

## Programme Specification: MSc Computing (Information Security)

1. Awarding Institution/Body	University of Gloucestershire
2. Teaching Institution	University of Gloucestershire
3. Recognition by Professional Body.	N/A
4. Final award and level of qualification	MSc
5. Modular Scheme or other	N/A
6. Programme title (name on certificate)	Computing (Information Security)
7. UCAS code	N/A
8. JACS code	G420
9. QAA subject benchmark statement(s) where relevant	This Programme Specification has been informed by:  <i>Subject Benchmark Statement Master's degrees in computing 2011</i>  UK Quality Assurance Agency (QAA)
10. Date of initial validation	May 2007
11. Date of revision	March 2012

### 12. External and Internal reference points

The educational aims and outcomes of the programme have been written with reference to the following reference points.

#### 12a) EXTERNAL

- ❖ the Framework for Higher Education Qualifications (FHEQ);
- ❖ the QAA Benchmark statement(s) (B);
- ❖ BCS accreditation guide;

Further details for the above are available at the relevant website(s).

#### 12b) INTERNAL

- ❖ University of Gloucestershire Academic Regulations for Taught Provision (ARTP);
- ❖ University of Gloucestershire Learning and Teaching strategy (LTS);
- ❖ Other specified policies e.g. Sustainability, AWP and Student Charter.

Further details for the above are available at the University website

### **13. Main educational aims of the programme**

The main educational aims of Computing (Information Security) are to provide you, the student, with opportunities to:

1. develop the practical and critically evaluative skills required to be directly employable in the computing industry
2. obtain comprehensive knowledge of IT/IS project management from practical IT/IS projects (**B**)
3. gain a critical understanding of the technologies and human factors required for developing applications (**B**)
4. develop a critical understanding of professional, legal and ethical issues and practice within the computing industry (**B**)
5. develop and deepen skills involved in carrying out academic research.
6. develop an understanding of the central importance of security throughout the design and implementation of computer systems
7. develop the skills to implement and evaluate computer security measures

### **14. Programme outcomes**

The programme provides opportunities for you, the student, to achieve and demonstrate the following learning outcomes:

#### **14a) Knowledge and understanding of:**

1. theories, systems and technologies that underpin the development of digital applications (B)
2. the needs of users, taking into account cognitive processing limits in the design of interactive human-computer interfaces (B)
3. the numerical methods and skills required of the computing professional in planning, researching and developing a variety of projects and products (B)
4. professional, legal, ethical and societal issues and practice within the computing
5. the threats to computer security and the utility of counters to those threats
6. legislation relating to data protection and computer crime

#### **14b) Intellectual/ thinking skills – able to:**

1. apply critical reasoning and problem solving in both practical development and theoretical academic settings, forming abstractions from the real world.(B)
2. apply investigative and scholarly techniques in researching a topic or problem in the published literature.

3. analyse and interpret data from a variety of sources, including published literature, systematic tests and observations
4. synthesise evidence and apply logical reasoning techniques to formulate arguments and arrive at conclusions.

**14c) Subject specific /Practical and professional skills – able to:**

1. analyse, evaluate and solve complex computing-related problems , by building on current developments, available software and appropriate development processes (B)
2. utilise computer programming skills to create computing applications
3. maintain up-to-date knowledge of technological developments and dealing with technical uncertainty by setting goals, performing effective research and identifying resources (B)
4. synthesise and critically evaluate the important issues within the profession.(B)
5. apply the tools and techniques of project management
6. explain the operation, strengths and weaknesses of commonly-used cryptographic protocols
7. show an understanding of how security is implemented throughout a network protocol stack

**14d) Transferable/key skills – able to:**

1. manage their own time and organise their own practice, identifying relevant knowledge, skills and supporting tools to achieve identified goals
2. communicate effectively through written and verbal media using well reasoned, logical arguments and engage in constructive discussion with peers and wider audiences
3. demonstrate interpersonal skills and the ability to work effectively with others to achieve common goals
4. demonstrate an ability to critically review the literature, which includes identifying all of the key developments in a particular area of study, critically analyzing them and identifying limitations and avenues for further development or explanation (B)
5. demonstrate an ability to recognize and respond to opportunities for innovation (B)

**15. Teaching, learning and assessment**

The teaching, learning and assessment strategies and methods used in the programme to enable learning outcomes to be achieved and demonstrated by you, the student.

**15a) Teaching and learning methods**

In order to develop knowledge, understanding and intellectual skills, students will engage with a wide variety of learning techniques throughout their MSc programme, including

lectures, lecture-led workshops, guest lectures, case studies, demonstrations, seminar discussions, computer laboratory sessions, student presentations, criticisms and research exercises. Students are supported in their learning through resources provided by tutors, but are also expected to carry out their own research and independent study using a variety of printed and electronic sources and to synthesise the information or data to form appropriate conclusions.

The study of computing is inherently vocational, creative, numerical and technical, requiring effective and efficient solutions to complex problems. Problem solving is a key requirement for programming, web design, interface design and project management, and is developed through individual and group based case studies and practical activities including analysis, design, implementation and critical evaluation.

### 15b) Assessment

Assessment methods include essays, case studies, examinations, presentations, projects, systems design and development exercises and software evaluation/comparisons as appropriate. These assessments will require students to use a wide range of quality information sources as the evidence base for assessments, demonstrate skills of analysis, evaluation and synthesis, and communicate effectively in both written and verbal formats. At the Masters' stage, assessment takes the form of a dissertation where, in addition to the written submission, students are required to give an oral presentation of their work in order to share their experiences and findings with their peers and assessors.

## 16. Current Programme Map

Code	Title	Status	Credits
<b>Postgraduate Certificate</b>		<b>60 Credits</b>	
COM495	Database Management	■	15
COM492	IT Project Management	■	15
	Option	□	15
COM475	Information Security	■	15
<b>Postgraduate Diploma</b>		<b>60 Credits</b>	
COM493	Digital Innovation and Usability	■	15
COM494	Research Methods for Computing	■	15
COM491	Professional Practice in Computing	■	15
COM476	Network Security	■	15
<b>MSc 60 Credits</b>			

COM404	Dissertation	■	60
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■ Compulsory module

□ Option

## 17. Programme Overview

The programme is offered in the following modes of study: Full-time, Part-Time.

Staged awards are available within this programme of study, see section 4.

Students may enter, interrupt or leave a programme at the end of each Level.

The language of study is English.

### 17a) Structure, key features and modules

This section of the programme specification should be read with reference to section 16, the programme map. Modules may be compulsory, core or optional and may have specific pre-requisites.

This course provides a specialist Information Security course within the MSc Computing suite. The course aims at developing technical understanding and the management requirements to ensure data and systems security. The course combines theory, tools, methods and management techniques necessary to understand information technology security, particularly in business settings.

Students will develop a professional approach to information systems analysis, project management and requirements for designing, implementing and evaluating secure systems. They will also develop some of the forensic and management skills needed to identify attempts to compromise systems, and implement systems and processes to prevent attacks. The course will therefore provide students with a well-balanced perspective, helping to prepare them for a lucrative career in data and IT security management.

The MSc Computing shell provides a framework for all awards, and contains the compulsory elements and requisite skills that underpin every course. It introduces knowledge and understanding of professional practice and ethics which will serve students well in their professional working lives as well as a sound basis in research methods to support their MSc dissertation work and beyond. Students can expect to gain knowledge of IT project management techniques that they can then apply when they conduct the project work at diploma level and in their dissertation. They have an opportunity to use their knowledge creatively, but within a well-defined and well-supported framework in the project module. The 60 credit dissertation allows students to research deeply in their programme area and to develop real expertise at the forefront of technology. The Computing shell will develop transferable skills to underpin a successful career in the increasingly important and rapidly expanding IT industry.

Opportunities for Personal Development Planning (PDP) and Career Planning are available throughout the course, beginning with induction. The Careers Office provides support for progression beyond the course. Tutors and the Course Leader are also available to help identify, develop and monitor the identified goals for the students on the course. For example, one student who was successful through several interview stages with BT was helped with the final presentation by the Careers Office and supported throughout the process by the Course Leader. Another student, who reached 'max fail' in this institution was advised and supported by the Course Leader so he gained a place elsewhere to restart his studies.

The Department has strong links with industry through the Knowledge Transfer Programme (KTP) that informs teaching and provides case studies. This, coupled with the Joint Programme of seminars with the British Computer Society and Institute of Engineering and Technology, provides students with engagement with a wider IT perspective and an opportunity for further personal development. Such events provide an excellent forum for students to gain an insight into the developments in the wider business and industrial world and focus or reshape their career plans accordingly.

Stages in their progress are reviewed periodically and students are advised on their areas of strengths or weaknesses as required in relation to their future career prospects. In particular, the compulsory modules COM704 (Research Methods) and COM701 (Professional Practice), with their emphasis on the development of the dissertation proposal and professional development, will enable a student to integrate and reflect on the PDP issues involved.

### **17b) Credit and award requirements**

180 CAT points

The requirements for the Postgraduate Certificate (PGC) in Computing are successful completion of:

60 CATS points, normally COM491 + COM495 + COM475 + 15-credit option

The requirements for the Postgraduate Diploma (PGD) in Computing (Information Security) are successful completion of:

120 CATS points including COM491 + COM492 + COM493 + COM494 + COM495+ COM475 + COM476 + 15-credit option

The requirements for the MSc in Computing (Information Security) are successful completion of:

PGD + COM404

### **18. Additional information**

Further information on Assessment; Quality Assurance including Evaluation; Disability and Learning support provision; Criteria for Admission/Recruitment and Careers can be found at the University website.

The National Recognition Information Centre (NARIC) provides details of comparative information on all Higher Education programmes.