

PROGRAMME SPECIFICATION

Master of Computing (Hons) in Computer Forensics

Awarding institution	Liverpool John Moores University
Teaching institution	LJMU
UCAS Code	C378
JACS Code	I100
Programme Duration	Full-Time: 4 Years, Sandwich Thick: 5 Years
Language of Programme	All LJMU programmes are delivered and assessed in English
Subject benchmark statement	Computing (2007) Master's degrees in computing (2011)
Programme accredited by	BCS, The Chartered Institute for IT
Description of accreditation	Initial CIP and CSci (partial fulfilment). *Confirmation of full accreditation will be sought in 2020.
Validated target and alternative exit awards	Master of Computing (Hons) in Computer Forensics Master of Computing (SW) in Computer Forensics Bachelor of Science with Honours in Computer Forensics Bachelor of Science with Honours (SW) in Computer Forensics Diploma of Higher Education in Computer Forensics Diploma in Higher Education (SW) in Computer Forensics Certificate of Higher Education in Computer Forensics
Programme Leader	Thomas Berry

Educational aims of the programme

The two principal themes in the programme are the development of practical computer forensics skills, and the management involved in developing successful investigations for law enforcement, national security and the commercial or public organisation. This is underpinned by themes of computing, security and networking. The main aims are:

- To provide students with the technical skills required for the implementation of computer forensics investigations.
- To prepare students with the management skills required to implement investigations in organisations and law enforcement.
- To provide students with the knowledge of the wide range of issues involved in the implementation of computer forensics investigations, such as security and legal, ethical and privacy requirements.
- To further develop students' originality in applying analytical, creative, problem solving and research skills.
- To provide students with a comprehensive understanding, critical awareness and ability to conduct evaluation of research issues.
- To encourage students to engage with the development of employability skills by completing a self-awareness statement.
- For students undertaking a placement year the aim is to provide students with an extended period of work experience at an approved partner that will complement their programme of study at LJMU. This will give the students the opportunity to develop professional skills relevant to their programme of study, as well as attitude and behaviours necessary for employment in a diverse and changing environment.

Alternative Exit/ Interim Award Learning Outcomes - Certificate of Higher Education

A student who is eligible for this award will be able to:

Develop computer programs using elementary programming constructs.

Discuss a range of practical aspects of computing and apply the associated tools and techniques used in them.
Discuss computer Systems at the hardware and software levels.
Understand the different approaches required to solve computer-based problems.
Demonstrate the skills and abilities to communicate their ideas and take personal responsibility for their learning.

Alternative Exit/ Interim Award Learning Outcomes - Diploma of Higher Education

A student who is eligible for this award will be able to:

Provide evidence of experience in a number of computer forensic tools as used by practitioners in the field.
Explain how UK laws related to computer crime are applied and how they relate to a computer forensics investigation.
Describe the structure of operating systems and apply the underlying principles.
Use object-oriented design in formulating an implementation.
Understand how databases are structured, how to query them for information and be able to develop a database to solve a problem.
Understand the ethical and professional issues involved in working in the computing industry.

A student who successfully completes a placement year will be eligible for the Sandwich award and will, in addition to the above, be able to demonstrate the professional and personal skills necessary for effective employment within a professional environment.

Alternative Exit/ Interim Award Learning Outcomes - Bachelor of Science with Honours (SW)

A student who is eligible for this award will be able to:

Develop a critical appreciation of the criminal justice system, computer-related law, legal procedures and how they relate to computer forensics.
Demonstrate an understanding of the threats and vulnerabilities to information and computing systems.
Demonstrate the fundamental technical concepts, implementation, and restrictions of computer forensics in the organisation, law enforcement and national security.
Be able to conduct a computer forensics investigation of networks, mobile devices and cloud platforms.
Develop practical and independent research skills in computer forensics.
Demonstrate the professional and personal skills necessary for effective employment within a professional environment.

Alternative Exit/ Interim Award Learning Outcomes - Bachelor of Science with Honours

A student who is eligible for this award will be able to:

Develop a critical appreciation of the criminal justice system, computer-related law, legal procedures and how they relate to computer forensics.
Demonstrate an understanding of the threats and vulnerabilities to information and computing systems.
Demonstrate the fundamental technical concepts, implementation, and restrictions of computer forensics in the organisation, law enforcement and national security.
Be able to conduct a computer forensics investigation of networks, mobile devices and cloud platforms.
Develop practical and independent research skills in computer forensics.

Target award Learning Outcomes - Master of Computing (Hons)

A student successfully completing the programme of study will have acquired subject knowledge and understanding as well as skills and other attributes.

Knowledge and understanding

A student who is eligible for this award will be able to:

- A1. Explain hardware / software and use of computer forensics tools to perform investigations.
- A2. Define how networks are configured and how to conduct network investigations.
- A3. Demonstrate how to write software to solve problems using the software development process.
- A4. Identify how to work in a professional manner with good professional ethics.

- A5. Define computer security and its impact upon computer forensic investigations.
- A6. Demonstrate how English Law works and how their investigation results would fit into a criminal trial.
- A7. Have been exposed to and applied a range of tools, techniques and procedures used in complex Computer Forensics investigations: Networking, Security and Privacy tools, ethical principles and legal procedures.
- A8. Have a clear understanding of how to effectively and creatively manage a computer forensics investigation.
- A9. Be able to comprehensively and critically understand current research issues in the relevant aspects of Computer Forensics through independent learning.
- A10. Be able to study independently at an advanced level and have developed effective methodology skills for original research.
- A11. To enable the student to acquire the skills needed in the investigation of user requirements and the development of a suitable software design using the appropriate specifications and design methodologies.

Teaching, learning and assessment methods used to enable outcomes to be achieved and demonstrated

Acquisition of 1 - 11 is through a combination of lectures, tutorials, practical sessions and laboratory work.

Throughout the learner is encouraged to undertake independent reading both to supplement and consolidate what is being taught / learnt and to broaden their individual knowledge and understanding of the subject.

Assessment

Knowledge and understanding is assessed via formal examination, individual and team coursework, demonstration of practical work, and a full-scale individual project at Level 6 and 7.

Skills and other attributes

Intellectual Skills

A student who is eligible for this award will be able to:

- B1. Have knowledge and understanding of facts, concepts, principles and theories relating to Computer Forensics.
- B2. Collect and synthesise information from a variety of sources.
- B3. Utilise methods and skills to solve well-defined computer-based problems.
- B4. Reflect on the impact of new technologies / legal requirements in the area.
- B5. Critically evaluate and testing of theories, concepts and systems.
- B6. Demonstrate the skills necessary to plan, conduct and report a research project.

Teaching, learning and assessment methods used to enable outcomes to be achieved and demonstrated

Skills 1 - 6 are taught through lectures and developed through tutorial work throughout the course. These skills are also developed through independent learning.

Assessment

Cognitive skills are partly assessed via formal examinations, but mainly through coursework assessment.

The Level 6 and 7 projects allow a student to demonstrate his/her cognitive skills.

Professional practical skills

A student who is eligible for this award will be able to:

- C1. Specify, design and construct programs to be used for the purpose of computer forensics.
- C2. Analyse evidence data for an investigation.
- C3. Evaluate investigation methodologies in terms of general attributes.
- C4. Be able to work as a member of a team.
- C5. Identify appropriate tools and techniques to be used for an investigation.
- C6. The ability to plan and manage IT projects.
- C7. Be able to conduct research into Computer Forensics and related topics.

Teaching, learning and assessment methods used to enable outcomes to be achieved and demonstrated

Practical skills are developed throughout the programme. The basic skills are provided at the lower levels. These are supplemented at higher levels by more advanced tools and techniques. Some of these skills are practised in the placement year.

Specialist software is available in labs or from specified PCs in the libraries.

Assessment

Assessment is normally by coursework.

The placement year is assessed, by portfolio, on a pass / fail basis.

Transferable / key skills

A student who is eligible for this award will be able to:

D1. Use information technology, e.g. Web and internet, for effective information retrieval.

D2. Apply numerical skills to cases involving a quantitative dimension.

D3. Communicate effectively by written or verbal means.

D4. Plan and manage learning and development.

Teaching, learning and assessment methods used to enable outcomes to be achieved and demonstrated

Key skills are developed throughout the programme in a variety of forms. Specifically through a combination of research related coursework, guided independent study and projects, examinations, group work and presentations.

Assessment

Key skills are assessed as part of coursework, projects, written examinations and presentations.

Alternative target awards

A student who is eligible for the following awards will be able to:

Master of Computing (SW) in Computer Forensics -

To be added

Programme structure - programme rules and modules

Programme rules

Students have the option to undertake a placement year. The placement year, module 5103COMSCI, will follow Level 5 and students will be enrolled on a 600 credit honours sandwich programme. The Level 5 mean for the final award mark will be calculated based upon the 240 credits at Level 5. Students successfully completing the assessment of the placement year are eligible for a Sandwich award.

Students not undertaking a placement year are registered on the non-sandwich version of the programme and will have the opportunity of an additional study year abroad following Level 5. Students will be enrolled on a 600 credit honours with study abroad programme. Of those 600 credits, 120 will be taken via a Level 5 study abroad module 5113COMSCI. The modules to be studied in the host institution must be agreed in advance. The Level 5 mean for the final award mark will be calculated based upon the 240 credits at Level 5.

Level 7	Potential Awards on completion	Master of Computing (Hons)
Core	Option	Award Requirements
7100COMP INTEGRATED MASTERS DISSERTATION (40 credits) 7102COMP INFORMATION AND SOCIAL NETWORKS (20 credits) 7103COMP ADVANCED TOPICS IN COMPUTER FORENSICS (20 credits) 7104COMP SOFTWARE DEVELOPMENT FOR COMPUTER FORENSICS (20 credits) 7140COMP DISSERTATION		120 core credits at level 7 0 option credits at level 7

RESEARCH METHODS (20 credits)		
Level 6	Potential Awards on completion	
Core	Option	Award Requirements
6100COMP PROJECT (40 credits) 6101COMP COMPUTER SECURITY (20 credits) 6102COMP NETWORK FORENSICS (20 credits) 6103COMP FORENSIC INVESTIGATORY PRACTICE (20 credits) 6104COMP CLOUD AND MOBILE FORENSICS (20 credits)		120 core credits at level 6 0 option credits at level 6
Level 5	Potential Awards on completion	
Core	Option	Award Requirements
5100COMP RESEARCH SKILLS (10 credits) 5101COMP PROFESSIONAL ISSUES (10 credits) 5102COMP DATABASE SYSTEMS (20 credits) 5103COMP OPERATING SYSTEMS (20 credits) 5104COMP OBJECT ORIENTED SYSTEMS DEVELOPMENT (20 credits) 5105COMP DIGITAL FORENSICS (20 credits) 5106COMP COMPUTER LAW (20 credits)		120 core credits at level 5 0 option credits at level 5
Level 4	Potential Awards on completion	
Core	Option	Award Requirements
4100COMP INTRODUCTION TO PROGRAMMING (20 credits) 4101COMP COMPUTER SYSTEMS (20 credits) 4102COMP INTERNET AND WEB TECHNOLOGIES (20 credits) 4103COMP PERSONAL AND PROFESSIONAL DEVELOPMENT (10 credits) 4104COMP DATA MODELLING (10 credits) 4105COMP INTRODUCTION TO COMPUTER FORENSICS AND SECURITY (20 credits) 4106COMP PROBLEM SOLVING FOR COMPUTER FORENSICS (20 credits)		120 core credits at level 4 0 option credits at level 4

Information about assessment regulations

All programmes leading to LJMU awards operate within the University's Academic Framework.
<https://www.ljmu.ac.uk/about-us/public-information/academic-quality-and-regulations/academic-framework>

Opportunities for work-related learning (location and nature of activities)

Level 4: 4103COMP Personal and Professional Development - this module provides students with an

opportunity to consider their future role as a computing professional and develop a plan to enable them to progress in their chosen career.

Level 5: 5101COMP Professional Issues – this module provides further insight into developing the role of the student becoming a computing professional. Students will be encouraged to become student members of appropriate professional bodies for the computing industry (e.g. ACM, IEEE or BCS) as part of their development.

Level 5 : 5105COMP Digital Forensics - This module requires problem analysis and development of an application that simulates a work based problem.

5103COMSCI Sandwich Year Computer Forensics - For students opting to undertake a placement year the aim is to provide students with an extended period of work experience at an approved partner that will complement their programme of study at LJMU. This will give students the opportunity to develop professional skills relevant to their programme of study as well as the attitude and behaviours necessary for employment in a diverse and changing environment.

Level 6: 6103COMP Forensic Investigatory Practice – This module requires problem analysis and presentation of results in a simulated court room.

Criteria for admission

A/AS Level

Applicants should have or expect to obtain a total of 120 UCAS points with a maximum of 20 points from AS level qualifications.

BTEC National Diploma

BTEC Extended Diploma

To the value of 120 UCAS points

BTEC Diploma / 90 Credit Diploma / Subsidiary Diploma /Certificate

To the value of 120 UCAS points when combined with other qualifications.

Irish Leaving Certificate

Applicants should have or expect to obtain a total of 120 UCAS points overall.

Scottish Higher

Applicants should have or expect to obtain a total of 120 UCAS points overall.

International Baccalaureate

Applicants should have or expect to obtain a total of 120 UCAS points overall.

Other

Qualifications deemed equivalent to the above upon completion of appropriate assessment will be considered acceptable.

Applicants should have five GCSE (or equivalent) passes of at least grade C including Mathematics and English (or IELTS 6.0).

Mature entry

Mature applicants will be considered on a case-by-case basis. The admissions team will be particularly concerned with the length of time since any relevant academic study and relevant background from work experience or 'Access' courses.

Overseas qualifications

Applicants offering other awards will be considered on an individual basis in line with the agreed entry criteria.

All applicants should have achieved IELTS 6 or equivalent.

External Quality Benchmarks

All programmes leading to LJMU awards have been designed and approved in accordance with the UK Quality Code for Higher Education, including the Framework for Higher Education Qualifications in the UK (FHEQ) and subject benchmark statements where applicable.

The University is subject to periodic review of its quality and standards by the Quality Assurance Agency (QAA) Published review reports are available on the QAA website at www.qaa.ac.uk

Programmes which are professionally accredited are reviewed by professional, statutory and regulatory bodies (PSRBs) and such programmes must meet the competencies/standards of those PSRBs.

Support for students and their learning

The University aims to provide students with access to appropriate and timely information, support and guidance to ensure that they are able to benefit fully from their time at LJMU. All students are assigned a Personal Tutor

to provide academic support and when necessary signpost students to the appropriate University support services.

Students are able to access a range of professional services including:

- Advice on practical aspects of study and how to use these opportunities to support and enhance their personal and academic development. This includes support for placements and careers guidance.
- Student Advice and Wellbeing Services provide students with advice, support and information, particularly in the areas of: student funding and financial matters, disability, advice and support to international students, study support, accommodation, health, wellbeing and counselling.
- Students studying for an LJMU award at a partner organisation will have access to local support services

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

Student Feedback and Evaluation

The University uses the results of student feedback from internal and external student surveys (such as module evaluations, the NSS and PTES), module evaluation questionnaires and meetings with student representatives to improve the quality of programmes.

Staff development

The quality of teaching is assured through staff review and staff development in learning, teaching and assessment.

Internal Review

All programmes are reviewed annually and periodically, informed by a range of data and feedback, to ensure quality and standards of programmes and to make improvements to programmes.

External Examining

External examiners are appointed to programmes to assess whether:

- the University is maintaining the threshold academic standards set for awards in accordance with the FHEQ and applicable subject benchmark statements
- the assessment process measures student achievement rigorously and fairly against the intended outcomes of the programme(s) and is conducted in line with University policies and regulations
- the academic standards are comparable with those in other UK higher education institutions of which external examiners have experience
- the achievement of students are comparable with those in other UK higher education institutions of which the external examiners have experience

and to provide informative comment and recommendations on:

- good practice and innovation relating to learning, teaching and assessment observed by external examiners
- opportunities to enhance the quality of the learning opportunities provided to students

Please note:

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 and demonstrate if he/she takes full advantage of the learning opportunities that are provided. More detailed information on the learning outcomes, content, teaching, learning and assessment methods of each module can be found in module and programme guides.