

# Nottingham Trent University

## Course Specification

### Basic Course Information

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|----|---|---|
| 1. | Awarding Institution:                         | Nottingham Trent University               |
| 2. | School/Campus:                                | School of Science & Technology            |
| 3. | Final Award, Course Title and Modes of Study: | <b>MSc IT Security</b><br>FT, SW or PT    |
| 4. | Normal Duration:                              | FT 1 year, SW 2 years, PT up to 2.5 years |
| 5. | UCAS Code(s):                                 | COMP124-FT, COMP125-SW, COMP126-PT        |

### 6. Overview and general educational aims of the course

The overall aim of the course is to provide you with a specialist Masters level education in theory and practice relating to Information Technology security issues. The course provides a broad education in the area of computer and Internet security. Student-centred learning, hand-on practical work and problem solving are central to the learning approach taken.

An original feature of this course is that it combines the technical and managerial aspects of IT Security. Building on a practical foundation comprising the understanding of operating systems, network protocols security and how to develop secured code, you will learn how to critically assess the security risks to IT organisations and how to evaluate the information security solution to mitigate them.

The major project element of the course will allow you an opportunity to develop greater subject specialism in one specific Internet or security topic of your choice. The course will also provide you with the research skills necessary to keep up to date with the continually changing issues in the field such as computer forensics, security in Cloud infrastructures and digital rights management. Overall the course will equip you to be an independent learner with advanced technical implementation skills and a good knowledge of security issues.

If you enrol into the sandwich (SW) mode of study, then you will have the option to apply for a paid industrial placement that is obtained via a standard employment application process for which we give you support. If successful, then you undertake a one-year placement between the completion of the taught modules and the start of the project.

On successful completion of the course you will be able to seek employment in a variety of computing and IT related industries. You will be particularly attractive for employers seeking technical security and computer forensics specialists. If you wish to pursue further study, you will also be fully equipped to embark on a computer science related, PhD level course of study, at a UK or EU university.

7.	<p><b>Course outcomes</b></p> <p>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><b>Knowledge and understanding</b></p> <p>By the end of the course you should be able to:</p>	
<p><b>C1.</b> Demonstrate a critical understanding of IT security related problems and of processes, approaches and procedures necessary to minimise vulnerability. <b>(B)</b></p> <p><b>C2.</b> Demonstrate an in-depth knowledge and advanced understanding of the tools and techniques required to undertake a computer forensics investigation.</p> <p><b>C3.</b> Apply appropriate software and/or hardware tools to design, develop and critically evaluate innovative IT security solutions at the application development and computer network levels. <b>(B)</b></p> <p><b>C4.</b> Critically appraise the main issues involved in information security management procedures to provide a secure environment within an organisation. <b>(B)</b></p> <p><b>C5.</b> Critically appraise and evaluate issues related to an information security based case study in the form of a major project.</p>	
<p><b>Skills, qualities and attributes</b></p> <p>By the end of the course you should be able to:</p>	
<p><b>C6.</b> Be Innovative in applying security principles in IT applications. <b>(B)</b></p> <p><b>C7.</b> Critically compare and contrast a variety of security technologies and management practices to provide secure solutions.</p> <p><b>C8.</b> Be systematic and efficient in analysing the security risks in Enterprise and Cloud infrastructures, and draft security policies to mitigate the risk factors. <b>(B)</b></p> <p><b>C9.</b> Communicate concepts, plans and designs, using a variety of approaches, including written, oral and computer based presentations. <b>(B)</b></p> <p><b>C10.</b> Learn independently to expand on the knowledge and understanding developed during the course.</p> <p><i><b>(B)</b> indicates that the outcome has been mapped to the Computing benchmark standards, which provide a national framework for describing the content and standards of a Master's degree in Computing disciplines.</i></p> <p><a href="http://www.qaa.ac.uk/Publications/InformationAndGuidance/Documents/QAA386_Computing.pdf">http://www.qaa.ac.uk/Publications/InformationAndGuidance/Documents/QAA386_Computing.pdf</a></p>	
8.	<p><b>Teaching and Learning Methods</b></p>
<p>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 with teaching and learning methods selected to facilitate student engagement in activities that are appropriate to the outcomes.</p> <p>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</p>	

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 various teaching methods are:

- lectures to introduce and develop concepts and to explore the application of these concepts;
- workshops and 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 be comprised 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 Environment (NOW) is an important mechanism for us to support your learning. Extensive use of this is made in all modules to offer you online support in your study.

You will also take the Research Methods module in order to enhance your independent learning and research skills.

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. You will gain knowledge and understanding together with skills to apply various techniques and use technology. Your abilities will be assessed through coursework reports, presentations, vivas and demonstrations. These also assess a range of transferable skills including competence in written communication and oral presentations.

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

Laboratory/workshops are used to develop a range of practical and problem-solving skills. A typical assessment is a practical assignment where your achievement is presented via a coursework report and viva or demonstration/presentation.

During the Major Project, you will be required to undertake a major piece of practical work. This then forms the basis of a dissertation. Finally you will have to attend a viva voce where you will discuss the project with a small panel of lecturers.

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

Module Title	Credit Points	Status	Assessment	
			Type	Details
Computer Security	20	Core	Coursework 100%	Written report addressing a computer forensics problem for a specific use-case based on investigation of the literature

Information Security Management	20	Core	Coursework 100%	Written assignment that includes researching a particular information security problem and recommending a systemic solution for an organisation.
Internet Programming	20	Core	Coursework 100%	The analysis, design and implementation of a web based application to be derived from a specification given by the module team
Computer Forensics	20	Core	Coursework 50% Coursework 50%	Element 1: addressing a computer forensics problem for a specific use-case based on investigation of the literature. Element 2: Written report demonstrating the practice of computer forensics.
Network and Cloud Security	20	Core	Coursework 100%	Written report addressing a network security problem for a specific use-case based on investigation of literature
Research Methods	20	Core	Coursework 100%	A literature survey investigating existing solutions and relevant publications for a specific research problem A project definition form to be handed in as a written report, detailing the proposal for the Major Project and its SW/HW requirements
Major Project	60	Core	Coursework 100%	Produce a written dissertation that describes, discusses, evaluates and analyses the outcome of your investigation and technical development. You will also be required to present what you have achieved via a mixture of viva voce and formal presentation.

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. Together, the modules on the course develop and assess the learning outcomes for the course as a whole. What we term a 'Curriculum Map' is available should you wish to see how the course outcomes and modules interrelate.

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

Weeks 1-10 (term 1)

- Computer Forensics (20 credits)
- Information Security Management (20 credits)

Weeks 11-30 (terms 2-3)

- Internet Programming (20 credits)
- Computer Security (20 credits)
- Network and Cloud Security (20 credits)
- Research Methods (20 credits)

*\* 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 (summer Term, SW to be taken in the second year)

- Major Project (60 credits)

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

Weeks 1-20 (terms 2-3)

- Internet Programming (20 credits)
- Computer Security (20 credits)
- Network and Cloud Security (20 credits)
- Research Methods (20 credits)

*\* 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 (summer term, SW to be taken in the second year)

- Major Project (60 credits)

Weeks 36-45 (term 1)

- Computer Forensics (20 credits)
- Information Security Management (20 credits)

### **Part Time Mode of Study**

In part time mode students will take half of the taught modules in year one and the other half in year two. Modules must be taken at the times that they are delivered to full time students. It is also important that the Research Methods module is delivered before students undertake their major project, which is scheduled in year 2 for part time students to allow them to experience a wider range of subject disciplines before embarking on the project. An example programme for September and January entry is given below.

### **Part Time modes of study for the September start:**

#### **Year 1**

Weeks 1-10 (term 1)

- Information Security Management (20 credits)

Weeks 11-30 (terms 2-3)

- Internet Programming (20 credits)
- Network and Cloud Security (20 credits)

#### **Year 2**

Weeks 1-10 (term 1)

- Computer Forensics (20 credits)

Weeks 11-30 (terms 2-3)

- Computer Security (20 credits)
- Research Methods (20 credits)

To be taken over 30 weeks during the course

- Major Project (60 credits)

**Part Time modes of study for the January start:**

**Year 1**

Weeks 11-30 (terms 2-3)

- Internet Programming (20 credits)
- Network and Cloud Security (20 credits)

Weeks 1-10 (term 1)

- Information Security Management (20 credits)

**Year 2**

Weeks 11-30 (terms 2-3)

- Computer Security (20 credits)
- Research Methods (20 credits)

To be taken over 30 weeks during the course

- Major Project (60 credits)

Weeks 1-10 (term 1)

- Computer Forensics (20 credits)

**11. Admission to the course**

For admission to the course, you should have a good honours degree or equivalent in any numerate (relevant) subject discipline.

Applicants with relevant employment experience or other relevant qualifications will also be considered, and might be interviewed to establish their eligibility for the course.

If English is not your first language, you will require an English language qualification, normally comprising one of the following: IELTS 6.5, TOEFL 550, or CBTOEFL 213.

This requirement may be waived if you can demonstrate language skills that indicate you have the potential to succeed on the programme by achieving good passes in English Language examinations taken as part of your Bachelor degree programme, or providing confirmation from academic referees/institutions that the medium of instruction throughout the degree study programme is English. If you are already studying in the UK, assessment may be based on the outcomes of an interview.

Mature candidates without a degree but with equivalent academic achievement and relevant industrial experience 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.

**12. Support for Learning**

We start with an induction programme (including IT and Library use) where 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 generally educated to PhD level and many are members of professional institutions including British Computer Society (BCS) and Institution of Electrical and Electronics Engineers (IEEE). Staff are generally active researchers and many have involvement with industry to undertake research or consultancy work.

The Course Leader, who is responsible for the day-to-day operation of the course, oversees all students enrolled on the course. The course leader is responsible for the pastoral care of all students on the course and will offer support and advice as necessary during your study.

The library and other learning resources (equipment/IT) are continually updated to ensure they are fit for purpose. As previously mentioned, NOW (NTU Online Workspace) is an important platform in supporting your learning.

The University central student Support Services offers a range of general, specialist and professional support services for students. [http://www.ntu.ac.uk/student\\_services/](http://www.ntu.ac.uk/student_services/)

For students hoping to take a placement, support and advice is available from the University's employability services.

**13. Graduate destinations / employability**

There is a wide range of career opportunities in the Computing & IT sector and related industries. This course will prepare you for roles as a technical security specialist together with a range of technical development and implementation roles. You will also have the potential to develop into security consultancy and technical management roles. The School of Science and Technology at Nottingham Trent University has an enviable graduate recruitment record.

Some graduates choose to venture into other sectors – such as project management or financial forecasting – where they are likely to be equally successful in gaining employment because of the transferable skills gained on the course. Other graduates go on to study for a PhD.

The University Employability 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 course.
- The subject benchmarks of the Quality Assurance Agency have been incorporated into the course's learning outcomes.

An annual monitoring process at course level is documented in a Course Standards and Quality Report (CSQR), which articulates the range of reflections and evaluations that have taken place throughout the year. Its emphasis is on evaluation and quality enhancement.

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:

There are no course specific exceptions from the University regulations.

16. **Additional Information**

Collaborative partner(s):	<b>None</b>
Course referenced to national QAA Benchmark Statements – indicated by <b>(B)</b> in section 7- the course outcome:	<b>Computing (2011)</b>
Course recognised by:	<b>N/A</b>
Date implemented:	<b>May 2015</b>
Any additional information:	<b>N/A</b>