

Nottingham Trent University

Course Specification

Basic Course Information

1.	Awarding Institution:	Nottingham Trent University
2.	School/Campus:	School of Science & Technology
3.	Final Award, Course Title and Modes of Study:	MSc Engineering (Cybernetics & Communications) FT, SW or PT
4.	Normal Duration:	FT 1 year, SW 2 years, PT up to 2.5 years
5.	UCAS Code(s):	COMP(144,145,148,149,152,153)

6. Overview and general educational aims of the course

The overall aim of the course is to provide you with masters level education in the theory and practice of engineering integrating aspects of Computer Science, Cybernetics, Wireless Communications, Mechanical Engineering, Business Management and Entrepreneurship. In addition to providing a broader, analytical and integrated study of engineering, the programme emphasizes the importance of independent learning, problem solving and self-organisation skills.

During the course you will learn the principles and techniques necessary for developing advanced engineering solutions and their applications to a range of practical problems. You will have further opportunities to develop greater versatility through cross-disciplinary integration of subject specialisation. An innovative feature is the multi-disciplinary design project that will provide a challenging simulated work environment to enable you (as a member of a team) to develop imagination, creativity, innovation in design solutions and skills that will further enhance your subsequent employability including leadership, team building and communication.

You will develop the research skills to enable you to keep up to date with knowledge and understanding of the continually changing issues related to engineering. Overall you will be equipped to be an independent learner who can analyse engineering problems, design and develop innovative but practical solutions.

This course has a September and January intakes, and if you enrol into the sandwich (SW) mode of study, then you will have the option to apply for an industrial placement. If successful, then you undertake a one-year placement between the completion of the taught modules and the start of the project.

On completion of the course you should be able to seek employment in the industrial sector allied to the electronic industry particularly communications and consumer products. A significant number of students from this course have found employment in the engineering/industrial sector where they often combine the subject specific knowledge from their undergraduate degree with the new knowledge and skills that they have gained on this course.

7.	<p>Course outcomes Course outcomes describe what you should know and be able to do by the end of your course if you take advantage of the opportunities for learning that we provide.</p>
<p>Knowledge and understanding By the end of the course you should be able to:</p>	
<p>P1. Demonstrate understanding of advanced engineering principles and techniques and their applications to a wide range of problems, particularly in the cybernetics and mobile networks domains. (B)</p> <p>P2. Critically evaluate problems using appropriate software tools and be aware of the capabilities and limitation of computer-based methods for developing engineering solutions.</p> <p>P3. Investigate new and emerging technologies in communications engineering and adapt to specific purposes as necessary. (B)</p> <p>P4. Demonstrate understanding of research processes and the skills to apply them to an engineering case study in the form of a project, and to critically appraise and evaluate issues related to the project topic in a logical manner. (B)</p> <p>P5. Demonstrate understanding of the design process, and the skills to integrate knowledge to generate an innovative design to a challenging situation and be aware of the limitation of the solution. (B)</p> <p>P6. Plan and control the development of engineering applications using appropriate methodologies including the assessment of risks and health and safety issues. (B)</p>	
<p>Skills, qualities and attributes By the end of the course you should be able to:</p>	
<p>P7. Be innovative in the use of a broad range of scientific principles in cybernetics and communications engineering applications and learn through reflection on practice and experience.</p> <p>P8. Synthesise and critically appraise ideas from a wide variety of sources. (B)</p> <p>P9. Generate ideas for new products and develop and evaluate a range of new solutions.</p> <p>P10. Communicate ideas, concepts, plans and designs, using a variety of approaches including writing, oral and computer based presentations.</p> <p>P11. Undertake technical roles within a team and can exercise leadership. (B)</p>	

P12. Learn independently to expand on the knowledge and understanding developed during the course. **(B)**

8. **Teaching and Learning Methods**

In planning the course, we have used an outcome-based approach, which incorporates the experience that has been developed in the School over a number of years based on feedback, review and reflection. The purpose is to create a student centred learning environment and teaching and learning methods are selected to facilitate student engagement in activities that are appropriate to the outcomes.

Reflecting the relative maturity of postgraduate students, your teaching and learning is designed to enable independent learning. The majority of taught modules will be centred on lectures supported by seminars, workshops and laboratories to provide a significant knowledge resource. You will be able to apply this knowledge through case study and project work either at the University or away from the University.

The teaching methods include:

- lectures to introduce and develop concepts and to explore the application of these concepts;
- specialist laboratories to develop skills and appreciate concepts;
- seminars to provide academic support;
- case study and project work to develop a deeper understanding of concepts and applications.

Comprehensive teaching material will be available to support the learning process utilising the World Wide Web and e-learning where applicable. Such teaching material will typically comprise of written information, recommended reading, tutorial questions, self-assessment tests and computer based learning and teaching instructions. It is a normal practice of the School to invite external professional staff to contribute to learning material and to give lectures on a 'visiting faculty' basis. The web and the University's own Virtual Learning Portal NOW will also be used for communication between students and staff.

Teaming up with students from the MSc Engineering Management programme, the design project will provide a challenging simulated work environment to enable you to engage in the design, manufacture and management of a real-world engineering project. Through a process of group interaction and reflection on practice and experience in designing and managing an engineering project, you will be able to develop technical

knowledge and a range of skills including team work, leadership, problem solving and decision making.

The major project module will integrate the knowledge base of the taught modules to enable individual development of highly specialised knowledge and research skills.

If you are an international student where English is not your first language, language support will be provided where appropriate by the School to enhance your learning experience and to improve your presentation skills. If necessary, you may be required to attend advanced English language classes as a supplementary module.

9. **Assessment Methods**

The course uses a variety of methods of assessment to ensure that you can demonstrate the range of higher-level learning outcomes. Subject knowledge and understanding and the skills to apply principles and techniques are assessed through coursework, case studies, and exams. These also assess a range of transferable skills including competence in written communication and oral presentations.

Simulated problems are used in case study to assess problem solving skills and creativity in design solutions.

Specialist laboratories are used to test a range of practical skills and those outcomes associated with hypothesis testing, data capture and interpretation. Typical assessments include coursework reports and presentations.

The design project assesses an important range of skills relevant to the world of work, including leadership, team building, design innovation, product development, technical presentation skills, time and resource management.

The major project assesses a similar range of skills as for the design project but the emphasis is on individual research and technical skills as well as self-organisational skills.

The assessment type and methods used vary for each module depending on the requirements, content and learning outcomes of the module. Feedback is provided on assessed work to encourage reflective learning.

The assessment schedule of the course is summarised in the following table.

Module Title	Credit Points	Status	Assessment	
			Coursework	Exam
Robotics & Cybernetics	20	Core	100%	
Mobile Networks	20	Core	100%	
Wireless Communications	20	Core	100%	
Group Design Project	20	Core	100%	
Research Methods	20	Core	100%	
Major Project	60	Core	100%	
Software Engineering 1	20	Option	100%	
Global Business Management	20	Option	100%	
Entrepreneurial Leadership and Project Management	20	Option	50%	50%

Assessment of the optional industrial placement is defined in the specification for the Placement Diploma (or Certificate) of Industrial Studies.

10. **Course structure and curriculum**

The course is studied on a one-year full-time basis. We have chosen the modules so that the course outcomes are developed. You will see that there are also a number of options to match your own study needs and interests. What we term a 'Curriculum Map' is available should you wish to see how the course outcomes and modules interrelate. The course leader will advise you on selection of modules.

Full-Time and Sandwich modes of study for the September start:

Weeks 1-10 (study 2 modules – 1 core + 1 option)

- Robotics and Cybernetics (20 credits) - **core**

Choose one from the following options:

- Entrepreneurial Leadership and Project Management (20 credits) - option
- Global Business Management (20 credits) - option
- Software Engineering 1 (20 credits) – **default option**

Weeks 11-30 (study 4 modules)

- Mobile Networks (20 credits) - **core**
- Group Design Project (20 credits) – **core**
- Research Methods (20 credits) – **core**
- Wireless Communications (20 credits) - **core**

** At this point, sandwich students successful of securing a placement position undertake a one-year work placement before returning the following year to start the major project.*

Weeks 31-45 (study 1 module)

- Major Project (60 credits) – **core**

Full-Time and Sandwich modes of study for the January start:

Weeks 1-20 (study 4 modules – 4 core)

- Mobile Networks (20 credits) - **core**
- Group Design Project (20 credits) – **core**
- Research Methods (20 credits) – **core**
- Wireless Communications (20 credits) - **core**

** At this point, sandwich students successful of securing a placement position undertake a one-year work placement before returning the following year to start the major project.*

Weeks 21-35 (study 1 module)

- Major Project (60 credits) – **core**

Weeks 36-45 (study 2 modules – 1 core + 1 option)

- Robotics and Cybernetics (20 credits) - **core**

Choose one from the following options:

- Entrepreneurial Leadership and Project Management (20 credits) - option
- Global Business Management (20 credits) - option
- Software Engineering 1 (20 credits) – **default option**

Part-Time mode of study:

Year 1

Weeks 1-10 (study 1 module)

Choose 1 from the following options:

- Entrepreneurial Leadership and Project Management (20 credits) - option
- Global Business Management (20 credits) – option
- Software Engineering 1 (20 credits) – **default option**

Weeks 11-30 (study 2 modules)

- Research Methods (20 credits) – **core**
- Wireless Communications (20 credits) - **core**

Year 2

Weeks 1-10 (study 1 module)

- Robotics and Cybernetics (20 credits) - **core**

Weeks 11-30 (study 2 modules)

- Group Design Project (20 credits) – **core**
- Mobile Networks (20 credits) – **core**

Weeks 31-60 (study 1 module)

- Major Project (60 credits) – **core**

11. Admission to the course

For admission to the course, you should have an honours degree or equivalent in Science, Engineering or Technology.

If you are a mature candidate without a degree but with equivalent academic achievement and substantial industrial experience, you are welcomed to apply. You will normally be expected to provide a portfolio of accredited supporting evidence and to attend an interview, where appropriate.

Selection is by application form, supported by documentary evidence of academic qualifications/attainments and references.

For international students

If you are an international student, where English is not your first language, you will need to have an English language qualification, normally IELTS 6.5 or equivalent.

This requirement may be waived if you can demonstrate language skills that indicate you have the potential to succeed on the programme.

If you are already studying in the UK, assessment may be based on the outcomes of an interview.

Applicants who have successfully completed the postgraduate diploma course in computing run by the Nottingham Trent International College will be eligible for entry to these courses.

12. Support for Learning

There is an induction programme (including IT and Library use) and you will

receive a course handbook that provides all the essential information about the course and the support we provide for your learning.

Staff teaching on the course are members of professional institutions including Institution of Engineering and Technology (IET), British Computer Society (BCS), Institution of Mechanical Engineers (IMechE), and Institution of Electrical and Electronics Engineers (IEEE). Most staff are active researchers; many undertake industrial consultancy.

The course leader, who is responsible for the day-to-day operation of the course, oversees all students enrolled on the course. Additionally, you will be allocated a Personal Tutor who is accessible by you on an individual basis throughout your time on the course.

The University's own e-learning environment (NOW) is used to support student learning activities.

The library and other learning resources (equipment/IT) are continually updated to ensure they are fit for purpose.

The University central student Support Services offers a range of general, specialist and professional support services for students.

For students hoping to take a placement, support and advice is available from the School's Placement Office.

13. Graduate destinations / employability

There is a wide range of career opportunities in the electronics and communications industry and related industries. We have an enviable graduate recruitment record. If you choose to work in the areas related to the subject discipline studied, we have an excellent employment record.

Some graduates choose to venture into other sectors and are equally successful in gaining employment because of the transferable skills gained on the programme. Other graduates go on to study for a PhD.

The University Careers Service is available to all students, offering individual consultation.

14. Course standards and quality

- A course committee monitors student feedback on module delivery.
- You will be given feedback on all assessed work.
- There is one External Examiner, who submits an annual report on the standards and quality of the programme.

<ul style="list-style-type: none"> • The subject benchmarks of the Quality Assurance Agency have been incorporated into the course's learning outcomes. • The University was the subject of a successful institutional audit by the Quality Assurance Agency in October 2010 – the report is available here http://www.qaa.ac.uk/InstitutionReports/Pages/Nottingham-Trent.aspx 										
<p>15. Assessment regulations This course is subject to the University's Common Assessment Regulations (located in its Academic Standards and Quality Handbook). Any course specific assessment features are described below:</p>										
<p>There are no course specific exceptions from the University regulations.</p>										
<p>16. Additional Information</p> <table border="0"> <tr> <td>Collaborative partner(s):</td> <td>None</td> </tr> <tr> <td>Course referenced (B) to national QAA Benchmark Statements:</td> <td>Engineering</td> </tr> <tr> <td>Course recognised by:</td> <td>n/a</td> </tr> <tr> <td>Date implemented:</td> <td>September 2013</td> </tr> <tr> <td>Any additional information:</td> <td></td> </tr> </table>	Collaborative partner(s):	None	Course referenced (B) to national QAA Benchmark Statements:	Engineering	Course recognised by:	n/a	Date implemented:	September 2013	Any additional information:	
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