

# COMPUTER AND NETWORKING ENGINEERING

The postgraduate courses offered by the Department of Engineering provide a unique mix of practical, hands-on learning and short course based teaching. They have been designed to equip you with the job-related skills required in robotics, control systems, embedded microprocessors, medical instrumentation, telecommunications, satellite and broadband technologies, wireless technologies, digital signal processing, network security, network communications and networks with cloud technologies.

As an engineering student at the University of Westminster, you will benefit from some of the best teaching and facilities available. Our staff and courses are recognised for their excellence in teaching, and our state-of-the-art laboratories are dedicated to our students. Recent graduates have gone to work in fields as diverse as broadcasting, aerospace, chip design, mobile communications, medical electronics, embedded systems, network security, control systems and instrumentation and measurement.

Our students are now working in companies such as ARM Holdings Ltd, BBC, Broadcom, British Aerospace, BskyB, BT, Cisco, Dell, Fujitsu, Google Enterprise, HP, Huawei Technologies, Mitsubishi, Panasonic, Philips, Quinix, Rolls Royce, Sony, Virgin, Xilinx and other medium and smaller companies.

Our research-active staff work in areas such as digital signal processing, ultra-low-power signal processor design, communication networks, distributed computing, microwave filters and circuit design, satellite navigation, and next generation communication systems. Furthermore, staff are actively involved with industry and these links, together with the research activity, inform the teaching of these state-of-the-art MSc courses.

All our courses are accredited by the Institution of Engineering and Technology.



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# COMPUTER NETWORKS WITH CLOUD TECHNOLOGIES MSc

Cloud computing is a technical and social reality today, it represents a dramatic shift in the design of systems capable of providing vast amounts of computing services and storage space. It is also a business reality today as an increasing number of organisations are adopting this paradigm since it increases efficiency, helps improve cash flow and offers many more services and benefits. The rapid shift in IT towards cloud computing is creating a worldwide skills gap. Our MSc course in Cloud technologies and its applications will be taught with respect to their design, architecture and implementation, as well as the use of tools which are used to model the behaviour of cloud based systems.

## Course content

The Computer Networks with Cloud Technologies MSc aims to produce postgraduates with an advanced understanding of Cloud based systems and their planning, implementation and maintenance.

The course aims to prepare you with specialist knowledge and skillset in key areas such as cloud architecture, modelling tools, virtualisation, distributed systems, cloud services and management. You will be able to develop technical solutions and strategies for cloud systems' management and operations. You will also be able to develop the ability to critically evaluate and analyse the associated architectures, management protocols and associated policies for cloud based systems.

The course aims to provide experience in the design and implementation of distributed systems and to build applications in the cloud using platforms and toolkits such as Google App Engine, VMware Cloud Foundry, Microsoft Windows Azure, CloudSim, CloudBees, GigaSpaces.

## Core modules

- Cloud Technologies
- Computer Networks
- Project

## Option modules

- Cloud Technologies
- Digital Signal Processing
- Electronics
- Embedded Systems
- Medical Instrumentation
- Robotic and Control Systems
- Satellite and Broadband Communications
- Security
- System-on-Chip Technologies
- Telecommunications
- Wireless Technologies

**Length of course:** one year full-time, starting in September

**Location:** Central London (Cavendish)

**Faculty:** Science and Technology

**Course fees and funding:** see course web page and [westminster.ac.uk/fees](http://westminster.ac.uk/fees)

**Entry requirements:** see page 216

For full and most up-to-date information, see course web page: [westminster.ac.uk/computer-networks-with-cloud-technologies-msc](http://westminster.ac.uk/computer-networks-with-cloud-technologies-msc)

## Professional recognition

This course is accredited by the IET – Institution of Engineering and Technology and by the BCS – The Chartered Institute for IT.

## Associated careers

The subject areas covered within the three pathways in the Computer Networks suite of MSc courses offer students an excellent opportunity to enable the successful graduate to enter into these ever expanding, fast growing and dominant areas within the network engineering sector.

Skills in design, installation, configuration, optimisation, security and management of these networks are highly desirable. The demand for engineers has been rising steadily over the past few years and there are skills shortages for engineers in some areas such as cybersecurity and cloud computing.

Examples of possible career paths for graduates in the areas of networks are: network support engineer; network design architect; network manager; project manager; security auditor; network security architect; distributed systems engineer; teaching; research and development.



# COMPUTER NETWORKS WITH COMMUNICATIONS MSc

Businesses today are heavily reliant on computer networks in their daily operations. It is important to ensure that such networks are well designed, optimised, secured and tested for maximum uptime and ease of management. There are excellent opportunities for network engineers with such skills and experience.

## Course content

The Computer Networks with Communications MSc aims to produce postgraduates with an advanced understanding of computer networks with hands-on experience of the planning, implementation and maintenance of such systems.

The course aims to prepare you with specialist knowledge and skillset in key areas such as network design, storage area networks, optical networking, network simulation, network redundancy and reliability. You will be able to review commonly used network simulators, commercial and academic, their common and specific purposes and architectures.

The course will enable you to apply a holistic understanding of networks and their applications in solving real world problems. It will also enable you to develop the ability to critically evaluate and integrate devices and components used for high speed fibre optical communication system, develop the ability to model the behaviour of modern day network systems to design and critically evaluate such systems at all levels of the OSI model.

## Core modules

- Communication Networks
- Computer Networks
- Project

## Option modules

- Cloud Technologies
- Digital Signal Processing
- Electronics
- Embedded Systems
- Medical Instrumentation
- Robotic and Control Systems
- Satellite and Broadband Communications
- Security
- System-on-Chip Technologies
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- Wireless Technologies



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# COMPUTER NETWORKS WITH SECURITY MSc

Today there are high level tools easily available to perform sophisticated attacks on computer and network systems. As a result computer network security is a very important consideration in every organisation using computer networks. Without proper implementation, businesses could suffer financial losses. There are excellent opportunities in this area with excellent rewards. At present there are skills shortages globally in some areas of security which is an indicator of the demand for highly skilled security professionals.

## Course content

The Computer Networks with Security MSc aims to produce postgraduates with an advanced understanding of modern networks with the integrated need of security. The course aims to prepare you with specialist knowledge and skillset in key areas such as threat analysis, network security systems, cryptography, cybersecurity, penetration testing, wireless security and information security. You will develop skills to critically evaluate the threats and vulnerabilities of network systems and to implement and integrate security strategies.

You will also be able to develop the ability to critically evaluate and implement principles and practices used in modern day cryptography used to secure data and communication in computer network systems. There will be an opportunity to explore current security tools used in penetration testing and get hands on experience at configuring enterprise level security appliances such as firewalls, intrusion detection systems and VPNs.



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**Entry requirements:** see page 216

For full and most up-to-date information, see course web page: [westminster.ac.uk/computer-networks-with-security-msc](http://westminster.ac.uk/computer-networks-with-security-msc)

## Core modules

- Computer Networks
- Security
- Project

## Option modules

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- Digital Signal Processing
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