

Birmingham City University Technology Innovation Centre

Undergraduate Programme

Programme Specification including Student Guide and Employer Guide

BSc (Hons) Computer Networks and Security

Date of Course Approval/Review	Version Number	Version Date
13 May 2004	2.05	22 June 2006



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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 Computer Networks & Security Programme Specification, Student and Employer Guides			
Version	Event	Date of event	Authorised by
2.01	Scheme Validation/ Review	13 May 2004	Dean of Faculty
2.02	Scheme Validation/Review (amendments to meet condition)	13 May 2004	Panel Chair
2.03	Minor Changes (to incorporate changes to the admissions section from later validations)	21 July 2004	Dean of Faculty
2.04	Minor changes and notification of IIE (now IET) accreditation	22 July 2005	Dean of Faculty
2.05	Minor changes Board of Studies	22 June 2006	Dean of Faculty

BSc (Hons) Computer Networks and Security

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:	Birmingham City University
3	Programme accredited by:	Institution of Engineering and Technology * see note below
4	Final Award:	BSc (Hons)
5	Programme Title:	Computer Networks and Security
6	UCAS Code:	GG49
7	QAA Benchmarking Group:	Engineering

*** Application to Institution of Engineering and Technology for re-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 communication network, software programming and hardware relevant to the development of security systems;
2. A curriculum which provides a range of subjects to facilitate the development of abilities, pursuit of interests and promotion of wide career choice;
3. A range of transferable and marketable skills and knowledge relevant to employment in a variety of roles both within and outside of computer network and associated industries;
4. An enjoyable and rewarding educational experience which places emphasis on active and participative learning;
5. An understanding of the systems approach encompassing the themes of business management, security technologies, programming for networks, security systems theory, communications networks and the practicalities of information and security systems, including compliance with appropriate standards;
6. An understanding of the legal and ethical issues and concepts relating to information systems and security, together with the audit procedures for assessing security systems and controls;
7. Analytical and modelling techniques to specify secure computer networks and systems;
8. Skills to identify and analyse the computer networking and security requirements of an organisation to support achievement of its business goals;
9. Sound understanding of commercial, social and business factors which influence technical solutions to solve problems;
10. Skills to specify and develop elements of an secure internet system, integrating hardware, software and business elements;
11. A qualification designed to satisfy accreditation requirements of the relevant professional bodies;
12. 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. The foundations for security capable professionals to address the development of security methods and practical systems; 2. The design, implementation and evaluation of item identification, data-capture, product and asset track and traceability systems, communications networks and associated security protocols; 3. Coding, protocols, attack and defence scenarios, protection requirements for e-commerce and emerging intelligent systems; 4. Principles and technologies for engineering security systems; 5. Programming skills for developing and evaluating secure network and communications systems; 6. Basic business management and organisational theories and techniques applied to successful secure networking enterprise 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>A range of assessment methods are employed. Assessment activities include practical work, individual and group work, presentations, written coursework, laboratory experimentation, examinations (seen and unseen, open and closed book). The assessment criteria for each module being published within module guides and assignment briefs.</p>
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Skills and other attributes

Intellectual / cognitive skills:

1. Use proficiently information and materials from a variety of sources for independent enquiry and learning;
2. Draw independent conclusions based on a rigorous, analytical and critical assessment of argument, opinion and data;
3. Apply learning study skills to developments within programme discipline;
4. Recognise and apply appropriate managerial, technical, practical and operational techniques for a diverse range of issues and problems;
5. Analyse the information requirements of an organisation in the achievement of its business goals;
6. Understanding of technical, software and business operations applied to processes, practice and products;
7. Reflect on own learning, and to be self-reliant and constructively critical;
8. Select appropriate software tools and techniques for the implementation of network applications;
9. Use relevant analytical and modelling techniques for specification and design of security based systems;

Teaching, learning and assessment methods used:

Intellectual skills are developed through teaching and learning programme previously outlined.

Analytical and problem solving skills are developed using a range of case studies and problem/task-based learning scenarios.

Assessment activities include practical work, individual and group work, presentations, written coursework, laboratory experimentation, examinations (seen and unseen, open and closed book).

Skills and other attributes (cont.)

Practical, research and independent learning skills:

1. Act independently to plan and undertake tasks, work to deadlines, and accept accountability for learning decisions;
2. Engage in the practical, technical and business skills applied for the design, implementation and support of computer networks and electronic security systems;
3. Apply appropriate methodologies using primary and secondary sources;
4. Collect relevant information, assimilate knowledge, marshal a coherent and rational argument, and relate theory and practice;
5. Use appropriate laboratory equipment and software tools to undertake experiments and to process data;
6. Write computer programmes for various applications, e.g. eCommerce;
7. Construct web-sites, design web pages and deploy web services;
8. Identify, understand and apply appropriate technical and application standards, recognising where appropriate the significance of national and international standards.

Teaching, learning and assessment methods used:

The acquisition of appropriate and transferable practical skills is central to the learning strategy of the programme. Initiative and independence are fostered throughout, and develop as the course progresses. Emphasis is placed on guided, self-directed and student-centred learning, with increasing independence of approach, thought and process.

Assessment activities include practical work, individual and group work, presentations, written coursework, laboratory experimentation, examinations (seen and unseen, open and closed book).

Learners are encouraged to plan their own work schedules to meet deadlines. Learners undertake an individual practical / research project and complete a related dissertation.

<p>Transferable / key skills:</p> <ol style="list-style-type: none"> 1. Work with, and relate effectively to, others; 2. Manage time and prioritise workloads; 3. Make effective oral and written presentations; 4. Access and make appropriate use of relevant numerical and statistical information; 5. Make effective use of information and communications technologies, including word and data processing packages, the internet, email and electronic information retrieval systems; 6. Formulate ideas and seek to develop innovative solutions; 7. Undertake appropriate career development. 	<p>Teaching, learning and assessment methods used:</p> <p>Transferable/key skills are core to the learning strategy of the programme. They are pervasive, and are incorporated into modules and assessments as appropriate.</p> <p>Assessment activities include practical work, individual and group work, presentations, written coursework, laboratory experimentation, examinations (seen and unseen, open and closed book).</p>
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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 BSc (Hons) 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 year 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
	<p>Visual Programming D1 System concepts, programming fundamentals and software design. Exploration of GUI creation. System and class design, debugging and testing, writing of software documentation. Investigation into .NET framework.</p>	24
	<p>Electronic Technology D1 Basic dc and ac theory, electrical measurements, communications systems fundamentals, signals and their characteristics. PC hardware.</p>	24
	<p>Digital and analogue principles, ADC, DAC, and introduction to communication principles. Computer architecture and PC Hardware.</p> <p>Computer Network Basics D1 LAN/WAN terminology, OSI, media, devices, standards, TCP/IP and addressing.</p>	24
	<p>Router configuration, routing protocols, access control lists, TCP/IP and Router operating systems.</p> <p>Data Analysis D1 Algebra, equations, graphical methods, statistics & probability, matrices, business mathematics, networks, linear programming, trend analysis, set theory.</p>	24
	<p>Business Context and Application 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.</p>	24

Award: Cert HE (120 credits)

Stage 2 Level 5

Module number	Module name	Credit
	<p>Switched LANs and WANS D2 VLSM, RIPv2, OSPF, EIGRP, VLANs, STP, VTP and switch configuration.</p> <p>ISDN/BRI, Frame Relay/PRI, Implementing LANs and WANS, DHCP, NAT/PAT, PPP, DDR, network management, optical and security.</p> <p>Security Systems Theory D2 Security solutions, data/information, networks, communications, operating systems and physical security, legal and ethical issues in systems security and penetration testing. Error control theory, cryptography, steganography, quantum cryptography , cryptographic filesystems, tamper resistance; security monitoring, intrusion detection systems, emissions analysis; risk assessment and security management; security and security audit standards and their significance with respect to security management.</p> <p>Data Application Programming D2 The module will show students how to implement strategies to access information from a range of data repositories. Students will develop and programme software applications designed to manipulate that data and represent it appropriately to the user.</p> <p>Data Capture Technologies D2 Data analysis, database design & implementation, 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> <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>	

Award: Dip HE (240 credits)

Stage 3 Level 6

Module number	Module name	Credit
	<p>Advanced Networking Technologies D3 Advanced routing, wireless, security and advanced design consideration for scaleable networks, software and hardware based firewall.</p>	24
	<p>Network Design and Management D3 Network operating systems, network management, network management protocols, network monitoring and management platforms, queuing theory, network design, simulation and modelling.</p>	24
	<p>Client Server Integration D3 Client and server system architectures, middleware, enterprise wide structures, distributed systems, web systems; SOAP, CORBA, J2EE, XML and .NET.</p>	24
	<p>Personal Identification and Authentication Systems D3 Classification and attributes of personal identification techniques, integrated data carrier and biometric systems, application and security attack considerations on integrated systems, ethical, legal and standardisation issues, including attention to privacy.</p>	24
	<p>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.</p>	24

Award: BSc (Hons) (360 credits)

Course Structure – BSc Computer Networks and Security (FC0223)

Level 6

Individual Project D3 FM6020	Personal Identification and Authentication Systems D3 FM6029	Client Server Integration D3 FM6011	Advanced Networking Technologies D3 FM6008	Network Design and Management D3 FM6027
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Level 5

Market-led Enterprise D2 FM5057	Data Capture Technologies D2 FM5042	Data Application Programming D2 FM5041	Security Systems Theory D2 FM5071	Switched LANs and WANS D2* FM5073
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Level 4

Business Context and Application of Technology D1 FM4017	Electronic Technology D1 FM4025	Visual Programming D1 FM4051	Data Analysis D1 FM4021	Computer Network Basics D1 FM4045
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Business Management Theme

Security Technologies Theme

Programming for Networks Theme

Security Systems Theory Theme

Communications Networks Theme

* Communications Networks III & IV are optional alternatives

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 Head of Division, 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 Faculty resources, including the Faculty Resource Centre, and a range of supported IT equipment.

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

Entry requirements are in accordance with section D of the University's Academic Regulations and Policies.

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 or European Baccalaureate	
BTEC/Edexcel National Certificate/National Diploma	
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

<p>Committees:</p> <p>Course Committee Board of Studies Examination Board Learning Management Committee Faculty Board</p>	<p>Mechanisms for review and evaluation:</p> <p>Review and validation events Accreditation by professional bodies Annual Monitoring Report Student feedback questionnaires Annual staff appraisal External Examiners' Reports Course team meetings</p>
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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) Computer Networks and Security

Student Guide

Background

Many of the issues concerning security relate to systems and devices in which failures in protection can endanger human life, the safety and viability of industrial and commercial systems, the safety of the environment, undermine public confidence and fuel criminal activity. Combating fraud and malice, together with the requirements for handling errors and mischance are core objectives in the development of secure network and communication systems. National schemes such as passports and identification cards to combat terrorism and international co-operative schemes for finance and transaction requiring personal identification is in the news almost every day.

The Computer Networks and Security course has been designed to produce graduates with capabilities in designing, implementing and evaluating identification, data capture and communications networks and associated security protocols. These capabilities will also include consideration of associated system needs including the legal, ethical and standardisation issues relating to information systems and security.

Attention to security brings you into an intriguing, richly interesting and legally rewarding world of coding, protocols, attack and defence scenarios, technology and innovation and to a level that provides attractive career prospects.

Why the focus upon Technology?

Many courses are available that deal only with networking, with little or no relation to actual practice or technical operations within business. The BSc Computer Networks and Security has been specially designed to take into account the direct needs of industrial change.

This unique programme incorporates real networking, software realisation, biometrics and more in order to focus the understanding of secure technical and creative operations concerning computer networking processes and products.

What does the industry want?

The landscape is changing so dramatically that industry requires flexible, technically apt, business minded individuals who can creatively and practically adapt to varied and diverse activities, processes and products.

In short they want multi-skilled individuals passionate about secure networking practise who have the broad ranging knowledge and skills that will enable to adapt to this change.

What type of work will I do?

The programme combines a number of key themes: Technical and communications transfer and application, security technologies and Operational Practice. You will undertake studies in these areas through lectures and tutorial/practicals and complete assessments, both coursework and examination.

Who will teach me?

The course team are members of the Technology Innovation Centre at Birmingham City University, specialising in computer network systems. They have for a number of years delivered professional training as we are a CISCO academy provider leading to the industry recognised Cisco Certified Networking Associate/Professional (CCNA/CCNP) qualification. You too will have an opportunity to gain these additional qualifications during your studies. External industrialists complement existing academics; providing guest lectures to offering more substantial contribution across entire modules.

Work experience

A sandwich option is available. It is up to you to decide on the type of study you wish to pursue a sandwich degree. The Technology Innovation Centre has a placements office, which manages a scheme designed to give the students an opportunity to work in industry as part of their studies. Industry placements offer students stimulating challenges and the chance to put theory into practise, to take on some responsibility and gain valuable experience of commercial life in a variety of organisations.

Is the course accredited?

The BSc (Hons) Computer Networks and Security is accredited by the Institution of Engineering and Technology as satisfying full academic requirements for IEng. (Subject to confirmation of re-accreditation)

Employment prospects?

The philosophy of the programme is upon creating multi-skilled and versatile graduates. However, that is not to say that you cannot concentrate your interests within a particular field.

Typical routes of employment that could lead from this programme include:

- providing technical, software or applications support or training

- specifying, designing or managing secure communications networks or applications they support
- implementation and/or evaluation of secure systems

How do I apply?

University: Birmingham City University
Faculty: [Technology Innovation Centre](#)
 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: GG49

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) Computer Networks and Security

Employer Guide

Introduction

The Bachelor of Science in Computer Networks and Security has been developed to produce graduates who are able to specify, design and manage computer networks and associated applications with security of commercial and service applications in mind. It has been designed to provide graduates with a broad knowledge in the areas of data communications and related security issues with respect to data capture, information access control and protection. This course embraces a range of security issues and foundations for solutions to networks and system security requirements.

Facilities / Partnerships

The **tic** was the first CISCO Regional Academy in the U.K. and is now one of only three CISCO Super Centres in the world providing training in CCNA, CCNP and other associated courses as well as being a Microsoft academy providing a full range of professional qualifications for the commercial sector. These partnerships are exceptional in that they provide an opportunity for students to study alongside people who are involved in the networking industry and provide additional qualifications and experience upon their graduation.

The Technology Innovation Centre has a successful record of delivery in technology-based courses. There is a range of advanced IT facilities using professional standard software connected to the **tic** network.

The **tic**'s Learning Centre has subscriptions to academic journals and access to a range of other publications. Furthermore UCEEL, the University's Digital Library, provides electronic versions of exam papers, book chapters and previous student projects, which can be accessed from off-site.

The Curriculum

The content and structure of the course is designed to produce professional technologists who have been exposed to a broad mix of theory, application and practice. There are five thematic, but interactive themes that define the course:

- Communication Networks
- Security Systems Theory
- Programming for Networks

- Security Technologies
- Business Management

Communication Networks – forming the essential focus for the course and the framework within which the other components of course structure relate and support. The scope of the communication networks theme extends to future developments in which there is expected to be increasing connectivity to the physical world and more attention to intelligent systems in meeting existing and emerging needs. Migration within the course is from basic network principles to the advanced networking technologies and associated security needs.

Security Systems Theory – providing the foundations and practical implementation and evaluations skills required for developing protocols and effective security systems. The theme takes a systematic approach to understanding the agents of fraud, malice, errors and mischance that raise the demand for protection in the form of security systems. It covers the significance and importance of security protocols and the principles and technologies for engineering security systems, including cryptography, steganography and the myriad of techniques for monitoring and protection of physical entities. It also covers as a theoretical construct the importance of ethical and legal considerations in specifying and developing security systems. The modules also lay the foundations for understanding and accommodating network attack and defence strategies and the protection requirements for e-commerce and the emerging ambient intelligent systems. This also includes attention to the ethical and legal issues that impact upon information and security systems. Modules also provide a guide to security standards, for example, BS7799 Information Security Management standard (ISO/IEC 17799:2000 – Part 1 and BS7799-2 1999 – Part 2.)

Programming for Networks – providing the software engineering and associated programming skills for developing and evaluating network and communication systems, including the very significant needs for security both within the software structures produced and the applications to which they apply. The theme accommodates the business and communication needs in respect of emerging standards in relation to business process definitions, business development frameworks such as the UN/CEFACT Business Development Framework, and the growing use of XML. The .NET platform is used to position and apply appropriate programming languages for dealing with application needs, including application program interfaces (APIs).

Security Technologies – providing the foundations for understanding the advantages and vulnerabilities of technologies that are and can be applied for security protection purposes. The theme extends from basic understanding of electronic data carrier and communication devices to structures for sensing, filtering and shielding against hardware attack strategies, screening, scrambling and design features for combating electronic device and data attacks to hardware facilities for supporting cryptographic functions and other

protection measures relating to authentication and data / information handling and database security. The theme also embraces the technologies for personal identification, including biometric techniques (finger print, facial and iris recognition for example), associated APIs and combination technologies and protocols.

Business Management – wherein attention is directed at the business and enterprise considerations and 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 wherein 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.

Aims of the Programme

The philosophy of the programme is upon creating multi-skilled and versatile graduates, many of whom will concentrate their interests within particular fields in the networking and security industry.

The programme aims to provide learners with:

- A broadly-based and stimulating curriculum which combines study of communication network, software programming and hardware relevant to the development of security systems;
- A curriculum which provides a range of subjects to facilitate the development of abilities, pursuit of interests and promotion of wide career choice;
- A range of transferable and marketable skills and knowledge relevant to employment in a variety of roles both within and outside of computer network and associated industries
- An enjoyable and rewarding educational experience which places emphasis on active and participative learning;
- An understanding of the systems approach encompassing the themes of business management, security technologies, product and asset track and traceability, programming for networks, security systems theory and communications networks;
- Analytical and modelling techniques to specify secure computer networks and systems;

- Skills to identify and analyse the computer networking and security requirements of an organisation to support achievement of its business goals;
- Sound understanding of commercial, social, ethical, legal and business factors which influence technical solutions to solve problems;
- Skills to specify and develop elements of an secure internet system, integrating hardware, software and business elements;
- A qualification designed to satisfy accreditation requirements of the relevant professional bodies*;
- A basis for professional development and further study.

Employment Prospects

The philosophy of the programme is upon creating multi-skilled versatile graduates, many of whom will concentrate their interests within particular fields in the Networking and AIIDC industry.

Typical areas of employment that could lead from this programme include:

- Retail
- Financial and Banking
- Government organisations; Healthcare, Transportation, Construction (DTI), (NHS)
- Supply chain logistics
- MoD
- Pharmaceuticals
- Airports
- Network Communications
- Software House Development

Accreditation

The BSc (Hons) Computer Networks and Security is accredited by the Institution of Engineering and Technology as satisfying full academic requirements for IEng. (Subject to confirmation of re-accreditation)