COMPUTING & COMMUNICATION TECHNOLOGIES

Postgraduate programmes
World-class research and superb industry links make Oxford Brookes one of the best places in the UK to study computing and communication technologies.

State-of-the-art facilities, using industry-standard hardware and software, means practice-based learning offers real-world experience.

Students gain the opportunity to develop the advanced skills and knowledge needed to pursue successful careers in their chosen fields.
INTRODUCTION

Our distinctive portfolio of undergraduate and postgraduate courses addresses a range of fast-moving subjects at the cutting edge of technology. Students are given the opportunity to encounter a rich and diverse set of state-of-the-art technologies and develop a wide range of cognitive, practical, analytical, creative and professional skills. The subjects that can be studied here cross a spectrum that is fundamental science at one end, and application or product focused at the other. We work hard to ensure that our courses are attractive to students, relevant to industry and academically sound.

The department has an excellent reputation for research within the UK and worldwide. In the last Research Excellence Framework nearly 80% of our research was internationally recognised with almost 19% being considered world leading or internationally excellent. The prize-winning research activities in the department cover a range of subjects including computer vision, software engineering and web technologies. Research staff are highly engaged in the international research community, including a number who are editors of prestigious journals and chairs of world-leading conferences.

The department has also established strong links with industry which enrich all our teaching and research activities. We are a partner with industry and other institutions researching new technologies to help improve the lives of people with type 1 diabetes. The world-class research, excellent teaching, access to state-of-the-art technology and the close links with industry make the Department of Computing and Communication Technologies one of the best places in the UK to study or to pursue an academic career.

Nigel Crook
Head of Computing and Communication Technologies
COMPUTER SCIENCE MSc/PGDip/PGCert

Our BCS accredited MSc in Computer Science aims to provide you with a diverse range of skills so that you will be able to produce optimal solutions in complex, multi-discipline projects which are increasingly widespread in industry.

Examples of such projects include intelligent firewalls, mind-controlled cars and sensor gloves to help disabled tablet users.

This course is aimed at new graduates or those with substantial experience in the computing industry who want to gain a qualification that develops their expertise.

Our Computer Science programmes are rooted in real-world and industry-relevant experiences. Real-world problems and current issues in computing are used to illustrate the theoretical concepts. This gives you the opportunity to develop the advanced skills and knowledge needed to pursue successful careers in your chosen field.

Professional experts contribute to the range of subjects on offer and the design of our programmes is informed by state-of-the-art research being undertaken in the department. Students on the programme will also be given the opportunity to undertake an intensive course on compiler construction from one of Europe’s leading authorities in the field.

BCS, the Chartered Institute for IT.

The MSc in Computer Science is accredited as meeting the requirements for CITP Further Learning and partially meeting the requirements for CEng and has been awarded the EQANIE (European Quality Assurance Network for Informatics Education) label.

www.brookes.ac.uk/courses/postgraduate/computer-science
Admission requirements

You should normally hold a first degree equivalent to at least a British lower second class bachelor’s degree in computing, mathematics, engineering or a science-related subject in which good programming skills have been developed. Applicants whose first degree is not in these areas but who have worked in a related industry and have obtained good relevant experience and programming skills can also be considered.

English language requirements

If your first language is not English, you will need an IELTS score of 6.0 or equivalent.

Find out about other acceptable English language qualifications and the UK Border Agency’s language requirements for student visas at www.brookes.ac.uk/international/how-to-apply/english-language-requirements/

Course content

The course is offered at three levels: a master’s degree (MSc), a postgraduate diploma (PGDip) and a postgraduate certificate (PGCert). The PGCert is also available as a Research Project.

For the MSc, you must pass modules amounting to 180 credits. This comprises six taught modules (20 credits each) plus your dissertation (60 credits).

The PGDip allows you to concentrate on the taught part of the degree and is ideal for people working in the computing industry who wish to brush up their skills. For the PGDip, you must pass modules amounting to 120 credits, comprising six taught modules (20 credits each). In some cases, it may be possible for a student on a postgraduate diploma to complete three taught modules (20 credits each) plus a dissertation (60 credits).

The PGCert is ideal for people working in the computing industry who wish to learn a specific area in this rapidly changing discipline. To qualify for a postgraduate certificate, you must pass modules amounting to 60 credits, comprising three taught modules (20 credits each).

For students who already have a background of research and scholarship we also offer a PGCert Research Project. This is a variant of the standard PGCert except that students undertake the dissertation rather than 3 taught modules.

Part-time students normally distribute the work evenly over a two-year period.

Dissertation module

Students studying for an MSc will also take:

- MSc Dissertation, which is an individual research and development project that allows you to study a topic of your choice in depth, guided by your supervisor. The work may be undertaken in close co-operation with a research, industrial or commercial organisation. You start your dissertation in Semester 2, continuing over the summer period.

Semester 1

Semester 1 has the following modules:

- Research and Scholarship Methods (compulsory for MSc and PG Dip)
- Secure Systems Architecture (compulsory for MSc)
- Formal Software Engineering (optional)
- Network Principles (optional)

Semester 2

Semester 2 has the following modules:

- Software Production (compulsory for MSc and PG Dip)
- Paradigms of Programming (optional)
- Compiler Construction (optional)
- Machine Learning (optional)
- Operating Systems Development (optional)
- Secure Programming (optional)
- Low Level Tools and Techniques (optional)
- Systems Administration (optional)
- IT Systems Management and Governance (optional)
- Multiservice Networks (optional)

The modules offered are constantly improved and student feedback is given utmost importance.

Jagdeep Nagpal, MSc Computer Science graduate. See page 25 for more from Jagdeep.

Career prospects

Graduates of this course are employed across a whole range of careers from development roles in small software houses, to the activities of IT departments in large, multinational corporations, to more specialist roles for providers of IT and telecommunications services. These include technical roles, including software design and development; specialist product support; and infrastructure and security management roles.

Admission requirements

You should normally hold a first degree equivalent to at least a British lower second class bachelor’s degree in computing, mathematics, engineering or a science-related subject in which good programming skills have been developed. Applicants whose first degree is not in these areas but who have worked in a related industry and have obtained good relevant experience and programming skills can also be considered.

English language requirements

If your first language is not English, you will need an IELTS score of 6.0 or equivalent.

Find out about other acceptable English language qualifications and the UK Border Agency’s language requirements for student visas at www.brookes.ac.uk/international/how-to-apply/english-language-requirements/
COMPUTER SCIENCE FOR CYBER SECURITY
MSc/PGDip/PGCert

Cyber threats are on the increase and have been highlighted as one of the four main threats to the UK. There is an increasing demand from business and government for individuals skilled in computer science and cyber security who can design, build, and maintain secure software and systems that can protect people, business and data from malicious attack.

This programme builds on the knowledge gained in a first degree to equip you with advanced computer science and cyber security skills necessary to produce modern secure systems. The theory taught in the lectures is reinforced in the practicals where you have the opportunity to use industry standard tools and techniques in our dedicated security, server and networking laboratories which provide a safe space for you to practise both offensive and defensive security techniques.

Why choose this course?

- Dedicated security, server and networking laboratories with enterprise equipment including Cisco switches, routers, firewalls and Dell servers.
- Small, dedicated private cloud that allows you to create more complex cyber security scenarios and to investigate cloud security issues.
- Access to a wide range of enterprise software to ensure realistic deployment environments.
- An emphasis on live projects, alongside group work modelled on industry standard working patterns, giving you the opportunity to develop skills that are directly applicable to the workplace.
- Staff with a wide range of expertise in computer science and cyber security.
- An opportunity to apply to undertake a placement which enables you to practice and refine your skills within a company or organisation.

www.brookes.ac.uk/courses/postgraduate/computer-science-for-cyber-security
Course content

The MSc in Computer Science for Cyber Security has a modular course-unit design providing you with maximum flexibility and choice. To qualify for a master’s degree without placement, you must pass modules amounting to 180 credits. This comprises six taught modules (20 credits each) plus your dissertation (60 credits). To qualify for a master’s degree with placement you need to undertake a one year placement in between the taught component and the dissertation.

The PGDip in Computer Science for Cyber Security allows you to concentrate on the taught part of the degree and is ideal for people working in the computing industry who wish to brush up their skills. To qualify for a postgraduate diploma, you must pass modules amounting to 120 credits. This comprises six taught modules (20 credits each). In some cases, it may be possible for a student on a postgraduate diploma to do three taught modules (20 credits each) plus your dissertation (60 credits).

The PGCert in Computer Science for Cyber Security allows you to concentrate on the taught part of the degree and is ideal for people working in the computing industry who wish to learn a specific area in this rapidly changing discipline. To qualify for a postgraduate certificate, you must pass modules amounting to 60 credits. This comprises three taught modules (20 credits each).

We also offer a Postgraduate Certificate Computer Science for Cyber Security Research Project.

Semester 1

Semester 1 has the following modules:
- Research and Scholarship Methods (compulsory for MSc)
- Network Principles (compulsory for MSc)
- Secure Systems Architecture (compulsory for MSc and PG Dip)

Semester 2

Semester 2 has the following modules:
- Operating Systems Development (compulsory for MSc and PG Dip)
- Secure Programming (compulsory for MSc)
- Low level Techniques and Tools (compulsory for MSc and PG Dip)

Dissertation module

Students studying for an MSc will also take:
- MSc Dissertation, which is an individual research and development project that allows you to study a topic of your choice in depth, guided by your supervisor. The work may be undertaken in close co-operation with a research, industrial or commercial organisation. You will undertake your dissertation over the summer period.
- MSc students have the option to apply to undertake a placement. Placement positions are not guaranteed, however the department will help and support students in finding a placement. Students on the placement will take the Work Experience Placement module, which is an optional element of all the department’s CCT programmes, and provides professional and practical experience in the computing, communications, or media industries. The nature of the work undertaken will be relevant to a student’s programme, and may provide a basis for the development of the dissertation.

Career prospects

This programme allows graduates to undertake a wide range of roles in IT and cyber security. Common careers in this area are IT security professionals, penetration testers, digital forensic investigators, software developers, systems engineers, technical analysts, IT managers, and consultants.

Admission requirements

You should normally hold a first degree, equivalent to at least a British lower second-class bachelor’s degree, in an electronic engineering, telecommunications, computer science or a related engineering or computing degree. Applicants whose first degree is not in these areas, but who have worked in a related industry, and have obtained good relevant experience and programming skills, can also be considered.

For entry to the Postgraduate Certificate Computer Science for Cyber Security Research Project you should provide evidence of experience in research and study methods at an appropriate level.

English language requirements

If your first language is not English, you will need an IELTS score of 6.0 or equivalent.

Find out about other acceptable English language qualifications and the UK Border Agency’s language requirements for student visas at www.brookes.ac.uk/international/how-to-apply/english-language-requirements/
If your first degree is not in computing but you want to move into IT then our BCS accredited **MSc in Computing** is designed for you. The course provides the basis for starting a career in computing and IT; teaching you the fundamentals of programming, hardware, networks and software engineering.

The course will enable you to develop a sound knowledge of computer software development for a range of problem areas, such as interactive websites, stand-alone applications and network systems. Because of its emphasis on software, system construction and management, and data organisation, the qualification is applicable to a wide variety of fields concerned with using computers, as well as directly to the computer industry itself.

[www.brookes.ac.uk/postgraduate/courses/computing](http://www.brookes.ac.uk/postgraduate/courses/computing)
Course content

The course is offered at three levels: a master’s degree (MSc), a postgraduate diploma (PGDip) and a postgraduate certificate (PGCert).

For the MSc, you must pass modules amounting to 180 credits. This comprises six taught modules (20 credits each) plus your dissertation (60 credits).

The PGDip allows you to concentrate on the taught part of the degree and is ideal for people working in the computing industry who wish to brush up their skills. For the PGDip, you must pass modules amounting to 120 credits, comprising six taught modules (20 credits each). In some cases, it may be possible for a student on a postgraduate diploma to complete three taught modules (20 credits each) plus a dissertation (60 credits).

The PGCert is ideal for people working in the computing industry who wish to learn a specific area in this rapidly changing discipline. To qualify for a postgraduate certificate, you must pass modules amounting to 60 credits, comprising three taught modules (20 credits each).

Part-time students normally distribute the work evenly over a two-year period.

Semester 1

Semester 1 has the following modules:
- Research and Scholarship Methods (compulsory for MSc and PG Dip)
- Object-Oriented Programming (compulsory for MSc and PG Dip)
- Structured Data (compulsory for MSc)

Semester 2

Semester 2 has the following modules:
- Computer Systems and Networks (compulsory for MSc and PG Dip)
- Software Production (compulsory for MSc)
- Cyber security and the web (Compulsory for MSc)

Dissertation module

Students studying for an MSc will also take:
- MSc Dissertation which is an individual research and development project that allows you to study a topic of your choice in depth, guided by your supervisor. The work may be undertaken in close co-operation with a research, industrial or commercial organisation. You start your dissertation in Semester 2, continuing over the summer period.

A master’s degree for people who had not studied computing before. This was not offered at many universities!

Anna Gregory, MSc Computing graduate

See page 13 for more from Anna.

Career prospects

As a graduate of this programme you will be ideally equipped for a career in the computing industry. Graduates are employed across a whole range of careers from development roles in small software houses, to the activities of IT departments in large, multinational corporations, to more specialist roles for providers of IT and telecommunications services. These include technical roles, including software design and development, specialist product support, and infrastructure and security management roles.

Admission requirements

You should normally hold a first degree equivalent to at least a British lower second-class bachelor’s degree, in a non-computing or IT subject. If you have industrial experience in part of the domain, but no formal qualifications, you may also be considered.

English language requirements

If your first language is not English, you will need an IELTS score of 6.0 or equivalent.

Find out about other acceptable English language qualifications and the UK Border Agency’s language requirements for student visas at www.brookes.ac.uk/international/how-to-apply/english-language-requirements/
Before you came to Brookes what did you study and where?
I did a MSc in Computer Science at Supinfo International University in France, Canada, London and China.

What made you choose Brookes as a place to study?
The opportunity to get a double degree as part of a partnership with my previous university is a huge plus. Besides being able to deepen my knowledge in software development makes a big difference. Additionally, the feedbacks from previous students were all positive.

What did you think of the course while studying here?
It was really interesting and made me discover several study topics. Having the opportunity to experiment with new paradigms broadened my ability to think out of the box.

What are the best bits of studying at Brookes?
The expertise and friendliness of lecturers and staff members really encourage students to give their best. Lecturers do not hesitate to spend extra time to answer questions with enthusiasm. Besides, the administration department members are terribly effective and always manage to accommodate student queries.

What advice do you have for others?
Do not hesitate. It is definitely worth it! If you are a foreigner, have a look at their free additional English academic courses which will increase the quality of your work.

After graduating from Brookes what were the next steps for your career and where are you working now?
I initially wanted to go to the Bay area in the US but their visa process is really constraining as I should have started it a year before. So I’m heading towards Hong Kong which offers great opportunities all year long.

What so far have been the best moments?
Seeing my parents really proud of the accomplishment made me realise that efforts always pay off. Regarding the job, I am still negotiating the details!

What so far have been the most challenging moments?
Some industries require generalists while others are mainly focused on in-depth experts of one particular technology. Unfortunately for me, the Hong Kong market seems to mainly target the second group… But I will overcome this!

Graduate Profile
Joey Clouvel MSc Software Engineering

Joey graduated at the end of 2014 and is now a successful software engineer in London with RemitONE, a leading provider of money transfer software systems.
Before you came to Brookes what did you study and where?
Before coming to Brookes I studied BA (Hons) Media Practice and Theory at University of Sussex.

What made you choose Brookes as a place to study?
Brookes really appealed to me as I felt at home as soon as I visited. The facilities were second to none, and there’s no better place in the world to study than Oxford! The deciding factor, though, was the course offered – it was a master’s degree for people who had not studied computing before. This was not offered at many universities!

What did you think of the course while studying here?
The course was really enjoyable and set me up for the workplace. All of the modules taught me transferable skills and an overview of computer science. The research tips given during the dissertation preparation modules have stayed with me to this day!

What are the best bits of studying at Brookes?
I really enjoyed going along to societies and socials, and I will never forget the Cheese and Wine Murder Mystery night! There’s also a good mix of international students, and some of my very best friends are people I met at Brookes (including my fiancé!)

How did the course at Brookes or your lecturers influence you? What support did you receive from them?
The course convinced me I wanted a job that combined both business and IT. My lecturers were very open to discussing job options with me and giving me advice on my dissertation. The support I received from careers advisers was invaluable. They helped tailor my CV to job applications and encourage me to apply for jobs I never would have considered. I’m pretty sure I wouldn’t have got a job without Brookes!

What so far have been the best moments?
Getting my first job was the best feeling. It’s really positive to know that everything you’ve learnt through school, college and university can be put to good use somewhere.

What so far have been the most challenging moments?
Moving in to the world of work was quite challenging as I was so used to being a student! But once you’ve got your foot on the career ladder and you start feeling responsible for your work, it’s much easier.

After graduating from Brookes what were the next steps for your career and where are you working now?
After graduating, I got a place on the Graduate IT Training Scheme at Logica (now CGI). I have recently moved on to Practicus (http://www.practicus.com) where I am Webmaster and Bid Project Manager. I help the company to win new business contracts.
This exciting one-year full-time specialist master’s course has been designed to enable tomorrow’s business and technology leaders to fully exploit the opportunities offered by recent advances in internet technologies. There is no doubt that these technologies now form the basis for innovations in all areas of business enterprise, and anybody wishing to take a leading role in local, regional or global business development will require the critical knowledge and skills offered by this programme. The course is run by the Department of Computing and Communication Technologies and has been developed in conjunction with our Business School.

The course is based on a sound understanding of the technical infrastructure of the internet and the web, but will rapidly develop your expertise in a host of convergent technologies. Issues relating to web application development, including web design and the human-computer interface, will complement a good understanding of the business potential of multimedia and database technologies.

The recent radical changes in the global market place are transforming the business environment and the nature of work itself. Significant drivers for change include advancing communications and digital technology, the world wide web and e-commerce. There have also been major changes in the business landscape due to the emergence of new, major international trading blocs and the emergence of former communist regimes as trading partners. Information technology and communications are crucial to enable businesses to flourish in this turbulent and dynamic environment. New ways are being discovered to use these technologies for trade, entertainment, communication, socialisation and information sharing. This has opened up exciting prospects for anyone who wishes to take advantage of these opportunities and shape future innovation and performance improvement in e-business and e-commerce.

This course focuses on the latest e-business models and technical skills that are required to build effective solutions. The course provides a unique integration of theory and practice with practice-oriented teaching based on real world examples. The course includes live projects undertaken in partnership with industry and regular guest lectures from award-winning practitioners. Few other universities offer the combination of taught modules and live projects that are available on this course. Therefore graduates will embark on new careers equipped with highly desirable skills and experience.

www.brookes.ac.uk/courses/postgraduate/ebusiness
The course is offered at three levels: a master’s degree (MSc), a postgraduate diploma (PGDip) and a postgraduate certificate (PGCert). The PGCert is also available as a Research Project.

For the MSc, you must pass modules amounting to 180 credits. This comprises six compulsory taught modules (20 credits each) plus the research and study methods module (10 credits) and your dissertation (50 credits).

The PGDip in eBusiness allows you to concentrate on the taught part of the degree and is ideal for people already working in the industry who wish to brush up their skills. To qualify for a postgraduate diploma, you must pass modules amounting to 120 credits.

The PGCert in eBusiness allows you to concentrate on the taught part of the degree and is ideal for people working in the industry who wish to learn a specific area in this rapidly changing discipline. To qualify for a postgraduate certificate, you must pass modules amounting to 60 credits.

Part-time students normally distribute the work evenly over a two-year period.

**Semester 1**

**Semester 1 has the following modules:**

- The Business Web (compulsory for MSc and PG Dip)
- eMarketing Principles and Strategies (compulsory for MSc and PG Dip)
- Web Applications Development (compulsory for MSc and PG Dip)
- Research and Study Methods (compulsory for MSc). This module continues in Semester 2

**Semester 2**

**Semester 2 has the following modules:**

- Research and Study Methods (compulsory for MSc). This module is continued from Semester 1.
- eBusiness Information Systems (compulsory for MSc)
- Business eFutures (compulsory for MSc)
- Building a Web-based Business (compulsory for MSc)

**Dissertation module**

Students studying for an MSc will also take:

- The Dissertation, which is an individual research and development project of 10,000-15,000 words on a topic closely related to your programme of study. The work may be undertaken in close co-operation with a research, industrial or commercial organisation possibly linked to an optional internship. The dissertation will typically be an investigation of a commercial problem from an IT perspective leading to the design, implementation and testing of a computer based solution.

**Admission requirements**

You will need a second-class honours bachelor’s degree, or the overseas equivalent, in a subject containing a computing or IT component, for example business information systems. Business-based awards, which have a computing related content, will also be considered.

**English language requirements**

If your first language is not English, you will need an IELTS score of 6.0 or equivalent.

Find out about other acceptable English language qualifications and the UK Border Agency’s language requirements for student visas at www.brookes.ac.uk/international/how-to-apply/english-language-requirements/

**Career prospects**

This programme aims to provide students with the opportunity to explore and critically evaluate current thinking, latest developments and professional best practice in e-business whilst providing opportunities for students to develop skills valued by employers to enhance opportunities for employment and choices of career.
IT SYSTEMS ADMINISTRATION AND MANAGEMENT MSc/PGDip/PGCert

The IT Systems Administration and Management programme teaches the fundamental theoretical concepts needed and gives students the opportunity to put these skills into practice in our VM platform, dedicated server laboratory, and networking laboratories.

These facilities, along with access to enterprise level software, through departmental VMWare and MSDNAA subscriptions, as well as University agreements with companies such as ServiceNow and Numeneent, allow students to work on complex scenarios using industry standard hardware and software.

Why choose this course?

■ It is taught by domain experts, many of whom are also practitioners in the field.
■ Dedicated server and networking laboratories with enterprise equipment including Cisco switches, routers and firewalls and Dell servers.
■ Dedicated virtualisation platform to practise cloud deployment.
■ Access to a wide range of enterprise software to ensure realistic deployment environments.
■ An emphasis on live projects, alongside group work modelled on industry standard working patterns, gives you the opportunity to develop more business-oriented skills such as project management, team management, and customer relationship management to equip you with the skills required for IT systems management.
■ An opportunity to apply to undertake a placement which enables you to practise and refine your skills within a company or organisation.

www.brookes.ac.uk/courses/postgraduate/it-systems-administration-and-management
## Course content

The MSc in IT Systems Administration and Management has a modular course-unit design providing you with maximum flexibility and choice. To qualify for a master’s degree without placement, you must pass modules amounting to 180 credits. This comprises six taught modules (20 credits each) plus your dissertation (60 credits). To qualify for a master’s degree with placement you need to have a one-year placement in between the taught component and the dissertation.

The PGDip in IT Systems Administration and Management allows you to concentrate on the taught part of the degree and is ideal for people working in the communications industry who wish to brush up their skills. To qualify for a postgraduate diploma, you must pass modules amounting to 120 credits. This comprises six taught modules (20 credits each). In some cases, it may be possible for a student on a postgraduate diploma to do three taught modules (20 credits each) plus your dissertation (60 credits).

The PGCert in IT Systems Administration and Management allows you to concentrate on the taught part of the degree and is ideal for people working in the communications industry who wish to learn a specific area in this rapidly changing discipline. To qualify for a postgraduate certificate, you must pass modules amounting to 60 credits.

We also offer a Postgraduate Certificate IT Systems Administration and Management Research Project.

### Semester 1
- **Semester 1 has the following modules:**
  - Research and Scholarship Methods (compulsory for MSc and PG Dip)
  - Network Principles (compulsory for MSc and PG Dip)
  - Secure Systems Architecture (compulsory for MSc)
- **Dissertation module**
  - Students studying for an MSc will also take:
    - MSc Dissertation, which is an individual research and development project that allows you to study a topic of your choice in depth, guided by your supervisor. The work may be undertaken in close co-operation with a research, industrial or commercial organisation. You will undertake your dissertation over the summer period.
    - MSc students have the option to apply to undertake a placement. Placement positions are not guaranteed, however, the department will help and support students in finding a placement. Students on the placement will take the Work Experience Placement module, which is an optional element of all the department’s CCT programmes, and provides professional and practical experience in the computing, communications, or media industries. The nature of the work undertaken will be relevant to a student’s programme, and may provide a basis for the development of the dissertation.

### Semester 2
- **Semester 2 has the following modules:**
  - Multiservice Networks (compulsory for MSc)
  - Systems Administration (compulsory for MSc and PG Dip)
  - IT Systems Management and Governance (compulsory for MSc)

### Admission requirements

You should normally hold a first degree, equivalent to at least a British lower second-class bachelor’s degree, in an electronic engineering, telecommunications, computer science or a related engineering or computing subject. Applicants whose first degree is not in these areas, but who have worked in a related industry, and have obtained good relevant experience and programming skills, can also be considered.

For entry to the Postgraduate Certificate Research Project you should provide evidence of experience in research and study methods at an appropriate level.

### English language requirements

If your first language is not English, you will need an IELTS score of 6.0 or equivalent.

Find out about other acceptable English language qualifications and the UK Border Agency’s language requirements for student visas at [www.brookes.ac.uk/international/how-to-apply/english-language-requirements/](http://www.brookes.ac.uk/international/how-to-apply/english-language-requirements/)

## Career prospects

This programme equips graduates to undertake a wide range of roles in IT systems administration and management and in a wide range of businesses and organisations. Common careers in this area are systems administrators, technical analysts, IT managers, consultants and IT security professionals.
MOBILE AND HIGH SPEED TELECOMMUNICATION NETWORKS
MSc/PGDip/PGCert

The growth of mobile, fixed line broadband communications in the last decade has been phenomenal. World-wide, billions of people now communicate with mobile phones and use DSL and optical fibre links from their homes and businesses to surf the web, download music and videos and watch IP TV. With this growth, comes great demand for people with the skills and knowledge to support many aspects of wireless and fixed line network provision, which means that graduates with the right skills and technical knowledge can be assured of a bright future. The Mobile and High Speed Telecommunication Networks course offered by Oxford Brookes is designed to provide you with in-depth knowledge of modern high-speed telecommunication systems and personal communications and so significantly enhance your future career prospects.

The course has two main components: 2G – 4G mobile communications, and fixed high-speed and multiservice networks. Emphasis is given to developing essential industrial and commercial skills.

The dissertation is a major element of the course and gives you the opportunity to enhance your career prospects by acquiring in-depth knowledge of a key aspect of telecommunications technology.

www.brookes.ac.uk/courses/postgraduate/mobile-and-high-speed-telecommunication-networks
**Course content**

The course is offered at three levels: a master’s degree (MSc), a postgraduate diploma (PGDip) and a postgraduate certificate (PGCert). The PGCert is also available as a Research Project.

For the MSc, you must pass modules amounting to 180 credits. This comprises six taught modules (20 credits each) plus your dissertation (60 credits).

The PGDip allows you to concentrate on the taught part of the degree and is ideal for people working in the communications industry who wish to brush up their skills. For the PGDip, you must pass modules amounting to 120 credits, comprising six taught modules (20 credits each). In some cases, it may be possible for a student on a postgraduate diploma to complete three taught modules (20 credits each) plus a dissertation (60 credits).

The PGCert is ideal for people working in the communications industry who wish to learn a specific area in this rapidly changing discipline. To qualify for a postgraduate certificate, you must pass modules amounting to 60 credits, comprising three taught modules (20 credits each).

For students who already have a background of research and scholarship we also offer a PGCert Research Project. This is a variant of the standard PGCert except that students undertake the dissertation rather than three taught modules.

Part-time students normally distribute the work evenly over a two-year period.

**Semester 1**

**Semester 1 has the following modules:**

- Research and Scholarship Methods (compulsory for MSc)
- Digital Mobile Communications (alternative compulsory for MSc and PG Dip)
- Digital Communications (alternative compulsory for MSc)
- Network Principles (alternative compulsory for MSc)

**Semester 2**

**Semester 2 has the following modules:**

- Advanced Mobile Communications (compulsory for MSc and PG Dip)
- High Speed Mobile Communications (compulsory for MSc and PG Dip)
- Optical and Broadband Networks (alternative compulsory for MSc)
- Multiservice Networks (alternative compulsory for MSc)

**Dissertation module**

Students studying for an MSc will also take:

- MSc Dissertation, which is an individual research and development project that allows you to study a topic of your choice in depth, guided by your supervisor. The work may be undertaken in close co-operation with a research, industrial or commercial organisation. You start your dissertation in Semester 2, continuing over the summer period.

**Career prospects**

Our MSc students come from all over the world and follow careers in many countries after their graduation. They are engaged in activities such as 3G network design, WiMax and LTE roll-out, handset compliance, DVB-H planning, communications software development and university lecturing. Many of them have commented on how the course content and training enabled their careers to flourish.

**Admission requirements**

You should normally hold a first degree equivalent to at least a British lower second class bachelor’s degree in an electronic engineering, telecommunications, computer science or a related engineering or computing subject. Applicants whose first degree is not in these areas but who have worked in a related industry and have obtained good relevant experience and programming skills can also be considered.

**English language requirements**

If your first language is not English, you will need an IELTS score of 6.0 or equivalent.

Find out about other acceptable English language qualifications and the UK Border Agency’s language requirements for student visas at www.brookes.ac.uk/international/how-to-apply/english-language-requirements/
SOFTWARE ENGINEERING
MSc/PGDip/PGCert

The most complex engineering artefacts in existence are now software systems, and the effects of such systems are felt by almost everyone. It is vitally important that software should be of high quality; it should be built on schedule and without error and it should be safe. Software engineering combines scientific and engineering principles with sound practice.

The BCS accredited MSc in Software Engineering addresses all this with a range of specialist modules while also allowing choice. The course aims to equip you to begin a career, or to undertake further study in this important and exciting area.

Our software engineering programmes are rooted in real-world and industry-relevant experiences. Real-world problems and current issues in software engineering are used to illustrate the theoretical concepts. This gives you the opportunity to develop the advanced skills and knowledge needed to pursue successful careers in your chosen field.

Professional experts contribute to the range of subjects on offer and the design of our programmes is informed by state-of-the-art research being undertaken in the department. In particularly students have the opportunity to work alongside members of our dependable systems research centre and internationally renowned academics. Students on the programme will also be given the opportunity to undertake an intensive course on compiler construction from one of Europe’s leading authorities in the field.

www.brookes.ac.uk/courses/postgraduate/software-engineering
Course content

The course is offered at three levels: a master’s degree (MSc), a postgraduate diploma (PGDip) and a postgraduate certificate (PGCert). The PGCert is also available as a Research Project.

For the MSc, you must pass modules amounting to 180 credits. This comprises six taught modules (20 credits each) plus your dissertation (60 credits).

The PGDip allows you to concentrate on the taught part of the degree and is ideal for people working in the computing industry who wish to brush up their skills. For the PGDip, you must pass modules amounting to 120 credits, comprising six taught modules (20 credits each). In some cases, it may be possible for a student on a postgraduate diploma to complete three taught modules (20 credits each) plus a dissertation (60 credits).

The PGCert is ideal for people working in the computing industry who wish to learn a specific area in this rapidly changing discipline. To qualify for a postgraduate certificate, you must pass modules amounting to 60 credits, comprising three taught modules (20 credits each).

For students who already have a background of research and scholarship we also offer a PGCert Research Project. This is a variant of the standard PGCert except that students undertake the dissertation rather than three taught modules.

Part-time students normally distribute the work evenly over a two-year period.

Semester 1

Semester 1 has the following modules:

- Research and Scholarship Methods (compulsory for MSc and PG Dip)
- Formal Software Engineering (compulsory for MSc and PG Dip)
- Secure Systems Architecture (compulsory for MSc)

Semester 2

Semester 2 has the following modules:

- Software Production (compulsory for MSc and PGDip)
- Paradigms of Programming (alternative compulsory for MSc)
- Compiler Construction (alternative compulsory for MSc)
- Machine Learning (optional)
- Operating Systems Development (optional)
- Secure Programming (optional)
- Low Level Tools and Techniques (optional)

Dissertation module

Students studying for an MSc will also take:

- MSc Dissertation, which is an individual research and development project that allows you to study a topic of your choice in depth, guided by your supervisor. The work may be undertaken in close co-operation with a research, industrial or commercial organisation. You start your dissertation in Semester 2, continuing over the summer period.

Career prospects

Graduates of this course are employed across a whole range of careers from development roles in small software houses, to the activities of IT departments in large, multinational corporations, to more specialist roles for providers of IT and telecommunications services. These include technical roles, including software design and development, specialist product support, and infrastructure and management roles.

Admission requirements

You should normally hold a first degree equivalent to at least a British lower second-class bachelor’s degree, in a computing, mathematics, engineering or science-related subject in which good programming skills have been developed. Applicants whose first degree is not in these areas but who have worked in a related industry and have obtained good relevant experience and programming skills can also be considered.

English language requirements

If your first language is not English, you will need an IELTS score of 6.0 or equivalent. Find out about other acceptable English language qualifications and the UK Border Agency’s language requirements for student visas at www.brookes.ac.uk/international/how-to-apply/english-language-requirements/
TWO-YEAR MASTER’S – DOING A PLACEMENT YEAR

What are the benefits of doing a placement?
A year in industry will give you the chance to practise the specific skills you will acquire during the taught part of your master’s course. You may also benefit by acquiring other skills that graduate recruiters look for in job applicants, such as the ability to work in a team, problem solving and time management. A lot of skills are learnt at undergraduate level, but having the opportunity to refine them during a placement as a postgraduate student is an added benefit.

Do I get paid while I’m on a placement?
Yes! The actual salary will depend on the job, but all placements are paid employment.

Are placements guaranteed?
No, but we can help you with the process of finding a placement and we make sure that placements are suitable before you start them.

How long does it all take?
If you do a placement, your master’s programme will be just over 2 years for a full time student (8 months taught component followed by a 1 year placement and then 4½ months for the dissertation). If you study the taught part of the programme part-time, the placement in industry is still full-time, so for a part time student the whole master’s programme takes a little longer (20 months taught component followed by a 1 year placement and then 4½ months for the dissertation).

I’m an international student – can I do a placement?
International students with Tier 4 UK immigration status, studying on a full-time master’s course, are entitled to undertake a work placement provided the placement does not constitute more than 50% of the course. For further information, please look at the British Home Office policy guidance for Tier 4 of the Points Based System (www.gov.uk/government/uploads/system/uploads/attachment_data/file/514308/T4_Migrant_Guidance_Apr_2016.pdf). Gaining work experience in the UK is likely to enhance your CV and increase your chances of gaining employment both in the UK and back in your home country. Working in the UK will also help develop your English language skills, and as a consequence your general communication skills.

How much does it cost?
To make sure you get the most up-to-date information, please look at the section about fees in the online prospectus entry for the course you are interested in. To find the course list, go to our website at cct.brookes.ac.uk/postgraduate.

How can I find out more?
For more information about studying a master’s programme with a placement, take a look at our web page (tde.bz/cct-pgp). You can also view our online virtual open day at tde.bz/BrookesVOD2016 or email us at cct-enquiry@brookes.ac.uk.
STUDENT COMMUNITY AND RESEARCH

Being part of our student community

The Department of Computing and Communication Technologies aims to provide an excellent student experience. With online information, dedicated student support co-ordinators, teams of student representatives for each course as well as cohort and student activities and societies to support and enhance learning, we value student involvement in every aspect of university life.

One of the attractions of studying with us is the opportunity to meet students from all over the world. Mobile and High Speed Telecommunication Networks graduate Hilary Frank joined the course from Nigeria and told us that the best part of studying with us was the “cordial atmosphere.” He said: “The staff are highly supportive, always willing and ready to listen and offer proper advice. Students’ voices are heard and considered in decision making which created a better atmosphere for teaching and learning. As a student representative I saw positive changes come about because students were encouraged to make contributions in all areas that touch on the students’ academic life. The racial diversity at Oxford Brookes University is great. Meeting happy people from all over the world makes Brookes an exceptional place to study.” Hilary graduated in 2014 and is currently working as a lecturer at Ken Saro-Wiwa Polytechnic in Bori, Nigeria.

For more information about what it’s like to study with us, take a look at our virtual open day website cct.brookes.ac.uk/postgraduate/virtualopenday.

Mobile and High Speed Telecommunications Networks graduate Hilary Frank.

cct.brookes.ac.uk/postgraduate/virtualopenday

Research in the department

The department contains a number of active research groups and includes internationally recognised researchers in all its disciplines. Two umbrella research centres cover the work of our research areas.

The Intelligent Systems Engineering Research Centre is home to the Cognitive Robotics Group, the Artificial Intelligence and Vision Research Group and the Communications, Media and Electronic Technologies Group. This latter group is inter-departmental, including research from faculty colleagues from the School of Arts and the Department of Mechanical Engineering and Mathematical Sciences.

Our Dependable Systems Engineering Research Centre includes the Applied Formal Methods Group, the Applied Software Engineering Group and the Advanced Reliable Computer Systems Group.

We have purpose-built labs for each of the two research centres which currently house around 17 research students. In addition we have a robotics projects lab and a robotics live lab which are home to our ever-expanding family of robots.

Our department has an excellent reputation for research and knowledge transfer and the fruits of our research inform and enhance our students’ experience at all levels of study.

All the details are on our website cct.brookes.ac.uk/research.

cct.brookes.ac.uk/research
Before you came to Brookes what did you study and where?
I’ve earned a Computer Engineering degree from Ecole Supérieure d’Informatique of Paris.

What made you choose Brookes as a place to study?
I heard about Oxford Brookes University through my former French university, ESI of Paris, since they offer a double degree programme where we can spend our last year of the engineering programme in a foreign university. I chose Brookes for two main reasons: first, its ranking in the engineering field. Oxford Brookes is known to be one of most prestigious universities in Europe. Second, I was inspired by its interesting course offerings, of which I chose the MSc in Mobile and High Speed Telecommunication Networks which I believed will help me expand my field of expertise beyond computer engineering.

What did you think of the course while studying here?
The course goes over all the aspects of telecommunications, starting from its early life as 2G and arriving at the 4G networks. More importantly, it will give you a very good start for a better understanding of telecommunication systems, even if you had acquired only a little knowledge in this field during your previous studies in computer engineering. Moreover, the teaching approach used combines the theoretical and the practical experience simultaneously, which can help the student to understand the concepts learned in real life examples.

What were the best bits of studying at Brookes?
Meeting with people from all around the world, sharing ideas and spending moments with them. Talking freely with the professors who were available all the time, getting their advices and benefiting from their professional experiences.

What advice do you have for others?
I can advise any student to enjoy every course they take and enjoy their study, even if sometimes assignments could be challenging and stressful, believe me, it will pay off. And be grateful because all the courses taught in Oxford Brookes are well designed and prepare you very well for the industry world. I conclude this by an important quote that accompanied me during my whole education: “Success belongs to the most persistent”.

After graduating from Brookes what were the next steps for your career and where are you working now?
After graduating from Oxford Brookes with an MSc in Mobile and High Speed Telecommunications Networks I wanted to discover more the world of telecommunication, so I applied to the engineering school INSA Toulouse, France to follow a six month course in Networks and Telecommunications engineering.

Georges Aoun MSc Mobile and High Speed Telecommunication Networks

Georges graduated at the end of 2013 and is now working at the multinational bank Société Générale in Paris, France, as an integrator engineer in the division of API-PRJ in MKT/OPMI/API.
Graduate profile
Jagdeep Nagpal MSc Computer Science

Before you came to Brookes what did you study and where?
BSc Computer Science and Software Engineering at University of Newcastle upon Tyne.

What made you choose Brookes as a place to study?
The courses offered were relevant to industry practices and the ability of choosing the modules that would enhance my skill-set. The atmosphere of the city and the highly dedicated and self-motivated students always kept me on my toes.

What did you think of the course while studying here?
It was very well structured, and extremely useful. Coming straight here after graduating, I did not believe there was so much more I had to learn to fully understand this industry. The modules gave me confidence and the strength to learn new programming languages and embrace change.

What are the best bits of studying at Brookes?
The lecturers are very helpful and are experts in their fields. The staff are well organised and extremely helpful. The campus is very peaceful and motivating. The modules offered are constantly improved and student feedback is given utmost importance.

What advice do you have for others?
If you are willing to work hard and succeed in life, then Oxford Brookes is the university you want to apply to. The freedom of choosing your own topics for dissertation allow you to learn new technologies along with the support of expert supervisors.

After graduating from Brookes what were the next steps for your career and where are you working now?
I graduated in 2013 and am now working as an Associate Software Engineer with BSkyB.

Jagdeep was awarded the 2013 Brian Clark Memorial Prize for the most outstanding contribution to the area of Computing.
Our graduates tell us that the relevance of our courses and the skills they've learnt enable them to achieve their goals and build their careers.

Our location in Oxford places us at the heart of one of Europe’s biggest concentrations of high-tech businesses.

Our postgraduate courses are taught by leading academics as active researchers and are designed to meet the needs of modern industry.
Brougham Buses
Harcourt Hill to Headington
Headington to Wheatley
40mins
30mins
Manton Road to Headington
Headington to Cowley Road
30mins
Wheatley to Cowley Road
35mins
Oxford City Services
Headington to City Centre
10mins
Park & Ride Service
Seacourt to Headington
Thomastown to Headington
20mins
7mins
Travelink
Coach to London
Headington to London
Oxford to London Gaolwick
Oxford to London Heathrow
700mins
735mins
80mins
Journey time may vary depending on traffic.

Harcourt Hill Campus
Seacourt Park & Ride
Coach Station
Rail Station
Not to Scale
Oxford Brookes promotes equality of opportunity for all who study, work and visit here. For more details please visit www.brookes.ac.uk/services/hr/eod or phone +44 (0) 1865 485929.

To obtain a large-print copy of (or sections of) this publication or to enquire about other formats please contact +44 (0) 1865 484848 or email query@brookes.ac.uk

All information is correct at the time of going to press (July 2016).
Please refer to the University’s website for the most up-to-date details.