their Learning:

Services and facilities available to students include the following:

- Personal Tutor;
- Degree Programme Director;
- Student/staff project average ratio of 5;
- Induction activities;
- Library visits and instruction;
- Web based information including Degree Programme Handbook, Degree Regulations and Module sheets;
- University Computing Service facilities (including extensive PC and UNIX provision, software applications, e-mail and internet access);
- University (Robinson) Library, including search facilities and inter-library loans;
- Private study area in Merz Court
- Extensive laboratories;
- University Careers Service;
- University Counselling Service;
- University Language Centre;
- Students' Union services, including societies, refectories and Student Advice Centre, further student refreshment and social areas are available in Merz Court;
- Centre for Physical Recreation and Sport;
- Student Progress Office;
- International Office;
- University Chaplaincy;
- Campus Medical Practice.

Ref: Postgraduate Prospectus 2001: http://www.ncl.ac.uk/postgraduate/

Student Support:	
Academic facilities	http://www.ncl.ac.uk/postgraduate/support/acfacilities.phtml
Accommodation	http://www.ncl.ac.uk/postgraduate/support/accomm.phtml
Welfare	http://www.ncl.ac.uk/postgraduate/support/welfare.phtml
Careers	http://www.ncl.ac.uk/postgraduate/support/careers.phtml
Disability	http://www.ncl.ac.uk/postgraduate/support/disability.phtml
Mature students	http://www.ncl.ac.uk/postgraduate/support/mature.phtml
Childcare	http://www.ncl.ac.uk/postgraduate/funding/childfund.phtml
UCS:	http://www.ncl.ac.uk/ucs/
The Language Centre	http://www.ncl.ac.uk/langcen/
Newcastle University Library	http://www.ncl.ac.uk/library
Tutor's Handbook:	http://www.ncl.ac.uk/internal/thb

13 Criteria for Admission

Students should normally have at least a 2:2 honours degree in electrical engineering, or exceptionally a lower qualification plus a significant period of relevant industrial experience.

14 Methods for evaluating and improving the quality and standards of teaching and learning:

Mechanisms for review

- Subject review
- Taught Programme Review
- Module Review (including University Questionnaire Service returns)
- Graduating Student Questionnaire.
- Graduate Questionnaire (sent out two years after graduation)
- Stage Review Meetings Annual Revision of Regulations
- Annual Revision of Module Sheets
- Accreditation Reports
- HEFCE/QAA Reports
- External Examiners' Reports to VC
- Student/Staff Committee
- Industrial Advisory Board
- Staff Meetings
- Student Representation on Committees
- Board of Studies
- Personal Tutors

Committees with responsibilities for quality and standards

- University Teaching Committee
- Faculty Teaching Committee
- Faculty Policy & Resources Committee (for resource issues)
- Board of Studies
- School Teaching Committee
- School Executive & Staff Committees (for resource issues)
- School Staff/Student Committee
- Board of Examiners
- University Staff/Student Committee

Staff Development activities

- All new staff complete Certificate in Learning & Teaching
- Biennial Appraisal linked to staff development
- Annual Board of Studies review of module delivery
- Annual Peer Review of Lecture Presentation

The following internal documentation is maintained:

: Preparing for Subject Review
: Guidelines for Taught Programme Review 1999
: Module Boxes,
: DTC minutes,
: Web based documentation, http://eee.ncl.ac.uk/
: HEFCE Quality Assessment Report 1997
: FTC Minutes
: FP&RC confidential Minutes, maintained by Faculty Asst. Registrar
: BoS. Minutes file,
: Staff/Student Minutes
: Exam. Board Minutes.

15 Regulation of Standards

Assessment rules
Common Marking Scheme
The University has adopted a Common Scale for the Return of Marks as defined in the "2004-05-PGT Progress Regulations and Examination Conventions":
Summary Description

PG masters programmes (MSc)		**Other PG programmes (PG Diploma)**	
<50	*Fail*	*<50*	*Fail*
50-59	*Pass*	*50 or above*	*Pass*
60-69	*Pass with Merit*		
70 or above	*Pass with Distinction*		

The regulations impose a limited resit provision which may apply if marks of 50% are not attained in every module.

Role of the External Examiner

The External Examiners are involved in all Stages of assessment.

- Approval of Examination Papers
- Vetting in-course assessments and examination scripts
- Interviewing a selection of candidates prior to the Examination Board
- Attending the Examination Board and participating in its deliberations
- Reviewing any subsequent special cases, either by correspondence or in special circumstances by subsequent visits to Newcastle.
- Returning a confidential report to the VC.

University and Faculty regulations governing assessment:
Taught Postgraduate Masters' Degree Entrance and Progress Regulations: http://www.ncl.ac.uk/calendar/university.regs/tpmdepr.html
Degree of Master of Science (MSc) by Flexible Training Advanced Programme: http://www.ncl.ac.uk/calendar/higher-science-eng-agr/mscftap.html

16 Indicators of Quality and Standards

- Annual External Examiners' Reports (School and FTC reviews)
- Annual review of student destinations
- Annual Module and Programme Review process reported to Board of Studies
- Staff / Student Committee Minutes reviewed by Board of Studies
- Annual FTC review of student feedback questionnaires.
- Biennial UTC "Taught Programme Review"
- Quinquennial UTC "Subject Review"

17 Report on Compatibility of Programme with FHEQ

Level M (Master's degree)

Intended Learning Outcomes

The intended learning outcomes of the award were compared to the descriptors at the Master's degree level of the FHEQ, and it was found that the former were consistent with the latter (see detailed Matrix for this programme).

http://www.ncl.ac.uk/sage/internal/teaching/admin/

Warning

This specification provides a concise summary of the main features of the programme and the learning outcomes that a typical student might reasonably be expected to achieve if they take advantage of the opportunities provided. More detailed information on the specific learning outcomes, indicative content and teaching, learning and assessment can be found in the Degree Programme Handbook and other University documentation.

The information from this document may be selectively extracted and included in documents that are more appropriate for non-academic audiences, for example, students, intending students and employers.