

# Computer Networks

*This version of the programme is no longer recruiting. Please see the specification for BSc (Hons) Computer Networks.*

<b>Final award</b>	BSc. (Hons)
<b>Intermediate awards available</b>	Cert. H.E., Dip. H.E.
<b>UCAS code</b>	G420
<b>Details of professional body accreditation</b>	N/A
<b>Relevant QAA Benchmark statements</b>	Computing
<b>Date specification last up-dated</b>	July 2013

## Profile

### The summary - UCAS programme profile

#### **BANNER BOX:**

Computer networks and the Internet are changing the way we live, work, play, and learn. This programme successfully prepares graduates for computer networking and IT related jobs in the public and private sectors, as well as for higher education in engineering, computer science, and other related fields. This programme uses a range of teaching styles: lectures, tutorials, workshops, practicals, including a virtual learning environment. Each module integrates high quality face-to-face teaching with hands-on practical laboratory exercises.

#### **ENTRY REQUIREMENTS**

- Typical offer is 200 UCAS tariff points
- IELTS 6.0 or equivalent
- Equivalent overseas qualifications
- Relevant Access programme
- Mature students, without appropriate academic qualifications but with relevant work experience, attend for interview and aptitude test

#### **For FTMS**

- students must have passed the SPM or equivalent with minimum grades of C/6 and one of the following:
- A levels
- STMP (minimum two (2) principal passes including general paper
- MICSS

#### **ABOUT THE PROGRAMME**

#### **What is Computer Networking?**

There is hardly a computer today which is not connected to a network; most computers are now connected to the Internet or on a Local Area Network (LAN) at home or in the workplace. Essentially, computer networking is about how computers are connected to each other, how they exchange or transfer data and information from one place to another and how organisations use computers to successfully implement their strategic goals.

## **Computer Networking at UEL**

A study of Computer Networking at UEL will involve not only the hardware and software that make up a network, but will also involve databases, programming, website development, computer systems, operating systems, and network security – as all of these elements are important for an effective, robust, useful and usable network system. Emphasis is placed on the acquisition of practical-based skills and strong theoretical concepts including the opportunity for one year's work experience (for London campus students only), which provides a solid foundation for a career in the computing industry.

### **Programme structure**

The Computer Networking programme is three or four years in length, as the sandwich degrees include a one-year work placement. Full time students will study three modules a semester or six modules a year. All the modules are core modules, however if you want to change to one of our other specialised degrees, or to a more general computing degree, this is easy to arrange. Students are able to work in groups to develop computer-based solutions to real-life situations, often in co-operation with local companies.

### **Learning environment**

As well as the usual teaching and learning facilities such as laboratories, lecture and seminar rooms and a well-resourced library, students have access to a wide range of computer networking resources. Specialised labs are used for study of networking and operating system environments such as Windows and Unix/Linux. Students are provided with software tools for programming, database development, computer-aided software engineering, Internet access and Web-based development.

Our comprehensive learning programme includes instructor-led lectures, online support, hands-on practicals, student-led tutorials and varied assessment tasks.

Our virtual learning environment, UEL Plus is used to give extra support to students and allow easy communication between students and staff. UEL Plus also provides students with the following features:

- Continued curriculum access
- Continuous learning opportunities
- Access to most module notes
- Access to assessment tasks
- Community discussion forums
- Opportunity to network with other students and lectures

### **Assessment**

A variety of innovative assessment methods are used. Some modules are entirely assessed by coursework, although most modules are assessed by a combination of coursework and examination. Coursework assessment can take a number of different forms, including portfolio building, presentations, software demonstrations, research-based assignments and practical exercises involving system or program specification, coding and testing. Examinations might include multiple choice tests, traditional unseen questions, open book questions, case studies and e-assessment.

### **Work experience/placement opportunities**

Computer Networks is one of our sandwich programmes (if you are a London campus student), students have the option to undertake a 48 week industrial placement during the third year of their programme. This placement is normally paid. The university has long-standing links with a large number of well-known employers who can provide UEL students with worthwhile work experience. Many students are offered permanent employment by their placement organisation when they graduate. In addition to enhancing employment prospects, the placement provides a valuable learning experience, the results of which feed into our students' final year of study.

### **Project work**

Students complete a project in their final year. This is a major piece of work that allows students to choose the direction of their study, to develop their own ideas and to integrate the various subjects studied. Students are encouraged to provide their own areas for this project, but there is always a battery of topics from which students can choose.

### **Added value**

In addition to the IT-related skills and knowledge acquired during the programme, you will develop a wide range of personal and professional skills including communication, presentation, negotiation, team working and time management skills. These sought-after skills will be useful throughout your working life and will increase your chances of finding a well-paid and interesting job after graduation.

## **IS THIS THE PROGRAMME FOR ME?**

### **If you are interested in...**

- how computers are networked together
- the architecture of the internet
- wireless communication principles and techniques
- using a host of applications remotely
- using network development and security tools
- developing and using technical skills
- using the Internet to develop solutions for varied organisations

### **If you enjoy...**

- solving technical problems
- the challenge of finding a solution to seemingly insoluble problems

- listening to and working with others to identify and develop these solutions
- making use of the latest technology

### **If you want...**

- the opportunity to work in a well-rewarded and fast-developing area
- sought-after and up-to-date skills
- to communicate and work with a wide variety of people to solve a range of business and technical problems
- to combine your interest in computing with other subjects

then our BSc (Hons) Computer Networks programme is the one for you!

### **Your future career**

There is still a significant shortage of up-to-date computing skills in the UK. Organisations need access to these skills to make best use of computing and internet resources.

Potential career paths include:

Network Design and Administration

1. **Network Administrator**
2. **Network Engineer**
3. **System Administrator**
4. **Network Analyst**
5. **Internet Network Specialist**

Technical Support Professionals

1. **PC Support Specialist**
2. **Help Desk Technician**
3. **Network Technician**
4. **Hardware Installation Coordinator**
5. **Software Applications Support**
6. **Cabling Installation Technician**
7. **Telecommunications Technician**
8. **Cabling Installation Coordinator**

Graduates of Computer Networks degree programmes are network specialists who understand the computer hardware and software that enable different parts of a network to link together. There is a great demand for these skills as networked systems are now used throughout business and industry - and those with the skills to support these systems are in short supply.

For graduates who wish to continue their studies at postgraduate level, the computer networks degree programme provide a suitable entry route to a variety of Masters programmes, both at UEL and elsewhere.

### **How we support you**

- Personal tutor support throughout the programme
- Support for development of study skills, preparation for employment and research
- Placement Office with well-established links with employers to provide support for finding placements
- Specialist support for dyslexia and English as a second language
- Student advice services for accommodation, finance, careers, IT training, learning resources.

### **Bonus factors**

The proximity of London means that UEL is ideally placed for developing links with a wide range of well-established, prestigious and innovative employers. The Thames Gateway Technology Centre based at the Docklands Campus provides a natural channel between business and higher education, by making the knowledge and expertise of UEL available to local employers. The TGTC also provides a variety of opportunities, including placements and final year projects, to our students.

## **Outcomes**

### **Programme aims and learning outcomes**

#### **What is this programme designed to achieve?**

This programme is designed to give you the opportunity to:

- Gain knowledge of modern techniques, protocols, software tools and applications across the area of computer networks
- Contribute to development of security policy for an organisation
- Learn and work both independently and within groups
- Be aware of the management, legal, social and ethical issues relating to information systems
- Develop the necessary skills and knowledge to pursue further study

#### **What will you learn?**

All learning outcomes are covered in the programme's single honours route and where Maj, J and/or Min is shown against a learning outcome, this confirms that the learning outcome is covered in the Major, Joint and/or Minor routes offered.

### **Knowledge**

- How to design and implement networked (Major, Joint and Minor) and distributed computer systems
- How computer hardware and software work together to provide a platform for information systems (Major, Joint and Minor)
- How computer systems can be linked together using networks and data communication techniques (Major, Joint and Minor)
- How to develop secure networks and their importance (Major, Joint and Minor)

## **Thinking skills**

- Problem solving (Major, Joint and Minor)
- Evaluation and critical analysis (Major, Joint)
- Self-appraisal and review of personal practice (Major)

## **Subject-Based Practical skills**

- Use of range of specialised computer technology, such as programming languages, databases (Major), operating and network systems (Major, Joint and Minor)
- Preparation of essays, reports and presentations (Major, Joint and Minor)
- Production of major self-directed project (Major)

## **Skills for life and work (general skills)**

- Communication skills (Major, Joint and Minor)
- Time management (Major, Joint and Minor)
- Learning and working both independently and in groups (Major, Joint and Minor)

# **Structure**

## **The programme structure**

### **Introduction**

All programmes are credit-rated to help you to understand the amount and level of study that is needed.

One credit is equal to 10 hours of directed study time (this includes everything you do e.g. lecture, seminar and private study).

Credits are assigned to one of 5 levels:

- 0 - equivalent in standard to GCE 'A' level and is intended to prepare students for year one of an undergraduate degree programme
- 1 - equivalent in standard to the first year of a full-time undergraduate degree programme
- 2 - equivalent in standard to the second year of a full-time undergraduate degree programme
- 3 - equivalent in standard to the third year of a full-time undergraduate degree programme
- M - equivalent in standard to a Masters degree

### **Credit rating**

The overall credit-rating of this programme is 360 credits.

### **Typical duration**

The expected duration of this programme is three years when attended in full-time mode, four years sandwich or five years in part-time mode. It is possible to move from a full-time mode of study to a part-time mode of study and vice-versa, to accommodate any external factors such as financial constraints or domestic commitments. Many of our students make use of this flexibility and this may impact on the overall duration of their study period.

### How the teaching year is divided

The teaching year begins in September and ends in June but some programmes also allow students to join at the start of Semester B, in February. A student, normally registering for 6 modules in one year (3 modules in each Semester) would do so in a full-time attendance mode of study and a student registering for up to 4 modules in one year (2 modules in each Semester) would do so in part-time attendance mode of study.

### What you will study when

This programme is part of a modular degree scheme. A student registered in a full-time attendance mode will take six 20 credit modules per year. An honours degree student will complete six modules at level one, six at level 2 and six at level 3.

It is possible to bring together modules from one field with modules from another to produce a combined programme. Subjects are offered in a variety of combinations:

- Single - 120 credits at levels one, two and three
- Major - 80 credits at levels one, two and three
- Joint - 60 credits at levels one, two and three
- Minor - 40 credits at levels one, two and three

Modules are defined as:

- Core - Must be taken
- Option - Select from a range of identified modules within the field
- University wide option - Select from a wide range of modules across the University

The following are the core and optional requirements for the single and major pathways for this programme

LEVEL	Module Code	TITLE	SKILLS MODULES (Insert Y where appropriate)	CREDITS	STATUS SINGLE	STATUS MAJOR	STATUS JOINT	STATUS MINOR
1	CN1041	Academic Skills for Computing	Y	20	Core	Core	Option	
1	SD1042	Introduction to Software Development		20	Core	----		

1	IM1024	Web Authoring and Web Management		20	Core	Core	Option	
1	CN1044	Introduction to Computer Systems		20	Core	Core	Core	Core
1	CN1047	Introduction to Computer Networks		20	Core	Core	Core	Core
1	IM1045	Information Systems		20	Core	----		
2	CN2059	Internet Connectivity		20	Core	----		
2	CN2041	Professional Issues	Y	20	Core	Core	Option	
2	CN2053	Operating Systems		20	Core	Core	Core	Core
2	SD2054	Software Development		20	Core	-----		
2	CN2047	Network Systems and Technologies		20	Core	Core	Core	Core
2	SD2052	Database Systems		20	Core	Core	Option	
3	CN3044	Network Programming		20	Core	----		
3	CN3054	Advanced Topics in Networks		20	Core	Core	Core	Core
3	CN3057	Distributed Systems		20	Core	----		
3	CN3046	Network Security		20	Core	Core	Core	Core
3	CN3070	Project Research and Implementation		40	Core	Core	Option	

### Requirements for gaining an award

In order to gain an honours degree you will need to obtain 360 credits including:

- A minimum of 120 credits at level one or higher
- A minimum of 120 credits at level two or higher
- A minimum of 120 credits at level three or higher

In order to gain an ordinary degree you will need to obtain a minimum of 300 credits including:

- A minimum of 120 credits at level one or higher
- A minimum of 120 credits at level two or higher
- A minimum of 60 credits at level three or higher

In order to gain a Diploma of Higher Education you will need to obtain at least 240 credits including a minimum of 120 credits at level one or higher and 120 credits at level two or higher

In order to gain a Certificate of Higher Education you will need to obtain 120 credits at level one or higher

In order to gain an Associate Certificate you will need to obtain a minimum of 20 credits at level one or higher

In order to gain a Foundation Degree you will need to obtain a minimum of 240 credits including:

A minimum of 120 credits at level one or higher

A minimum of 120 credits at level two or higher

(A Foundation degree is linked to a named Honours degree onto which a student may progress after successful completion of the Foundation degree)

## **Degree Classification**

Where a student is eligible for an Honours degree, and has gained a minimum of 240 UEL credits at level 2 or level 3 on the programme, including a minimum of 120 UEL credits at level 3, the award classification is determined by calculating:

$$\frac{\text{The arithmetic mean of the best 100 credits at level 3}}{\times 2/3} + \frac{\text{The arithmetic mean of the next best 100 credits at levels 2 and/or 3}}{\times 1/3}$$

and applying the mark obtained as a percentage, with all decimal points rounded up to the nearest whole number, to the following classification

70% - 100% First Class Honours

60% - 69% Second Class Honours, First Division

50% - 59% Second Class Honours, Second Division

40% - 49% Third Class Honours

0% - 39% Not passed

## **Assessment**

### **Teaching, learning and assessment**

#### **Teaching and learning**

Knowledge is developed through

- Participation in lectures, tutorials and workshops
- Directed and general reading
- Primary and secondary research, e.g. using the Internet or Learning Resource Centre

Thinking skills are developed through

- Successful completion of set assessment tasks
- Self-appraisal and self-evaluation
- Critical evaluation of concepts, assumptions, arguments and data

Practical skills are developed through

- use of general IT applications such as word processors and spreadsheets
- use of specialised IT applications such as program development environments and website development tools
- investigation of computer hardware, operating systems and networks

Skills for life and work (general skills) are developed through

- working in groups to complete work set, such as presentations
- working during sandwich year as placement student
- managing time to complete assessments by deadlines

## **Assessment**

Knowledge is assessed by

- examinations, both unseen and based on previously supplied case studies
- multiple choice tests
- extended essays and reports

Thinking skills are assessed by

- all assessment tasks set, particularly those requiring critical evaluation
- self-appraisal of performance
- use of appropriate problem solving skills

Practical skills are assessed by

- assessment tasks requiring use of general and specialised IT applications
- use of equipment in practicals and presentations

Skills for life and work (general skills) are assessed by

- evidence of group and team working
- completion of placement year
- ability to work to time constraints

## **Quality**

## **How we assure the quality of this programme**

### **Before this programme started**

Before this programme started, the following was checked:

- there would be enough qualified staff to teach the programme;
- adequate resources would be in place;
- the overall aims and objectives were appropriate;
- the content of the programme met national benchmark requirements;
- the programme met any professional/statutory body requirements;
- the proposal met other internal quality criteria covering a range of issues such as admissions policy, teaching, learning and assessment strategy and student support mechanisms.

This is done through a process of programme approval which involves consulting academic experts including some subject specialists from other institutions.

### **How we monitor the quality of this programme**

The quality of this programme is monitored each year through evaluating:

- external examiner reports (considering quality and standards);
- statistical information (considering issues such as the pass rate);
- student feedback.

Drawing on this and other information, programme teams undertake the annual Review and Enhancement Process which is co-ordinated at School level and includes student participation. The process is monitored by the Quality and Standards Committee.

Once every six years an in-depth review of the whole field is undertaken by a panel that includes at least two external subject specialists. The panel considers documents, looks at student work, speaks to current and former students and speaks to staff before drawing its conclusions. The result is a report highlighting good practice and identifying areas where action is needed.

### **The role of the programme committee**

This programme has a programme committee comprising all relevant teaching staff, student representatives and others who make a contribution towards the effective operation of the programme (e.g. library/technician staff). The committee has responsibilities for the quality of the programme. It provides input into the operation of the Review and Enhancement Process and proposes changes to improve quality. The programme committee plays a critical role in the quality assurance procedures.

### **The role of external examiners**

The standard of this programme is monitored by at least one external examiner. External examiners have two primary responsibilities:

- To ensure the standard of the programme;
- To ensure that justice is done to individual students.

External examiners fulfil these responsibilities in a variety of ways including:

- Approving exam papers/assignments;
- Attending assessment boards;
- Reviewing samples of student work and moderating marks;
- Ensuring that regulations are followed;
- Providing feedback through an annual report that enables us to make improvements for the future.

### **Listening to the views of students**

The following methods for gaining student feedback are used on this programme:

- Module evaluations involving the collection of data via questionnaires
- Informal discussions/meetings between students and teaching staff, year tutors and programme leaders
- Student representation on programme committees (meeting each semester)

Students are notified of the action taken through:

- circulating the minutes of the programme committee
- providing details on the programme notice board

### **Listening to the views of others**

The following methods are used for gaining the views of other interested parties:

- Placements Officer and visiting tutors
- Discussions with placement employers
- Information provided by the British Computer Society
- Liaison with schools and colleges whose students apply for places on our programmes

## **Further Information**

### **Where you can find further information**

Further information about this programme is available from:

- The UEL web site
- The student handbook
- Module study guides
- UEL Manual of Regulations and Policies <http://www.uel.ac.uk/qa/>
- UEL Quality Manual <http://www.uel.ac.uk/qa/>
- Regulations for the Academic Framework <http://www.uel.ac.uk/academicframework/>

- School of Architecture, Computing and Engineering at UEL  
<http://www.uel.ac.uk/ace/>
- UEL catalogue for the Undergraduate Degree Scheme