COMPUTER SCIENCE AND SOFTWARE ENGINEERING

The Computer Science and Software Engineering industries move fast and our MSc courses will help you stay at the cutting edge. Our students are well placed to both develop and exploit the emerging technologies that play a key role in defining the way society uses technology. Designers, programmers, systems analysts and project managers – our graduates are flourishing in the business, commercial and entrepreneurial sectors.

All of our Masters teaching is informed by links to industry and supported by up-to-the-minute research conducted by in-house research teams active in the areas like Data and Knowledge Management, Health and Social Care Modelling, Computational Intelligence, Parallel Computing, Distributed and Intelligent Systems, Semantic Computing, and Computer Vision and Imaging.

Our programmes are accredited by BCS – The Chartered Institute for IT as meeting the requirements for Chartered IT Professional (CITP) Further Learning and partially meeting the requirements for Chartered Engineer (CEng).
The Advanced Software Engineering MSc enables students to extend their knowledge of, and gain valuable experience in, software engineering as it applies to a number of new and important areas of IT and computing.

The rapid pace of technical change in software development has been accompanied and compounded by an increase in the complexity of the systems that are developed. Recently this has been most noticeable in the increase in mobile computing and the use of sophisticated hardware that require developer knowledge of new paradigms.

The surge in cybersecurity issues and threats facing businesses and organisations that depend on IT systems has meant that software engineers need a thorough understanding of security when building and maintaining software applications and systems. There is an acknowledged national shortage of IT and computing skills in the workforce. Most obviously, the need for improved computer security has never been greater.

Computers are central to all aspects of our daily lives; as industries ranging from communications to banking have come to rely on them, the need for improved computer security has never been greater.

This course focuses on two aspects of Cyber Security: analysis and assessment of risk plus how to minimise it, and, how to extract and use digital information from a wide range of systems and devices.

The course is structured so that all students cover the same introductory material, but then choose to specialise in either Cyber Security or Digital Forensics.

You will gain an understanding of the nature of the security threats that face computer systems and the type of information that is stored on digital devices (and how it can be extracted from them). You will benefit from a broad and varied array of state-of-the-art technologies, including:• A dedicated forensics computer laboratory. • Over 30 computing laboratories with an extensive range of specialist and other software providing access to Linux/UNIX, Windows and Mac OS, all supported by high-bandwidth networks. • Access to a range of free software titles through a number of academic initiatives for use on home computers for educational and personal purposes. • Specialist technicians to ensure you can get the most out of these technologies.

Professional recognition

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Associated careers

Graduates will typically be part of a team working on sophisticated n-tier applications, as a designer, programmer, systems administrator or systems analyst (among others). Graduates will also find positions within new and established businesses that specialise in mobile applications. Other roles are possible in computer science research for either a commercial enterprise or academic institution. Further PhD study opportunities within the University of Westminster are also an option.

Course content

The Advanced Software Engineering MSc takes into account the emerging needs of industry underpinned by theory and software engineering practices. As a consequence the modules emphasise both the critical conceptual underpinnings as well as the practical skills for each subject.

Core modules

• Advanced Software Design
• Advanced Software Engineering Project
• Concurrency and Parallelism
• Enterprise Development
• Research Methods and Professional Practice

Option modules

• Advanced Big Data Analytics
• Big Data Theory and Practice
• Cloud Computing Applications
• Cybersecurity Threats and Countermeasures
• Data Mining & Machine Learning
• Data Visualisation and Dashboarding
• Internet Security
• Mobile and Ubiquitous Computing
• Mobile Application Development
• Usability and User Experience Design
• Free Choice Module (see course web page)

Professional recognition

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Associated careers

Depending on their chosen pathway graduates of the course are expected to find employment as information security/senior security officers and related cyber security roles or more technical roles investigating threats and safeguarding digital assets their life-cycle. Such roles will range from supporting industry, the public sector in general and the police and law enforcement agencies specifically, while some may focus more on researching new security threats and countermeasures.