

Course Handbook  
PgDip/MSc IT Security  
2019-20  
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Please read this Handbook in conjunction with the University's Student Handbook.

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## 1. Welcome to the course

Welcome to the MSc IT Security Course and congratulations on gaining your place.

The information in this handbook contains important information about the MSc IT Security course, its structure and content. You will find it a useful resource for the coming year. This document is not designed to be a standalone manual. It is vital that you talk to staff to supplement the information. If you have any questions – please ask.

As your course leader I will be your main point of contact throughout your period of study on the MSc or Postgraduate Diploma. We will meet regularly throughout the course and you should come to see me if you have any queries or problems. Studying at Master's level provides you with an opportunity to develop your personal and academic skills. As well as being hard work it should also be a rewarding time. I hope you have an enjoyable time studying at UCLan.

-- Dr Martin Bateman

### 1.1 Rationale, aims and learning outcomes of the course



Increasing use of communication technology and information-based applications creates new opportunities and provides more convenient access to existing services, but offers increased potential for illegal or unwanted activities

The importance of networked IT systems in industry, commerce and education means that an in-depth understanding of the problems and techniques of IT Security development can improve your employment prospects in today's competitive employment market. The academic challenge and approach of an MSc can also develop an interest in research and provide opportunities to continue to PhD study.

The course will enable you to understand the underlying concepts, policies and technologies relating to IT systems security. Through the optional modules, it allows you to develop other skills useful to the development or maintenance of a secure IT system.

The course aims to build on your previous experience and we hope you will help to enrich the course with ideas from your previous studies and any work experience you may have.

#### Aims of the Programme

##### PgDip Aims

- To explore the concepts and principles of IT security
- To develop skills in the critical evaluation and use of tools and standards for IT system security and management
- To promote a systematic approach to security policy and planning
- To investigate current trends and research relevant to IT Security
- To develop practical IT skills and knowledge relevant to the design, development and management of IT systems
- To develop and enhance the students' information acquisition and critical analysis skills

##### MSc Aims (in addition to the above aims)

- To provide an opportunity for the students to plan, undertake and evaluate a substantial IT security-related project
- To develop the students' critical evaluation, communication and self-management skills to a level appropriate for post-graduate students

## Learning Outcomes

These are the skills and knowledge you should have acquired by the end of the course. The successful student will be able to

- Interpret relevant literature relating to IT security
- Critically evaluate tools and policies for the management of IT systems' security
- Apply and evaluate principles, practices and tools for the design, development and management of IT systems in a chosen area
- Explain the principles underlying techniques for preventing and investigating security exploits
- Plan, perform and evaluate a substantial security-related project
- Undertake a risk assessment and analysis of the security of an IT system
- Demonstrate a professional approach to ethical and legal issues relevant to a computing professional and understand the implications of their actions
- Select and use tools for securing and investigating an IT system
- Apply practical IT skills relevant to the design, development and management of IT systems in a chosen area
- Evaluate ideas, methods and systems in a coherent manner
- Analyse and evaluate appropriateness of methods and techniques from a specialist area for the development of computer systems in a given situation
- Locate and integrate information from multiple sources
- Analyse complex concepts and communicate the outcome effectively in a format suitable for a professional audience
- Communicate effectively to a diverse audience, for example, professional and lay audiences
- Construct reports to a professional standard
- Learn and work independently as a reflective practitioner, including goal setting, planning, self-management and review
- Work as part of a team

### 1.2 Course Team

#### Course Leader:

Martin Bateman	CM111	x3004	<a href="mailto:mbateman@uclan.ac.uk">mbateman@uclan.ac.uk</a>
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#### Academic Lead for Computing:

Chris Casey	CM226	x3278	<a href="mailto:ccasey@uclan.ac.uk">ccasey@uclan.ac.uk</a>
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#### Tutors:

Martin Bateman	CM111	x3004	<a href="mailto:mbateman@uclan.ac.uk">mbateman@uclan.ac.uk</a>
Nicky Danino	CM227	x3303	<a href="mailto:ndanino@uclan.ac.uk">ndanino@uclan.ac.uk</a>
Zaki El-Haroun	CM013	x3295	<a href="mailto:zmel-haroun@uclan.ac.uk">zmel-haroun@uclan.ac.uk</a>
Dan Fitton	CM218	x3277	<a href="mailto:dbfitton@uclan.ac.uk">dbfitton@uclan.ac.uk</a>
Peggy Gregory	CM012	x3284	<a href="mailto:ajgregory@uclan.ac.uk">ajgregory@uclan.ac.uk</a>
Janet Read	CM217	x3285	<a href="mailto:jcread@uclan.ac.uk">jcread@uclan.ac.uk</a>
Katie Taylor	CM224	x3321	<a href="mailto:kitaylor@uclan.ac.uk">kitaylor@uclan.ac.uk</a>
Li Guo	CM116	x3556	<a href="mailto:lguo@uclan.ac.uk">lguo@uclan.ac.uk</a>
Vinh-Thong Ta	CM116	x3263	<a href="mailto:vtta@uclan.ac.uk">vtta@uclan.ac.uk</a>
Mahmoud Hassan Eiza	CM213	x3169	<a href="mailto:mhashemeiza@uclan.ac.uk">mhashemeiza@uclan.ac.uk</a>

### 1.3 Expertise of staff

The course team have substantial experience of teaching at this level. They have research interests and industrial/academic experience relevant to your course. There is research into data communications and networks, mobile computing, computer security and software

engineering, particularly Agile software development. We have collaborated with Sony, BAE and a variety of UK and overseas Universities. They will use this to enrich the postgraduate learning experience. Details of staff publications and interests are available on the School website. We also have several active research groups in the Computing area that you may want to get involved with.

#### **1.4 Academic Advisor**

Martin Bateman is your personal tutor and will advise you on your progress and issues such as option choices during your studies. He can provide you with guidance on academic matters, as well as information about where to go for any additional and specialist help and advice you might need, e.g. careers, study skills, personal counselling, etc. Since Martin is also your Course Leader, he is well placed to advise you about your course and your choices. He will be the first point of call for many of the questions that you might have during the year.

#### **1.5 Administration details**



Campus Admin Services provides academic administration support for students and staff and are located in the following hubs which open from 8.45am until 5.15pm Monday to Thursday and until 4.00pm on Fridays. The hub can provide general assistance and advice regarding specific processes such as extenuating circumstances, extensions and appeals.

#### **Computing and Technology Hub**

C&T Building Room 235

Contact Details: [candthub@uclan.ac.uk](mailto:candthub@uclan.ac.uk) or +44 (0)1772 891994

#### **1.6 Communication**



The University expects you to use your UCLan email address and check regularly for messages from staff. This can be set to auto-forward to another email address and is also available via remote access. If you send us email messages from other addresses they risk being filtered out as potential spam and discarded unread.

Campus Admin Services and academic staff generally contact you via your UCLan email address. Details of term starting times, enrolment details and results will be sent to you by letter.

#### **1.7 External Examiner**

The University has appointed an External Examiner for your course to help ensure that the standards of the course are comparable to those provided at other higher education institutions in the UK.

Dr Gregory Epiphaniou of the University of Bedfordshire is the External Examiner who takes overall responsibility for checking the quality of the course, particularly for assessments and the way they are marked on the key modules. Other examiners have responsibility for other modules.

If you wish to make contact with your External Examiner, you should do this through your Course Leader and not directly. External Examiner reports will be made available to you electronically. The School will also send a sample of student coursework to the external examiner(s) for external moderation purposes, once it has been marked and internally moderated by the course tutors. The sample will include work awarded the highest and lowest marks and awarded marks in the middle range.

## 2. Structure of the course

### 2.1 Overall structure



Students embarking on the course may be enrolled on an MSc or a PGDip. The MSc comprises 9 modules (6 taught modules and a 3 module Project). The PG Dip comprises 6 modules (all taught). Students who satisfactorily complete the PG Dip may continue to the MSc route if they wish, by undertaking the 3 module Project.

The course is flexible and can be completed in a number of ways:

#### Full-time study (MSc includes the project, PGDip does not)

##### September start

3 modules	3 modules	Project
Sept – Jan	Jan – May	May – Sept

##### January Start

3 modules		2 Modules	Project
Jan – May	Summer	Sept – Jan	Jan - May

#### Part-time study (MSc includes the project, PGDip does not)

##### Over 3 years

3 modules	3 modules	Project
Year 1	Year 2	Year 3

##### Over 2 years

4 modules	2 modules and Project
Year 1	Year 2

### 2.2 Modules available

Each module is a self-contained block of learning with defined aims, learning outcomes and assessment. A standard module is worth 20 credits. It equates to the learning activity expected from one sixth of a full-time undergraduate year. Modules may be developed as half or double modules with credit allocated up to a maximum of 120 credits per module.

#### Compulsory Modules

You must take all the following modules:

CO4509 Digital Security	Semester 2
CO4510 Advanced Topics in IT Security	Semester 1
CO4512 Information Security Management	Semester 2
CO4820 Critical Analysis	Semester 1

CO4804 Masters Project

Semester 2 or 3 all year for p/t

### Optional Modules

You must take two of the following modules:

CO4403 OO Software Development	Semester 1
CO4514 Digital Forensic Technology	Semester 2
CO4515 Trends in Cybercrime	Semester 1
CO4516 Mobile Device Evidence and Investigation	
CO4832 Independent Investigation	
CO4830 IT Projects & Programmes	
FZ4002 The Expert Witness in the Legal Process	

### Optional Work Placement

In addition, you may gain work experience by taking CO4822, Professional Placement.

## 2.3 Course requirements



There are no course-specific requirements beyond the requirements of the University's Academic Regulations.

## 2.4 Module Registration Options

Discussions about your progression through the course normally take place after semester results are released (in January, June, September and October). These discussions provide an opportunity for you to make plans for your study over the next semester.

## 2.5 Study Time

Full time students are expected to study a 40-hour week; part-time students are expected to study the number of hours that are appropriate for the modules they are enrolled for. The contact time (in-class) will typically be three hours per week for each module. You should expect to do roughly an additional 6-9 hours during teaching weeks and some additional work before and after the teaching period. You will also have to attend the PDP sessions (1 hour per week) and in your second semester you have to attend a project preparation class (1 hour per week). The time outside of class contact should be spent on independent study, assignment and completing lab exercises.

### 2.5.1 Weekly timetable

A timetable will be available once you have enrolled on the programme, through the student portal.

### 2.5.2 Expected hours of study

The normal amount of work involved in achieving a successful outcome for a 20 credit module is 200 hours of study time - this includes attendance at UCLan, private study and time taken to prepare for and complete assignments.

### 2.5.3 Attendance Requirements



You are required to attend all timetabled learning activities for each module. Notification of illness must be made to [CandTHubAttendance@uclan.ac.uk](mailto:CandTHubAttendance@uclan.ac.uk).

Exceptional requests for leave of absence must be made to your Course Leader.

We will monitor your attendance. It is your responsibility to make sure your attendance is recorded. You can check your attendance record through myUCLan. Occasional absences are not a problem, but you should discuss your attendance with the module tutor if your attendance is not recorded for more than one event that you attend.

You must only enter your own details on the attendance system. To enter information for anyone else is dishonest and would result in inaccurate records, which might mean that a student's problems might not be detected until it is too late for us to help. Any student who makes false entries can be disciplined under the student guide to regulations.

International students may have responsibilities under the UK Visas and Immigration (UKVI), Points Based System (PBS) - you MUST attend your course of study regularly; under PBS, UCLan is obliged to tell UKVI if you withdraw from a course, defer or suspend your studies, or if you fail to attend the course regularly.

If you have not gained authorisation for absence, do not respond to communications from the University and are absent for four weeks or more, you may be deemed to have withdrawn from the course. If so, the date of withdrawal will be recorded as the last day of attendance.

### **3. Approaches to teaching and learning**

#### **3.1 Learning and teaching methods**

Teaching methods include lectures, tutorials, practical classes, discussion groups, and student presentations. As well as attending classes you will be expected to follow your tutor's suggestions for weekly reading and study. Materials and instructions will all be made available on Blackboard either prior to or after sessions. As a postgraduate student you are expected to be an independent learner, and to gradually take more initiative for your learning throughout the course. You already have a background in computing and experience of academic work. You are expected to build on this by reading around the subject, finding relevant material for yourself as well as following tutor suggestions and contributing to discussion.

#### **3.2 Study skills**

The course team support the development of study skills through individual and group feedback in class and through individual discussions with your module tutors and your academic advisor. For more information on the general support provided by the University, see WISER <http://www.uclan.ac.uk/students/study/wiser/index.php>

#### **3.3 Learning resources**

##### **3.3.1 Learning Information Services (LIS)**



Extensive [resources](#) to support your studies are provided by LIS – library and IT staff. Take advantage of the free training sessions designed to enable you to gain all the skills you need for your research and study.

When you have complaints or problems with equipment, these should be reported to LIS ([LISCustomerSupport@uclan.ac.uk](mailto:LISCustomerSupport@uclan.ac.uk)) as well as to the relevant module tutor. LIS prefer to deal with problems first-hand and rather than indirectly through academic staff. Moreover, by dealing with LIS directly, your problem should be dealt with more quickly.

##### **3.3.2 Electronic Resources**

LIS provide access to a huge range of electronic resources – e-journals and databases, e-books, images and texts. See [http://www.uclan.ac.uk/students/study/library/electronic\\_resources.php](http://www.uclan.ac.uk/students/study/library/electronic_resources.php) for more information. You should use the Discovery search engine to help locate relevant resources from the University's collection. ([http://www.uclan.ac.uk/students/library/discovery\\_resource.php](http://www.uclan.ac.uk/students/library/discovery_resource.php)).

All modules will be supported by information on Blackboard and you should make sure that you make use of this outside as well as in class.

### 3.4 Personal development planning

Personal development planning is about assessing your own skills and abilities and planning how to develop them during (and after) your course. Technical development is part of this, but personal skills such as teamwork and communication skills are also important to your success at University and in your career. You might be surprised at how much emphasis employers put on these aspects. You will meet with your Academic Advisor to do personal development planning (PDP) and to discuss your progress.

### 3.5 Developing your career



Your University experience is not only about achieving your chosen award, it is also about developing as a person and realising your potential. We want you to gain the skills and attitudes that will help you to achieve your goals and aspirations.

The Careers Service (<http://www.uclan.ac.uk/students/careers/index.php>) offers a range of support for you including:-

- career and employability advice and guidance
- access to work placements, internships, voluntary opportunities, part-time employment and live projects
- workshops, seminars, modules, certificates and events to develop your skills

There is a daily drop in service available from 10.30am-3pm for CV checks and initial careers information. For more information visit the team (in Foster building near the main entrance) or access our careers and employability resources via the Student Portal.

## 4. Student Support

There are many student support services available in the University. In general you should go to your **module tutor** if you have questions about a particular module, your **Course Leader** and **Academic Advisor**, for course queries, the **Campus Admin Service** for administration queries and **the 'i'** for more general 'living' queries (such as accommodation, visas etc). From each of these points of contact you should be helped or directed to a more appropriate source of help.

### 4.1 Academic Advisors



Your Academic Advisor is an academic member of staff who will discuss your progress with you and help you to deal with problems. They help you to review your aims and achievements. Full-time students should meet with their personal tutor twice per semester, and part-time students once per semester.

### 4.2 Students with disabilities

If you have a disability that may affect your studies, please either contact the Disability Advisory Service - [disability@uclan.ac.uk](mailto:disability@uclan.ac.uk) - or let one of the course team know as soon as possible. With your agreement, information will be passed on to the Disability Advisory Service, who will work with the School to help you study. The University will make reasonable adjustments to accommodate your needs and to provide appropriate support for you to complete your study successfully. Where necessary, you will be asked for evidence to help identify appropriate adjustments.

Chris Casey ([ccasey@uclan.ac.uk](mailto:ccasey@uclan.ac.uk)) is the acting disability co-ordinator for students with disabilities in PSC. Please contact him directly for further advice / support, particularly if you

have not been allocated a Disability Advisor. He is not a specialist disability advisor but can help to ensure that appropriate arrangements have been put into practice.

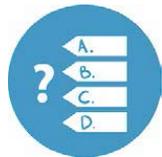
### 4.3 Students' Union

The Students' Union offers thousands of volunteering opportunities ranging from representative to other leadership roles. We also advertise paid work and employ student staff on a variety of roles. You can find out more information on our website:

<http://www.uclansu.co.uk/>

## 5. Assessment

### 5.1 Assessment Strategy



Assessment is an important part of Higher Education. We use examinations to allow you to demonstrate your knowledge and the ability to apply that knowledge to solve problems. Because computing is a practical and vocational subject, course-work is important. You will often be expected to tackle realistic problems and to evaluate different ways of solving them.

The course learning outcomes demand that you develop a variety of knowledge, skills and abilities, which require a variety of assessment techniques:

- a) *Formally invigilated tests and examinations* can be used to explore your knowledge and your ability to apply it to simplified situations. They also ensure that your own work is assessed.
- b) *Presentations and vivas (interviews)* allow the demonstration of skills in spoken communication.
- c) *Coursework* such as laboratory work, programming exercises, design exercises, written assignments and independent research allow you to demonstrate many practical and important skills that cannot sensibly be assessed by the previous methods.

In course assessment doesn't just assess what you can do – by doing the assessment you will learn and consolidate the skills you have. Your tutors will give you formal feedback on assignments to help you to do better on other assessments, but more importantly for your future career, to show how you can improve your performance on similar tasks in the future. By acting on the feedback from the lecturer, you will develop your competence and understanding.

The overall mark for each module is calculated as a weighted average of the coursework and examination marks. The details are given in the module descriptor held on Elearn Blackboard.

### 5.2 Notification of assignments and examination arrangements

#### How do I know what assignments I will have?

At the beginning of the year you will be issued with an indicative assignment schedule. Also at the start of each module, the module leader will tell you the latest date by which a piece of coursework will be released and the date by which you must submit it. This is to help you to plan your work. Examinations will be displayed on your on-line timetable.

#### How do I submit my assignments?

Assignments are usually submitted on-line through Elearn Blackboard, which gives you an electronic receipt. Keep a copy of it safe. *To reduce problems from lost assignments, keep a **complete** copy of the work you hand in.*

*As far as possible your work will be marked anonymously, so assignment work submissions must not contain your name.*

Aim to complete the coursework before the hand-in date to allow a margin of safety in case of technical problems. The University provides you with the software and hardware relevant to your course. If you choose to use your own equipment you are responsible for backing it up. Therefore please note that **failed/lost computers; failed/lost hard-drives, etc will not be accepted as an excuse for late submission.**

Meeting deadlines and dealing with problems in good time are essential parts of your preparation for industry. If you have a problem that may make it difficult to meet a deadline, discuss it with the relevant lecturer **before** the deadline if possible.

If you fail to submit a piece of work without a good reason, you will be given 0% for that work. This will make passing the module very difficult and may mean that you have extra work to complete over the summer. **It makes sense to hand work in before the deadline, even if it is incomplete.**

### **Will I be penalised for late work?**

Except where an extension of the hand-in deadline date has been approved (using extenuating circumstances forms), lateness penalties will be applied in accordance with University policy as follows:

<b>(Working) Days Late</b>	<b>Penalty</b>
1 - 5	maximum mark that can be achieved is 50%
more than 5	0% awarded

If you anticipate that you will have difficulty in meeting assessment deadlines or you have missed or are likely to miss in-semester tests you must apply for an extension or for an adjustment to be made because of Extenuating Circumstances, which can be done online via myUCLan (this can be accessed in the Useful Tool link on the Student Portal home page of the UCLan website).

### **5.3 Referencing**

In your assignments, use Harvard convention for referencing whenever you make a reference to someone else's work. You can find lots of information about this on the internet, but you will be given more information about it during your course. If you are in any doubt, ask a lecturer for guidance.

### **5.4 Confidential material**

If you use personal or commercially confidential information in your assignments (e.g. in your project), you have ethical and legal responsibilities to respect confidentiality and maintain the anonymity of individuals and organisations in your work assignments.

Students who do projects for clients must arrange for a client project agreement to be signed by the participants to ensure that they all understand their responsibilities.

### **5.5 Cheating, plagiarism, collusion or re-presentation**

Please refer to the information included in section 6.6 of the University Student Handbook for full definitions. The University uses an online Assessment Tool called Turnitin. A pseudo-Turnitin assignment will be set up using the School space on Blackboard to allow students to check as many drafts as the system allows before their final submission to the 'official' Turnitin assignment. Students are required to self-submit their own assignment on Turnitin and will be given access to the Originality Reports arising from each submission. In operating Turnitin, Schools must take steps to ensure that the University's requirement for all summative assessment to be marked anonymously is not undermined and therefore Turnitin reports should either be anonymised or considered separately from marking. Turnitin may

also be used to assist with plagiarism detection and collusion, where there is suspicion about individual piece(s) of work.

## 6. Classification of Awards

The University publishes the principles underpinning the way in which awards and results are decided in [Academic Regulations](#). Decisions about the overall classification of awards are made by Assessment Boards through the application of the academic and relevant course regulations.

## 7. Student Feedback



You can play an important part in the process of improving the quality of this course through the feedback you give. You will elect a student representative through the Student Union. The Staff Student Liaison Committee is a formal way of providing feedback through the student representative. However, the rep should also raise issues directly with staff on your behalf, if necessary..

**Do not simply save up problems to be raised at the meeting. To help resolve them quickly, problems should be raised with relevant staff, your course representative, or support staff as soon as you are aware of them.**

### 7.1 Student Staff Liaison Committee meetings (SSLCs)

The purpose of a SSLC meeting is to provide the opportunity for course representatives to feedback to staff about the course, the overall student experience and to inform developments which will improve future courses. These meetings are normally scheduled once per semester. Details of the Protocol for the operation of SSLCs is included in section 8.2 of the University Student Handbook.

## 8. Appendices

### 8.1 Programme Specification

#### UNIVERSITY OF CENTRAL LANCASHIRE

#### Programme Specification

This Programme 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 and demonstrate if he/she takes full advantage of the learning opportunities that are provided.

***Sources of information on the programme can be found in Section 17***

1. Awarding Institution / Body	University of Central Lancashire
2. Teaching Institution and Location of Delivery	UCLan Main campus
3. University School/Centre	Physical Sciences & Computing
4. External Accreditation	
5. Title of Final Award	MSc in IT Security PGDip in IT Security
6. Modes of Attendance offered	Full-time and Part-time with optional professional placement
7a) UCAS Code	
7b) JACS Code	I100
8. Relevant Subject Benchmarking Group(s)	Computing;
9. Other external influences	QAA (NQF for HE); BCS, The Chartered Institute for IT; Bologna agreement Skills for Justice NOS for Countering E-Crime
10. Date of production/revision of this form	April 2017
<b>11. Aims of the Programme</b>	
<b>PgDip Aims</b>	
• To explore the concepts and principles of IT security	
• To develop skills in the critical evaluation and use of tools and standards for IT system security and management	
• To promote a systematic approach to security policy and planning	
• To investigate current trends and research relevant to IT Security	
• To develop practical IT skills and knowledge relevant to the design, development and management of IT systems	
• To develop and enhance the students' information acquisition and critical analysis skills	
<b>MSc Aims (In addition to the above aims)</b>	
• To provide an opportunity for the students to plan, undertake and evaluate a substantial IT security-related project	

- To develop the students' critical evaluation, communication and self-management skills to a level appropriate for post-graduate students

## 12. Learning Outcomes, Teaching, Learning and Assessment Methods

### A. Knowledge and Understanding

The successful student will be able to

- A1. Interpret relevant literature relating to IT security
- A2. Critically evaluate tools and policies for the management of IT systems' security
- A3. Apply and evaluate principles, practices and tools for the design, development and management of IT systems in a chosen area
- A4. Explain the principles underlying techniques for preventing and investigating security exploits

### Teaching and Learning Methods

Lectures, directed reading, tutorial exercises, visiting speakers, case studies, supervised and unsupervised practical work.  
Project and literature-based research.

### Assessment methods

Assessment methods are specified in each module syllabus. All learning outcomes in a module are assessed with the mode of assessment specified for each outcome of the assignment. Assessment methods include written reports, portfolios, practical assessment and presentations, examinations.

### B. Subject-specific skills

The successful student will be able to

- B1. Plan, perform and evaluate a substantial security-related project
- B2. Undertake a risk assessment and analysis of the security of an IT system
- B3. Demonstrate a professional approach to ethical and legal issues relevant to a computing professional and understand the implications of their actions
- B4. Select and use tools for securing and investigating an IT system
- B5. Apply practical IT skills relevant to the design, development and management of IT systems in a chosen area

### Teaching and Learning Methods

Lecture, tutorial (e.g. problem analysis, extracting information from documentation, presentations), practical work, project preparation and supervisory advice, including peer review

### Assessment methods

Written coursework, project work, practical exercises and report

### C. Thinking Skills

The successful student will be able to

- C1. Evaluate ideas, methods and systems in a coherent manner
- C2. Analyse and evaluate appropriateness of methods and techniques from a specialist area for the development of computer systems in a given situation
- C3. Locate and integrate information from multiple sources
- C4. Analyse complex concepts and communicate the outcome effectively in a format suitable for a professional audience

### Teaching and Learning Methods

Practical work, directed research, on-line discussion groups, preparation of and participation in student-led seminars, supervisory support for the project and the Masters paper

### Assessment methods

Written coursework, project report, essays, online discussion and presentations

### D. Other skills relevant to employability and personal development

The successful student will be able to

- D1. Communicate effectively to a diverse audience, for example, professional and lay audiences
- D2. Construct reports to a professional standard
- D3. Learn and work independently as a reflective practitioner, including goal setting, planning, self-management and review
- D4. Work as part of a team

### Teaching and Learning Methods

Team-work, project preparation and supervision, preparation of and participation in student-led seminars, critical reflection.

### Assessment methods

Presentations, project interview, project and project report, team assessment

13. Programme Structures*				14. Awards and Credits*	
Level	Module Code	Module Title	Credit rating		
Level 7	CO4804	Masters Project	60	<p><b>Masters Degree</b> Requires 180 credits at Level 7 including CO4509, CO4510, CO4820 and CO4804,</p> <p>Optional professional placement route requires successful completion of CO4822 which has a notional credit value of 60 but does not contribute to the required award total</p> <p><b>PGDip in IT Security</b> Requires 120 credits at level 7 including CO4509 and CO4510 and CO4512</p> <p><b>PGDip in Computing</b> Requires 120 credits at level 7</p> <p><b>Post-Graduate Diploma is normally a target award for students who do not wish to carry out a project</b></p> <p><b>PGCert in Computing</b> Requires 60 credits at level 7.</p>	
	CO4820	Critical Analysis	20		
	CO4509	Digital Security	20		
	CO4510	Advanced Topics in IT Security	20		
	CO4512	Information Security Management	20		
	<b>40 credits from:</b>				
	CO4403	Object-Oriented Software Development	20		
	CO4514	Digital Forensic Technology	20		
	CO4515	Trends in Cybercrime	20		
	CO4516	Mobile Device Evidence and Investigation	20		
	CO4832	Independent Investigation	20		
	CO4830	IT Projects & Programmes	20		
	FZ4002	The Expert Witness in the Legal Process	20		
CO4822	<b>Optional module:</b> Professional Placement	60 notional credits			

### 15. Personal Development Planning

Professional skills are developed through dedicated course modules, as well as through discussion, seminars, project work, coursework, and support sessions.

Technical competence alone is not enough for the good computing professional and so is not sufficient for the award of any Masters within the School of Physical Sciences & Computing. The Programme aims identify the need to develop interpersonal skills and generic transferable skills as well as subject-specific knowledge, understanding and skills. The course team believe that this combination is needed to ensure the employability of the graduate.

The following transferable skills are developed:

- critical evaluation
- presentation skills
- report-writing skills
- investigative (information finding) skills
- problem solving
- independent learning
- teamwork
- time management.

The design of the course has been directed to the development of these practitioner skills alongside technical competence. The skills will be developed and assessed throughout the programme as a whole.

The process begins with an induction scheme that runs throughout the first semester aimed at supporting students as they transition to Masters level study. Students are encouraged to reflect on Masters level reading and writing skills, personal development plans, career opportunities, and reflective learning. In addition an academic advisor is allocated at enrolment with whom students are encouraged to discuss their personal development.

**16. Admissions criteria**

(including agreed tariffs for entry with advanced standing)

*\*Correct as at date of approval. For latest information, please consult the University's website.*

Applicants should have one of the following:

- Honours degree of 2.ii or above, in a computing or closely-related discipline
- Degree and substantial relevant industrial experience
- BCS postgraduate diploma plus PGD project
- Qualifications deemed by the University to be equivalent to the above

Students will be expected to display communication skills appropriate to an Honours graduate. In particular, students whose first language is not English will be required to demonstrate competence in the language. The normal minimum standard required is IELTS 6.5 or equivalent.

**17. Key sources of information about the programme**

- [http://www.uclan.ac.uk/courses/msc\\_pgdipl\\_it\\_security.php/](http://www.uclan.ac.uk/courses/msc_pgdipl_it_security.php/)
- student handbook
- postgraduate prospectus

## 18. Curriculum Skills Map

Please tick in the relevant boxes where individual Programme Learning Outcomes are being assessed

Level	Module Code	Module Title	Core (C), Compulsory (Comp) or Option (O)	Programme Learning Outcomes																		
				Knowledge and understanding				Subject-specific Skills					Thinking Skills				Other skills relevant to employability and personal development					
				A1	A2	A3	A4	B1	B2	B3	B4	B5	C1	C2	C3	C4	D1	D2	D3	D4		
LEVEL 7	CO4804	Masters Project	C	✓	✓	✓	✓	✓			✓	✓		✓	✓	✓	✓			✓		
	CO4820	Critical Analysis	Comp											✓		✓		✓	✓	✓		
	CO4509	Digital Security	Comp	✓	✓	✓	✓		✓		✓	✓	✓		✓	✓	✓	✓	✓			
	CO4510	Advanced Topics in IT Security	Comp	✓	✓	✓	✓		✓	✓	✓		✓	✓	✓	✓	✓	✓	✓		✓	
	CO4512	Information Security Management	Comp	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			
	CO4403	Object-Oriented Software Development	O			✓							✓		✓				✓			
	CO4514	Digital Forensic Technology	O	✓	✓	✓					✓	✓			✓	✓	✓		✓			
	CO4515	Trends in Cybercrime	O	✓										✓				✓	✓			
	CO4516	Mobile Device Evidence and Investigation	O		✓						✓	✓	✓			✓			✓			
	CO4832	Independent Investigation	O			✓								✓		✓	✓	✓				
	CO4822	Professional Placement	O***															✓	✓	✓		
CO4830	IT Projects & Programmes	O			✓					✓		✓	✓	✓		✓	✓	✓			✓	
FZ4002	The Expert Witness in the Legal Process	O	✓			✓				✓			✓		✓	✓	✓	✓				

**Note:** Mapping to other external frameworks, e.g. professional/statutory bodies, will be included within Student Course Handbooks

19. LEARNING OUTCOMES FOR EXIT AWARDS:

For **each exit award available**, list learning outcomes relating to the knowledge and understanding, subject specific skills, thinking, other skills relevant to employability and personal development that a typical student might be expected to gain as a result of successfully completing each level of a course of study.

**Learning outcomes for the award of: PGDip in IT Security**

- A1. Interpret relevant literature relating to IT security
- A2. Apply and evaluate principles, practices and tools for the design, development and management of IT systems in a chosen area
- A3. Explain the principles underlying techniques for preventing and investigating security exploits
- B1. Demonstrate a professional approach to ethical and legal issues relevant to a computing professional and understand the implications of their actions
- B2. Select and use tools for securing and investigating an IT system
- C1. Evaluate ideas, methods and systems in a coherent manner
- C2. Analyse and evaluate appropriateness of methods and techniques from a specialist area for the development of computer systems in a given situation
- C3. Locate and integrate information from multiple sources
- D1. Communicate effectively to a diverse audience, for example, professional and lay audiences
- D2. Construct reports to a professional standard

**Learning outcomes for the award of: PGDip Computing**

- A1. Describe and evaluate principles, practices and techniques relevant to the design and development of computing systems.
- A2. Find and critically evaluate computing research literature.
- B1. Select and use appropriate tools and techniques to design, build and evaluate systems.
- B2. Apply principles, practices and techniques to solve complex computing problems in specific domains (through optional modules)
- B3. Adopt a professional approach to ethical and legal issues relevant to a computing professional and understand the implications of their actions
- C1. Evaluate ideas, methods and systems in a coherent manner
- C2. Analyse and evaluate appropriateness of methods and techniques from a specialist area for the development of computer-based systems in a given situation
- D1. Communicate complex ideas to a diverse audience
- D2. Reflect critically on professional experience, devising and evaluating new approaches

**Learning outcomes for the award of: PGCert in IT Security**

- A1. Interpret relevant literature relating to IT security
- B1. Demonstrate a professional approach to ethical and legal issues relevant to a computing professional and understand the implications of their actions
- C1. Evaluate ideas, methods and systems in a coherent manner
- D1. Construct reports to a professional standard