Course Specification

MEng Computer Forensics and Security

Course Code: MECFS

2019/20

leedsbeckett.ac.uk

MEng Computer Forensics and Security

Material Information Summary for 2019/20 Entrants

Confirmed at 1ˢᵗ February 2019

General Information

Award   Master of Engineering Computer Forensics and Security

Contained Awards   Bachelor of Engineering (with Honours) Computer Forensics
and Security

Bachelor of Engineering Computer Forensics and Security

Diploma of Higher Education Computer Forensics and Security

Certificate of Higher Education Computer Forensics and
Security

Awarding Body   Leeds Beckett University

Level of Qualification & Credits   Level 7 of the Framework for Higher Education Qualifications,
with 120 credit points at each of Levels 4, 5 and 6 of the UK
Credit Framework for Higher Education and 120 credit points
at Level 7 of the UK Credit Framework for Higher Education
(480 credits in total)

Course Lengths & Standard Timescales

- 4 years (full time, campus based)
    Starts 23rd September 2019/ Ends June 2023

Location(s) of Delivery   Headingley Campus, Leeds (plus location of work placement, if
applicable)

Entry Requirements   Admissions criteria are confirmed in your offer letter. Details
of how the University recognises prior learning and supports
credit transfer are located here:
http://www.leedsbeckett.ac.uk/studenthub/recognition-of-
prior-learning/

Course Fees   Course fees and additional course costs are confirmed in your
offer letter

Timetable Information

Timetables will be made available to students during induction week via:

    i)   The Student Outlook Calendar
    ii)   The Student Portal
    iii)   The Leeds Beckett app

Any difficulties relating to timetabled sessions can be discussed with your Course Administrator.

Policies, Standards and Regulations   http://www.leedsbeckett.ac.uk/public-information/

There are no additional or non-standard regulations which relate to your course

Key Contacts

Your Course Director   Emlyn Butterfield | e.butterfield@leedsbeckett.ac.uk | 0113 812 4440

Your Academic Advisor   An academic advisor drawn from the Course Team will be allocated to you at induction.

Your Course Administrator   Claire Howson | c.howson@leedsbeckett.ac.uk | 0113 812 3609

Professional Accreditation or Recognition Associated with the Course

Professional Body   N/A

How is Accreditation/ Recognition Achieved?   N/A

Course Accreditation/ Recognition Period   N/A

Course Overview

Aims

This course aims to develop a student's understanding of computer forensics and security, with an underpinning knowledge of the broader computing area. Students who undertake the course will be well versed with the two subject areas and be in a position to perform forensic analysis and/or implement computer security mechanisms into any business they obtain employment with.

The field of computer forensics and computer security have traditionally distanced themselves, both within academia and the professional market, however with the ever increasing use of digital devices and the risks posed by them the disciplines are starting to merge – with a significant shift in this in recent years with the emergence of cybercrime; with the identification that the skill sets required for each are essentially the same and complimentary. Students with the dual skill set are not only ultimately in the position to undertake a more rigorous forensic analysis, but also to implement more robust security mechanisms. The course covers key topics such as authentication, access control, malware and vulnerabilities, secure coding, sandboxing, virtualisation, vulnerability assessment, Unix security, and ethical hacking and penetration testing techniques. Our students will also develop the security mind-set, and be better prepared for the immense challenges facing ICT and security professionals.

The programme will provide a mix of academic and practical content; provide students with the theoretical knowledge to excel in their field and the practical experience to be able to physically implement their skills. The course will allow students who are unsure as to which field to focus on, to become proficient in both; creating a much wider student intake base.

This course aims to develop students within specific subject areas that are at the forefront of news and government policy. Technology is advancing at a rapid rate, creating new opportunities in this dynamic and diversifying sector. The Computer Forensics & Security course ensures students are equipped with the skills to engage confidently with these opportunities and challenges. Fundamental to this is the understanding of computer systems and the broader computing field. On the course students will gain expertise in the use of computer forensic and security tools and will develop an understanding of the motivation for crimes. Students will also work with employers, lawyers and experts to gain experience of preparing work for use by courts, customers and subsequently presenting it. Students will study general computing topics during Level 4 of the course; giving the necessary grounding in the various technologies related to computing that will be relied upon in the specialist subject areas. In Years 2, 3 and 4 students will increasingly specialise in aspects unique to computer forensics and security. The opportunity for students to perform significant aspects of hands-on forensic analysis and security assessments, directly interact with employers through guest lectures and projects, and interaction with the legal system provides a course that is different from many other HE institutions – developing capable practitioners who have practical employer related skills.

Computing and information technology in general has a very strong industrial presence. The use of computers and technology has become ubiquitous within the modern world. The use of computers and technology has become ubiquitous within the modern world. The need for graduates within the science and technology area has also being recognised by the government hence the recent STEM initiative which is designed to promote appropriate provision for areas of significant importance to the country's workforce requirements.

With an increase in the use of computers within every walk of life now means that there is not a single crime that a digital device cannot be linked to. The legal and commercial sectors have identified this factor and now analyse digital devices on a regular basis to help identify or dismiss user activity. Companies and institutions are also bound by the Data Protection Act, and in relevant cases Financial Services requirements, which requires that data be kept secure and accurate. Companies and institutions are only too aware of the legal implications of security breaches and leaked data and are therefore implementing more rigid and pronounced computer security and management policies.

Course Learning Outcomes

At the end of the course, students will be able to:

1	A systematic understanding of key aspects of forensics & security, including acquisition of coherent and detailed knowledge, at least some of which is at, or informed by, the forefront of the discipline
2	An ability to deploy accurately established techniques of analysis and design that encompass internationally recognised standards
3	A wide breadth of understanding that enables students to devise and sustain arguments and solve problems using ideas and techniques, some of which are at the forefront of computer security practice, and describe and comment upon particular aspects of current research, or equivalent advanced scholarship
4	The skills and understanding to undertake projects to a professional industry recognised standards, within Computer Forensics & Security, by the consistent application and review of development, management and evaluation methods and techniques
5	An ability to independently undertake research and critically evaluate arguments, assumptions, abstract concepts and data (that may be incomplete), to make judgements, and to frame appropriate questions to achieve a solution or identify a range of solutions to a problem.
6	Demonstrate originality and synthesis in the application of theory and techniques, drawn from earlier studies, through the production of significant industry and research based projects.

Teaching and Learning Activities

Summary

For each module students will normally receive a weekly lecture followed by a tutorial or practical lab based session(s). In addition some modules will be supplemented with optional drop-in workshop sessions. These are supplemented with a programme of guest speakers and industry led seminars. This structure is preferred within such a vocational award where students are learning specialised material for a specific career.

This is a very hands-on subject area where theory alone would be unlikely to allow a student to achieve successful employment in this area. Practical exercises allow for students to implement their theoretical learning and see how it relates to industry. Practical solutions are achieved through the replication of exercises such as compromised computer systems and mobile devices that students must analyse – similar to that as found in industry. Many of these examples are available through open source community projects but are also built in-house when suitable external material is not available.

The use of a team project at Level 5 allows students to develop communicative skills with their peers, this will include where possible, mixing with other cultures. Individuals may not have originally chosen to work with as they are outside of their direct friendship group. Any issues that arise within group work such as difficulties with other group members are carefully managed through distanced support of the group where possible, so as to get the students to deal with the issues themselves. Where distance support is not possible tutors will directly resolve the issue working with the group to rectify and identify solutions.

Students are encouraged to debate within a variety of learning environments, including in-class and through the VLE discussion boards and communication groups – this helps to develop respectful appreciation of their peers.

Through encouraging students to use industry forums and scholarly research, students interact with a range of cultures and thinking that they are required to draw upon and evaluate within several modules.

The use of an induction session begins the process of welcoming students to the University and the course. Students are introduced to the support mechanisms in place, faculty and university wide, and begin to develop relationships with their peers.

Your Modules

(Correct for students progressing through the programme within standard timescales. Students who are required to undertake repeat study may be taught alternate modules which meet the overall course learning outcomes. Details of module delivery will be provided in your timetable).

Level 4 Core Modules (2019/20 for FT students and 2019/20)

Fundamentals of Computer Programming

Computer Communications

Object Oriented Programming

Forensics & Security

Fundamentals of Databases

Website Development

Level 5 Core Modules (2020/21 for FT students and 2021/22)

Web and Network Security

Team Project

Computer Forensic Processing

Digital Security Landscapes

Digital Forensic Analysis

Level 6 Core Modules (2021/22 for FT students)

Production Project

Networked Forensic Investigations

Advanced Digital Security

Forensic Investigative Techniques

Level 6 Option Modules (delivery years as per Level 6 core modules above)

The following option modules are indicative of a typical year. There may be some variance in the

availability of option modules

Incident Response & Investigation

Advanced Web Engineering

Advanced Software Engineering

Advanced Database Systems

Level 7 Core Modules (2022/23 for FT students)

Project Management

Forensic Image/Video Processing

Advanced Security Exploitation

Security Analysis and Architecture

Dissertation

Research Practice

Assessment Balance and Scheduled Learning and Teaching Activities by Level

The assessment balance and overall workload associated with this course are calculated from core modules and a sample of option module choices undertaken by a typical student. They have been reviewed and confirmed as representative by the Course Director.

A standard module equates to 200 notional learning hours, which may be comprised of teaching, learning and assessment, placement activities and independent study. Sandwich placement years spent out of the University are not be included in the calculation unless they are credit bearing and attributed to a level of the course. Modules may have more than 1 component of assessment.

Assessment Balance	Level 4	Level 5	Level 6	Level 7
Examination	15%	-	20%	20%
Coursework	52%	60%	50%	50%
Practical	33%	40%	30%	30%
Overall Workload				
Teaching, Learning and Assessment	290 hours	232 hours	181 hours	181 hours
Independent Study	910 hours	968 hours	1019 hours	1019 hours
Placement	-	-	-	-

Learning Support

If students have a question or a problem relating to their course, the Course Administrator is there to help. Course Administrators works closely with academic staff and can make referrals to teaching staff or to specialist professional services as appropriate. They can give a confirmation of attendance letter, and a transcript. Students may also like to contact your Course Rep or the Students' Union Advice team for additional support with course-related questions.

If students have any questions about life at our University in general, they can call into or contact the Student Hub on either campus to speak to our Student Experience Team. This team, consisting of recent graduates and permanent staff, are available to support students throughout their time here.

There is a Student Hub on the ground floor of the Rose Bowl at City Campus and one in Campus Central at Headingley. Students can also find the team in the Gateway in the Leslie Silver Building at City Campus. The telephone number is 0113 812 3000, and the e-mail address is StudentHub@leedsbeckett.ac.uk.

Within MyBeckett students will see two tabs (Support and Opportunities) where they can find online information and resources for themselves. The **Support** tab gives students access to details of services available to give you academic and personal support. These include Library Services, the Students' Union, Money advice, Disability advice and support, Wellbeing, International Student Services and Accommodation. There is also an A-Z of Support Services, and access to online appointments/registration.

The **Opportunities** tab is the place to explore the options students have for jobs, work placements, volunteering, and a wide range of other opportunities. For example, students can find out here how to get help with CV's, prepare for an interview, get a part-time job or voluntary role, take part in an international project, or join societies closer to home.