

Birmingham City University Technology Innovation Centre

Undergraduate Programme

Programme Specification including Student Guide and Employer Guide

BSc (Hons) Mobile Communications Technology

Date of Course Approval/Review	Version Number	Version Date
20 March 2007	2.02	20 March 2007



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Definitive Documents and Version Control

This document has a version number and reference date in the footer. Documents originating from the 1999 scheme follow the sequence 1.01, 1.02, 1.03 etc. Documents originating from the 2004 scheme begin with 2.01 as the first released version and follow the same sequence.

The process leading to introduction of new courses, and major changes to courses follows **tic** procedure QA 1 and culminates in approval by the University's Senate.

The process leading to introduction of minor changes to modules and courses follows **tic** procedure QA 5 and culminates in approval by the Dean.

The reference date will be that of the validation event, minor changes board, or other meeting at which formal consideration was given.

Further details about the course and document development may be obtained from minutes of the validation, or minor changes board. A history of the document is summarised in the table below and further information relating to past versions can be obtained from the **tic** Registry.

BSc Mobile Communications Technology, Programme Specification, Student and Employer Guides			
Version	Event	Date of event	Authorised by
2.01	Approval meeting	20 March 2007	Dean of Faculty
2.02	Approval meeting – conditions	20 March 2007	Panel Chair

BSc (Hons) Mobile Communications Technology

PROGRAMME SPECIFICATION

NOTE: This specification provides a concise summary of the main features of the course and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if s/he takes advantage of the learning opportunities that are provided. More detail on the specific learning outcomes, indicative content and the teaching, learning and assessment methods of each module can be found (1) at <https://web.tic.ac.uk>, (2) in the Module Specification Handbook, and (3) in the Student Handbook. The accuracy of the information contained in this document is reviewed by the University and may be checked within independent review processes undertaken by the Quality Assurance Agency.

The information from this specification may be selectively extracted and included in documents that are more appropriate for students, intending students and employers.

1	Awarding Institution / Body:	Birmingham City University
2	Teaching Institution:	Technology Innovation Centre
3	Programme accredited by:	* See note below
4	Final Award:	BSc (Hons)
5	Programme Title:	Mobile Communications Technology
6	UCAS Code:	H640
7	QAA Benchmarking Group:	Engineering

*** Application to Institution of Engineering and Technology for accreditation pending (May 2008).**

8 Aims of the programme

The programme aims to provide learners with:

- 1 A broadly-based and stimulating curriculum, which combines study of mobile communications technology, computer programming and networking, multimedia and business management, relevant to a wide career choice in a range of commercial and industrial sectors;
- 2 Opportunities for intellectual and creative development through the application of technical knowledge, software systems and design principles to the creation of high quality communications and mobile media applications;
- 3 A range of transferable and marketable skills and knowledge relevant to employment in a variety of roles both within and outside of mobile communications and associated industries;
- 4 An enjoyable and rewarding educational experience which places emphasis on active and participative learning;
- 5 An understanding of the legal and ethical issues and concepts relating to information and communication systems;
- 6 Experience of analytical and modelling techniques relevant to computer networks and communications systems;
- 8 A qualification designed to satisfy accreditation requirements of the relevant professional bodies;
- 9 A basis for professional development and further study.

9 Intended learning outcomes and the means by which they are achieved and demonstrated: the programme provides learners with opportunities to develop and demonstrate knowledge and understanding, skills and other attributes as follows:

Knowledge and understanding

<p>Knowledge and understanding of:</p> <ol style="list-style-type: none"> 1. Principles and technologies that underpin mobile communication systems, applications and devices. 2. Theory and practice for generating and manipulating audio and video signals and their application in multimedia for distribution on mobile platforms. 3. The design and development of communications systems. 4. The fundamental concepts, principles and theories of the technologies that underpin good computer networking practice, design and implementation. 5. Basic computer programming and operational skills relevant to the development of applications for mobile devices. 6. Basic business management and organisational theories and solutions for successful enterprises and the legal and regulatory systems within which they operate; 7. The organisational, teamwork and practical management approaches employed throughout a typical system design process cycle. 8. Relevant ethical, legal and professional issues applicable to rapidly evolving technology based business. 	<p>Teaching, learning and assessment methods used:</p> <p>Knowledge and understanding are acquired through formal lectures, computer based practical sessions, laboratory experiments, seminars and other directed independent learning activities. Throughout the course, learners are encouraged to broaden their knowledge of the subject area.</p> <p>Knowledge is assessed, formatively and summatively, by a number of methods, including seminars, coursework, examinations (seen and unseen, open- and closed- book), presentations, and practical project work.</p> <p>A range of assessment methods are employed. In modules which involve the application of software for simulation purposes, the emphasis is on practical and analytical assignments. Examinations are used in technical modules to test understanding of scientific principles and techniques.</p>
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Skills and other attributes

<p>Intellectual / cognitive skills:</p> <ol style="list-style-type: none">1. Use relevant software modelling techniques for specification and design of mobile and computer networks.2. Evaluate relative merits and performance of technologies and protocols relevant to the mobile communications sector.3. Integrate technical knowledge and principles in the design of mobile multimedia applications.4. Make critical judgments about the merits of different viewpoints and perspectives on ethical and social issues relevant to the media industry.5. Use proficiently information and materials from a variety of sources for independent enquiry and learning;6. Draw independent conclusions based on a rigorous, analytical and critical assessment of argument, opinion and data;7. Recognise and apply appropriate managerial, technical, practical and operational techniques for a diverse range of issues and problems;8. Analyse the information requirements of an organisation in the achievement of its business goals;	<p>Teaching, learning and assessment methods used:</p> <p>Intellectual skills are developed through formal lectures, computer laboratories, audio and video practical areas, laboratory experiments, seminars and directed independent learning activities.</p> <p>Analytical and problem solving skills are further developed using a range of appropriate 'real' and 'theoretical' case-studies and problem- and task-based learning scenarios.</p> <p>Assessment includes practical project work, individual and group presentations, written coursework, laboratory experimentation, examinations (seen and unseen, open- and closed- book).</p>
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Skills and other attributes (cont.)

Practical, research and independent learning skills:	Teaching, learning and assessment methods used:
<ol style="list-style-type: none">1. Plan and undertake tasks, work to deadlines, and accept accountability for learning decisions;2. Apply appropriate methodologies and sources for research;3. Collect relevant information, assimilate knowledge, marshal a coherent and rational argument, and relate theory and practice;4. Use appropriate laboratory equipment and software tools to undertake experiments and to process data;5. Write computer programmes for various applications.6. Identify, understand and apply appropriate technical and application standards, recognising where appropriate the significance of national and international standards.	<p>Practical applications are a key feature of the course and are emphasised in course design and delivery. Small-group tutorial and practical work comprise up to two thirds of timetabled sessions.</p> <p>Assessment for practical work can include laboratory demonstrations and tests as well as practical activities which may be written up as coursework.</p> <p>Research and independent learning skills are central to the programme and are developed throughout the course. The Learning Centre provides comprehensive internet and text resources and specialist staff to provide tutorial support for skills development.</p> <p>As well as developing and applying skills through assignment work, particular emphasis on research work is associated with the year 1 and 2 business modules and the final year project.</p> <p>Independent learning is encouraged through research tasks for assignments and the final year project, and in the requirement to plan work schedules to meet deadlines for coursework submission.</p>

Transferable / key skills:

1. Work with and relate effectively to others
2. Manage time and prioritise workloads
3. Make effective oral and written presentations which are coherent and comprehensible to others
4. Access and make appropriate use of relevant numerical and statistical information
5. Make effective use of information and communications technologies, including the internet, email and electronic information and retrieval systems.
6. Understand career opportunities and begin to plan a career path.
7. Show confidence and self-awareness, reflect on own learning, and be self-reliant and constructively self-critical.

Teaching, learning and assessment methods used:

Transferable/key skills are core to the learning strategy of the programme. They are pervasive, and are incorporated into modules and assessments as appropriate, e.g. team-working skills are fostered via group, task-based practical projects. Reflection and self awareness are fostered by keeping logbooks and submitting self assessment documentation in support of personal performance.

The use of information technology is fundamental to the course.

Assessment methods include practical projects, presentations, coursework, peer- and self-assessment.

10 Programme structure and requirements, levels, modules, credits and awards

The BSc (Hons) programme is normally studied over three years full-time or five years part-time, and students may if they wish move between full and part-time modes of attendance. The academic year runs from September to June. The course is divided into study units called modules, each of 24 credits. Students complete 120 credits at levels 4, 5 and 6 (corresponding to years 1, 2 and 3 of the full-time programme). Each 24 credit module represents 240 hours of student learning and assessment.

The Faculty's degrees can be studied in sandwich mode. Students who, in addition to satisfying requirements for an honours degree, successfully complete an approved industrial placement between levels 5 and 6 (full time years 2 and 3) obtain the award of a sandwich honours degree.

The structure of the course, the modules, levels and credit ratings, and the awards which can be gained are shown below.

Stage 1 Level 4

Module number	Module name	Credit
	Business Context and Applications of Technology D1 A contextualised introduction to industry and business concepts within a technology intensive business environment and development of core business skills including research, group work, planning, report writing and presentations.	24
	Mobile Technology D1 Fundamentals of electrical and electronic technology. Digital principles, techniques and standards. Systems for mobile communications.	24
	Visual Programming D1 System concepts, programming fundamentals and software design. Exploration of a GUI creation, system and class design, debugging and testing, writing of software documentation. Investigation into .NET frameworks (both full and compact).	24
	Computer Network Basics D1 LAN/WAN terminology, OSI, media, devices, standards, TCP/IP and addressing. Router configuration, routing protocols, access control lists, TCP/IP and Router operating systems.	24
	Media Design & Production D1 Digital imaging, post production treatment, authoring theory, authoring websites, authoring multimedia CDs	24

Award: Cert HE (120 credits)

Stage 2 Level 5

Module number	Module name	Credit
	<p>Market Led Enterprise D2 Business enterprise and careers; marketing planning; business environment and resource analysis, objective setting and basic strategy. Work planning. Financial planning: market-based budgets, risk analysis, financial forecasts & statements. Project planning.</p>	24
	<p>Multimedia Interfacing and Authoring D2 Creating graphics and content, compositing media, multimedia application design, interaction design, multimedia scripting, programming concepts, using dynamic content.</p>	24
	<p>Switched LANS and WANS D2 VLSM, RIPv2, OSPF, EIGRP, VLANs, STP and switch configuration. ISDN/BRI, Frame Relay/PRI, Implementing LANs and WANs, DHCP, NAT/PAT, PPP, DDR, network management, optical and security.</p>	24
	<p>Data Capture Technologies D2 Data analysis, database design and implementations, query languages. Nature and capability of data carrier technologies, data structures and associated appliances, product and asset track and traceability systems and associated facilities for supporting security.</p>	24
	<p>Mobile Networks and Devices D2 Radio Spectrum, modulation, transmission and reception, satellite links, wireless technologies, web based services using mobile devices.</p>	24

Award: Dip HE (240 credits)

Stage 3 Level 6

Module number	Module name	Credit
	Individual Project D3 To provide opportunity to develop in-depth knowledge and skills in an area relevant to the course and ability to manage actives and resources and to generate, implement and report on solutions to meet project objectives.	24
	Mobile Systems and Network Management D3 Wireless and mobile communication principles and Network Management.	24
	Client Server Integration D3 Client and server systems architectures, middleware, enterprise wide structures, distributed systems, web systems; SOAP, CORBA, J2EE, XML, and .NET	24
	Wireless Networks and Security D3 Wireless networking and secure networking technologies.	24
	Media Distribution D3 Mobile platform capabilities, distribution services, encoding, media compression, distribution methods, software development for mobile devices, mobile device interfaces, control and manipulation of multimedia content, animation techniques.	24

Award: BSc (Hons) (360 credits)

Course Structure – BSc (Hons) Mobile Communications Technology

Level 6

Individual Project D3	Mobile Systems and Network Management D3	Client server Integration D3	Wireless Networks and Security D3	Media Distribution D3
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Level 5

Market Led Enterprise D2	Mobile Networks and Devices. D2	Data Capture Technologies D2	Switched LANS and WANS D2	Multimedia Interfacing and Authoring D2
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Level 4

Business Context and Applications of Technology D1	Mobile Technology D1	Visual Programming D1	Computer Network Basics D1	Media Design & Production D1
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Business Management Theme

Mobile Comms Theme

Mobile Programming Theme

Comms Networks Theme

Multimedia Theme

11 Support for Learning

Students are encouraged to identify and, with guidance, to reflect on their own learning needs and are offered the following support as appropriate to those needs:

An induction programme dealing with orientation and the dissemination of essential information.

A dedicated Learning Centre with open access learning materials, resources and full-time staff specialising in a variety of support areas.

A Student Handbook, containing information relating to the University, Faculty, course and modules.

Access to administrative staff and to academic staff, including the Tutors, Course Director and Programme Manager, at reasonable times.

Support staff to advise on pastoral and academic issues, and to offer support and assistance with the keeping of Students' Progress Files.

Access to the services of the Learning Centre and IT support staff.

Access to the University's Student Services, including those offered by the careers service, financial advisers, medical centre, disability service, crèche, counselling service and chaplaincy.

12 Criteria for admission (BSc)

All applicants must have GCSE (grade C or above) in Mathematics and English Language, or equivalent. In addition, applicants should have one of the following, for which the typical tariff offer is 220 points for Curriculum 2000, or equivalent for other qualifications. Actual tariff offers may vary from 220 points.

Qualification	Requirements
Curriculum 2000, A Levels	Five GCSEs/GCEs including at least two subjects at A2 level. Points tariff can include AS level.
Curriculum 2000, AVC.	Two 6-unit or one 12-unit AVCE.
Irish Leaving Certificate	Passes in four subjects at the higher grade.
Scottish Certificate of Education	Passes in four subjects at the higher grade.
International Baccalaureate	Typically 28 points
BTEC/Edexcel National Certificate/National Diploma	For National Diploma, Typically M, M, P
A pass in a recognised Access or Foundation Year course	
An appropriate Advanced General National Vocational Qualification	
A professional qualification of an appropriate standard	
A qualification deemed equivalent to one of the above	

Other learning and experience may be considered for entry to the programme. A student may be allowed entry to the course if he or she does not have the standard entry qualifications but can provide evidence of necessary knowledge and skills to successfully enter and complete the programme.

Applicants with a Higher National Certificate or Higher National Diploma, including Merits in an appropriate subject, or an equivalent qualification, may be offered entry with advanced standing.

UCAS applicants are invited to visit the **tic** during open days held through the academic year. Open day programmes include a tour of facilities and an introduction to the **tic**'s courses and activities. Meetings are arranged between course tutors and prospective students to ensure opportunity is provided for individual questions and clarification of the course content.

13 Evaluation and improvement of quality and standards

Committees: Course Committee Board of Studies Examination Board Learning Management Committee Faculty Board Learning Quality Committee	Mechanisms for review and evaluation: Review and validation events Accreditation by professional bodies Annual Monitoring Report Student feedback questionnaires Annual staff appraisal External Examiners' Reports Course team meetings
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14 Regulation of assessment

Details of the mechanisms and criteria for assessment in individual modules, and the means of determining final degree classifications, are published widely. Students are able to access the University's Standard Undergraduate Assessment Regulations on the Intranet and individual and collective guidance is given by academic staff on their operation at appropriate times throughout the course.

To qualify for an Honours degree a student must successfully complete all required modules and obtain 360 credits (each module has a 24 credit value). Only assessments at levels 5 and 6 (that is second and third year modules on the 3-year full-time programme) are used to calculate the degree classification. The pass mark in all modules is 40%.

Degree classifications are determined, after successful completion of all the course modules from whichever is the best of:

1. The average of the marks for the level 5 and level 6 modules, or
2. The average of the marks for the five level 6 modules, or
3. The average of the final year Individual Project module mark plus the best three from the remaining four level 6 modules.

The highest average is used to obtain the degree classification according to the following bands:

First class honours	aggregate mark of 70% or above
Upper second class honours	aggregate mark of 60%-69%
Lower second class honours	aggregate mark of 50%-59%
Third class honours	aggregate mark of 40%-49%

External Examiners are appointed. Their work includes:

- Reviewing coursework assignments and assessment criteria
- Approving examination papers
- Monitoring standards through moderation of completed assessments
- Attending Examination Boards
- Participating in the course review processes.

BSc (Hons) Mobile Communications Technology

Student Guide

Background

The Technology Innovation Centre (*tic*) of Birmingham City University has for many years delivered courses that combine study of the latest communications and networking technologies. BSc (Hons) Mobile Communications Technology is a course that focuses on one of the fastest growing technologies in information systems with opportunities in both business and consumer sectors.

The BSc (Hons) Mobile Communications Technology course aims to provide students with a stimulating study programme of core technologies that support secure mobile, wireless computer networking, communication systems and multimedia applications, enabling graduates to be proficient in a variety of mobile communication technology career paths.

The Study Programme

The content and structure of the course reflect the overall philosophy of integrating the technological and creative aspects of mobile and multimedia applications. The course is designed to enable graduates to apply the latest techniques in mobile communications, data capture technology and multimedia for the design, implementation and management of secure systems applications.

Effective systems and applications need technical knowledge and creative ability. The course content is therefore designed to promote both technical and creative skills and abilities. Technology themes in Mobile Communications, Mobile Programming and Communications Networks are complemented by the creative studies in the Multimedia theme.

The demands of business, industry and commerce create the context for the course. Companies require effective systems and applications to bring competitive advantage and meet market-led objectives. Modules in the Business theme cover topics including business organisation, management and financial planning that are needed to promote successful enterprise

The Employment Market

Employers want multi-skilled, enthusiastic and adaptable team workers who can apply their creative and practical skills in a fast-changing sector of commercial activity. The knowledge and skills that employers seek also enable graduates to develop their own business ideas. The *tic* aims, through its links with industrial and commercial organisations and partners to foster an environment which promotes opportunity and career fulfilment.

Course Delivery

The **t_{ic}**'s philosophy of developing practical and relevant skills translates into its approach for course delivery. Emphasis is placed on skills acquisition through hands-on and small group activity. This is made possible by continuous development of the **t_{ic}**'s extensive professional-standard computing, communication and network facilities housed in a new purpose-designed building at the heart of Birmingham's Eastside development. As well as extensive general computing, internet and laboratory resources, there are specialist computer communications networking and electronic applications areas.

Course assessment is through a combination of coursework, test/examinations and project work. These reflect essential skills needed in the mobile communications technology industries.

The course team at the **t_{ic}** includes specialists in mobile, wireless and networking communications systems and applications. For a number of years they have delivered professional training and support across Europe, Middle East and Africa as we are a CATC academy provider leading to industry recognised Cisco Certified Networking Associate/Professional (CCNA/CCNP) certifications. Students will have the opportunity to gain additional training and CISCO certification.

The **t_{ic}** is also an Academy providing a full range of professional qualifications for Microsoft, Apple and Sun MicroSystems as well as being a Pearson Vue testing centre. These partnerships are exceptional in that they provide an opportunity for students to study alongside people who are involved in the computing and the networking industry. These provide opportunities for additional qualifications and experience upon graduation.

As well as the course team specialists, students also have access to the **t_{ic}**'s Learning Centre which has staff to provide individual support in practical study areas. External industrialists complement the study programme, providing input ranging from guest lectures to offering more substantial contribution across entire modules.

Sandwich Placements

In common with our other degree programmes, students on BSc (Hons) Mobile Communications Technology have the option of a period in industry between year 2 and 3 of the full-time course. The **t_{ic}** has a placements officer who manages the scheme and assists students in making applications.

Employment prospects

The aim of the programme is to equip graduates for careers in a broad range of wireless, mobile, media and associated industries.

The following are examples of possible employment areas:

- Mobile and wireless technology applications development.
- System level integration in mobile and wireless communications.
- Specifying, designing or managing secure communications networks or the applications they support.
- Business and finance within mobile communication industry.
- Technical, software or applications support and training.
- Creative solutions in Multimedia applications development.
- Management and support of communications systems.

Further Details

Click on to <http://www.tic.ac.uk/> to find out more about the Technology Innovation Centre and its courses. Alternatively you can contact the **tic** Information Reception on 0121 331 5400 for an informal enquiry or to arrange a meeting with one of the course tutors. Open days are run through the year and all UCAS applicants are invited, or you can contact Reception for dates.

How do I apply?

University: Birmingham City University
Faculty: [Technology Innovation Centre](http://www.tic.ac.uk/)
Millennium Point, Curzon Street, Digbeth
Birmingham B4 7XG
Telephone: (+44) (0)121 331 5400
<http://www.tic.ac.uk>

Applications: UCAS
Rosehill
New Barn Lane
Cheltenham
Gloucestershire GL52 3LZ
Telephone (+44) (0)1242 223707
<http://www.ucas.ac.uk/>

UCAS code: H640

Course Length: 3 years full-time
4 years sandwich
3 years part time for stage 2 entry with appropriate HNC or equivalent, 5 years if no exemptions apply

Location: Millennium Point, Birmingham

Enquiries: Information Officer (at the above address)
Telephone: (+44) (0)121 331 5400
Email: enquiries@tic.ac.uk

BSc (Hons) Mobile Communications Technology

Employer Guide

Introduction

The BSc (Hons) Mobile Communications Technology is provided by Birmingham City University's, Technology Innovation Centre (*tic*) at the prestigious Millennium Point complex near the Birmingham city centre. Further information is available at: <http://www.tic.ac.uk/>.

The *tic* supports individuals, organisations and communities in furthering their understanding and capabilities within a rapidly advancing technology-based society, providing cutting-edge resources and specialised knowledge to meet the demands of the 21st Century. It has close links with industries and commerce and provides an education that is highly vocational and develops the skills and attributes that prepares its graduates for professional practice.

Facilities / Partnerships

The *tic* offers outstanding opportunities for combining learning, training and skill development with the transfer and implementation of innovative technologies for economic and social development.

The *tic* was the first CISCO Regional Academy in the U.K. and is now a CATC academy providing industry recognised Cisco Certified Networking Associate/Professional (CCNA/CCNP) certifications and training within the UK and across Europe, Middle East and Africa. In addition the *tic* is also an Academy providing a full range of professional qualifications for Microsoft, Apple and Sun Microsystems as well as being a Pearson Vue testing centre. These partnerships offer special opportunities for students to study alongside professionals in the computing and the networking industry.

Programme Aims

The BSc Mobile Communications Technology aims to develop students' intellectual and creative abilities by providing knowledge of technology together with skills relevant to secure mobile and wireless communications systems and media distribution. By combining specialist education and training within both academic and practical contexts, the course is designed to provide students with experience of professional practice and organisation in order to equip them for a variety of roles.

The Curriculum

The content and structure of the BSc (Hons) Mobile Communications Technology reflect the overall philosophy of integrating creative and technological aspects at a system level. There are five broad themes:

- Mobile Communications
- Communications Networks
- Mobile programming
- Multimedia
- Business Management

Mobile Communications – this core theme starts from basic principles and techniques from which applications of radio, wireless and mobile communications are considered. This leads to the development of communications network systems together with traffic and management aspects.

Communications Networks – together with the mobile communications theme communications networks forms a core focus of the course and covers technology, design, planning and implementation of local and wide area networks. The scope of the theme extends to future developments including wireless and security enhancements.

Mobile Programming – providing fundamental concepts of programming and software design. Skills acquired enable programming techniques to be applied for real time applications in data capture for mobile devices. This is followed by client server applications for a complete system requiring processing and management of information.

Multimedia – providing knowledge and practical skills required to design and produce interactive websites and multimedia applications. The theme encourages development of creative skills in the application of multimedia authoring tools and scripting languages for mobile devices.

Business Management – skills required for building effective network and communications systems from the business perspective, including attention to the increasingly important security needs and solutions. Effective security solutions generally require the holistic appreciation of system needs in which the business and management perspective and consideration is of crucial significance, particularly in respect of critical assurance requirements that need to be defined and accommodated.

Expected outcome

On completion of the course students will have:

- 1 A broadly-based and stimulating curriculum which combines study of communication technology, multimedia, computer programming, mobile communications with associated devices and business management relevant to a wide career choice in a range of commercial and industrial sectors;
- 2 Opportunities for intellectual and creative development through the application of technical knowledge, software systems and design principles to the creation of high quality communications and mobile media applications
- 3 A range of transferable and marketable skills and knowledge relevant to employment in a variety of roles both within and outside of mobile communications, computer networking and associated industries;
- 4 An enjoyable and rewarding educational experience which places emphasis on active and participative learning;
- 5 An understanding of the legal and ethical issues and concepts relating to information and communication systems;
- 6 Analytical and modelling techniques relevant to computer networks and communications systems;
- 7 A qualification designed to satisfy accreditation requirements of the relevant professional bodies;
- 8 A basis for professional development and further study.