

**BSc Honours Computer Networks
and Communications**
Rabeb Thabti

My degree is challenging me, broadening my experience and giving me the opportunity to put theoretical studies into significant practical use. Studying at the University of Westminster has given me the confidence to go on and pursue my ambitions.



Other related areas/courses you might be interested in:
Computer Science BSc Honours (p110) • Computing Foundation (p113)
• Electronic Engineering (p132)

Computer Systems Engineering MEng/BEng Honours

The course provides a solid grounding in the design and realisation of modern embedded systems, building upon more than two decades of experience in digital signal processing and electronic system design within the department. Embedded systems exist in every part of modern life, including portable digital cameras, kitchen appliances, collision avoidance systems in cars, and robotics. This has created a surge in demand for highly skilled engineers who can program computers and utilise and implement hardware systems. These degrees give you the skills required by engineers to efficiently combine software and hardware solutions and create the next generation of embedded electronic devices.

Course content

This course shares a common Year 1 (Credit Level 4) with the MEng/BEng Electronics Engineering degree. Project-based learning plays a large part in the courses, with project modules relevant to modern industry. At Year 2 (Credit Level 5) these include a voice-over amplifier project, and the Micromouse competition where teams of students vie to build the fastest maze-solving robot mouse. At Year 3 (Credit Level 6) you take an individual project of your choice, as well as a group project tackling the design of a very large scale integrated (VLSI) programmable processor.

You can transfer to the MEng/BEng Electronic Engineering at the end of the common first year. Subject to performance, it is possible to transfer from the BEng to the MEng Computer Systems Engineering at the end of Year 2 (Credit Level 5).

Year 1 (Credit Level 4)

Subjects of study include: Communications • Digital and Analog Circuits • Engineering Science and Maths • Linear System Analysis • Programming • Real-Time Audio Processing*

Year 2 (Credit Level 5)

Subjects of study include: Data transmission* • Digital Microelectronics* • Event-driven and GUI Programming • Micromouse Maze-Solving Competition* • Network Software Engineering • Operating Systems • Professional Employability Skills • Signal and System Analysis

* These subjects are taught as group projects.

Sandwich placement year

You have the chance to take a placement in industry between Year 2 and Year 3 (Credit Levels 5 and 6). This gives you practical experience in the workplace and a competitive edge in the job market. It contributes to your professional development towards Chartered Engineer status.

Length of course

MEng: four-year, full-time; five-year, full-time sandwich; five-year, full-time with Foundation.
BEng: three-year, full-time; four-year, full-time sandwich; four-year, full-time with Foundation

UCAS codes

MEng: H655
BEng: H650;
with Foundation H653

Location

Central London (Cavendish)

Professional recognition

These courses are accredited by the Institution of Engineering and Technology (IET), enabling you, as a graduate, to become a Chartered Engineer after a period of further study and professional experience.

Teaching and assessment

You will receive advice and support from supervisors and other members of staff, all of whom are available to help you achieve your aims and get the most out of your education.

Associated careers

With an industry-wide skills shortage, employers are looking for creative people with the breadth of technical expertise to take a good idea from conception through to a viable product. Our graduates have gone on to work for the BBC and electronics giants such as British Aerospace, BT, GEC and Nokia, as well as for smaller private companies. Some have started up their own businesses in manufacturing or consultancy.

For information about the Foundation year see p113.

Year 3 (Credit Level 6)

BEng subjects of study include: Algorithm Realisation • Business Finance and Management • Embedded Processor Architecture • Individual Project • Mobile Platform Programming • Real-Time Embedded Systems • Robotic System Design

Year 4 (Credit Level 7) MEng

Subjects of study include: Embedded Media Processing • Industrial Group Project • Multirate DSP • Video and Image Processing • plus one option module from the other MSc modules

Typical offer for September 2009

<i>Qualification type</i>	<i>Grade/points</i>
A Levels	MEng: BBB to include Maths BEng: BBC to include Maths
International Baccalaureate	MEng: 32 points to include Maths at Higher Level BEng: 30 points to include Maths at Higher Level
BTEC National Diploma	MEng: DDM in Engineering BEng: DMM in Engineering
Advanced Diploma	MEng: Grade B in Engineering and relevant ASL at Grade B including Certificate in Mathematics for Engineering or A2 Maths BEng: Grade B in Engineering or IT and relevant ASL at Grade C including Certificate in Mathematics for Engineering or A2 Maths

See also entry requirements on p48.

For further information about Computer and Network Engineering courses visit the School of Electronic Engineering, Computer Science and Informatics website at www.westminster.ac.uk/computing

Computer Systems Engineering BSc Honours

Computer Systems Engineering is a growing market in today's computer industry. Embedded systems have become widespread in industry and can be found in almost all modern consumer devices, from washing machines to cars. This course focuses on three main areas - the computer system, embedded systems and program development. Its aims are to create strong computer-based engineers who are needed in both industry and research.

Year 1 (Credit Level 4)

The course focuses on the fundamental topics that form the basis for a complete knowledge of a computer system and its operation, including programming, computer organisation (including network aspects), and digital systems, and some of these modules are project-based.

Subjects of study include: Computer Networks • Computer Organisation • Digital Systems • Electronics and Circuits • Maths for Computing • Programming

Year 2 (Credit Level 5)

You are introduced via three group-based project modules to the design and implementation of sequential circuits using field-programmable gate arrays, embedded microprocessor systems, and data transmission, giving you hands-on experience in the implementation of these advanced technologies. Software design is also included.

Subjects of study include: Computer Systems Engineering • FPGA Design* • Micromouse Maze-Solving Competition* • Network Engineering • Network Software Engineering • Operating Systems • Professional Employability Skills

* These subjects are taught as group projects.

Sandwich placement year

A placement in industry may be taken between Year 2 and Year 3 (Credit Levels 5 and 6). This gives you practical experience in the workplace and a competitive edge in the job market. It contributes to your professional development towards Incorporated Engineer status.

Year 3 (Credit Level 6)

Advanced topics cover the design and the performance of computers, the design of real-time systems, and making the designs safe and secure. There are also modules dealing with software, networks and industrial project management. This level culminates with you developing a complete project using the engineering knowledge and skills developed during the course.

Subjects of study include: Advanced Networks • Business Finance and Management • Computer Architecture and Performance • Concurrent Programming • Individual Project • Real-Time and Embedded Systems • Safety and Security in Systems Design

Length of course

Three-year, full-time; four-year, full-time sandwich; four-year, full-time with Foundation

UCAS codes

H657; with Foundation H656

Location

Central London (Cavendish)

Professional recognition

These courses are accredited by the Institution of Engineering and Technology (IET). This entitles you, after a period of experience, to become an Incorporated Engineer.

Teaching and assessment

You will receive advice and support from supervisors and other members of staff, all of whom are available to help you achieve your aims and get the most out of your education.

Associated careers

The national shortage of professionals with suitable skills has led to many opportunities for you to take exciting, well-paid jobs. Technology plays such a vital role in today's society that engineers can be found in almost every area of human activity. Employers are looking for creative people with the breadth and technical expertise to take a good idea from conception through to a viable product. The range of skills provided gives an ideal grounding for many professions.

For information about the Foundation year see p113.

Typical offer for September 2009

Qualification type	Grade/points
A Levels	CCD/AB
International Baccalaureate	28 points
BTEC National Diploma/Certificate	MMM/DD in Engineering or IT
Advanced Diploma	Grade C in IT or Engineering and relevant ASL at Grade C

See also entry requirements on p48.

Computer Networks and Communications BSc Honours

Communications technology requires knowledge of the interaction of hardware and software in complex networks. This course covers all aspects of computer networks, from the physical transmission of signals, through the protocols required for the safe transmission of data, to the end-to-end services built on the communications backbone. Wired and wireless networks are covered and special emphasis is placed on the transportation of real-time audio and video media.

You can follow one of two course pathways; Communications focuses on support and services for wired and wireless communication systems, while Computer Systems focuses on computer architecture and safety and security in systems design.

Course content

Westminster is a Cisco Networking Academy and this course allows you to register for CCNA (Cisco Certified Network Associate) exams. All Cisco-relevant material is covered in core modules throughout the course. You can transfer to the BSc Computer Network Security course at the end of the common first year.

Year 1 (Credit Level 4)

Subjects of study include: Computer Networks • Computer Organisation • Digital Systems • Electronics and Circuits • Mathematics for Computing • Programming • plus one option from Communications

Year 2 (Credit Level 5)

Subjects of study common for both pathways include: Network Engineering • Network Software Engineering • Operating Systems • Professional Employability Skills

Communications pathway: Communication Systems

Computer Systems pathway: Computer Systems Engineering

Sandwich placement year

You will have the opportunity to take a placement in industry between Year 2 and Year 3 (Credit Levels 5 and 6). This experience gives you practical experience in the workplace and a competitive edge in the job market. It contributes to your professional development towards Chartered Engineer status.

Year 3 (Credit Level 6)

Subjects of study common for both pathways include: Advanced Networks • Business Finance and Management • Distributed Systems and Network Software • Individual Project • Networks Architecture

Communications pathway: Cellular Radio Networks • Mobile Radio Systems

Computer Systems pathway: Computer Architecture and Performance • Safety and Security in Systems Design

Length of course

Three-year, full-time; four-year, full-time sandwich; four-year, full-time with Foundation

UCAS codes

PG94; with Foundation G427

Location

Central London (Cavendish)

Teaching and assessment

You will receive advice and support from supervisors and other members of staff, all of whom are available to help you achieve your aims and get the most out of your education.

Associated careers

This course equips you with the flexibility to work at different levels with networked communication systems, from digital modulation through network architecture, routing and management. The course draws from the strong traditions of teaching digital communications, networks and software engineering within the School, and will provide you with the understanding and experience needed for a career in network communications technology.

For information about the Foundation year see p113.

Typical offer for September 2009

Qualification type	Grade/points
A Levels	CCD/AB
International Baccalaureate	28 points
BTEC National Diploma/Certificate	MMP/DM in Science
Advanced Diploma	Grade C in IT or Engineering and relevant ASL at Grade C

See also entry requirements on p48.

Computer Network Security BSc Honours

Security is a vital aspect of any networked system, especially as the dependency on network infrastructures has grown over the past few decades. This course builds on more than a decade of experience in education in network design and support, and its aim is to produce network engineers with a strong background in security. The course focuses on three main aspects – communication, network design and implementation, and security.

Course content

Westminster is a Cisco Networking Academy and this course allows you to register for CCNA (Cisco Certified Network Associate) exams. All Cisco-relevant material is covered in core modules throughout the course. The emphasis is on 'hands-on' work at every level, enhancing the development of your engineering skills which are vital for today's market.

You can transfer to the BSc Computer Networks and Communications course at the end of the common first year.

Year 1 (Credit Level 4)

In the first year the degree focuses on the fundamental principles of networking, computer hardware and software development. The aim is to create a solid foundation for the remainder of the course.

Subjects of study include: Computer Networks • Computer Organisation • Digital Systems • Electronics and Circuits • Mathematics for Computing • Programming • plus one option from Communications

Year 2 (Credit Level 5)

The course continues with the themes of network engineering and software development. Specialist modules look at the threats to a system's integrity, how they can be countered, and the practical implementation of encryption.

Subjects of study include: Cryptography • Network Engineering • Network Software Engineering • Operating Systems • Professional Employability Skills • Threats and Counter Measures

Sandwich placement year

You will have the opportunity to take a placement in industry between Year 2 and Year 3 (Credit Levels 5 and 6). This gives you practical experience in the workplace and a competitive edge in the job market. It contributes to your professional development towards Chartered Engineer status.

Year 3 (Credit Level 6)

The network theme is further advanced and the issues of implementation, configuration and dealing with present day data streams (such as for multimedia applications) are addressed. There are specialist modules on planning and implementing secure systems, and on working on projects in an industrial environment, which will prepare you to analyse requirements, design and implement a secure network system. You will also complete a major project involving these aspects.

Subjects of study include: Advanced Networks • Business Finance and Management • Distributed Systems and Network Software • Individual Project • Network Architecture • Network Security Systems • Secure System Planning

Length of course

Three-year, full-time; four-year, full-time sandwich; four-year, full-time with Foundation

UCAS codes

G423; with Foundation G425

Location

Central London (Cavendish)

Teaching and assessment

You will receive advice and support from supervisors and other members of staff, all of whom are available to help you achieve your aims and get the most out of your education.

Associated careers

Graduates from this course can work as network engineers and take on specific responsibility within a network team or as a team leader for the security aspects of that network. Jobs in industries such as banking, where security is of particular importance, would be particularly appropriate.

For information about the Foundation year see p113.

Typical offer for September 2009

Qualification type	Grade/points
A Levels	CCD/AB
International Baccalaureate	28 points (minimum)
BTEC National Diploma/Certificate	MMM/DD
Advanced Diploma	Grade C in IT or Engineering and relevant ASL at Grade C

See also entry requirements on p48.