Birmingham City University
Faculty of Technology, Engineering and the Environment

Postgraduate Programme

Programme Specification

MSc Data Networks and Security

Date of Course Approval/Review	Version Number	Version Date
26 Nov 2009	2.02	18 Dec 2009

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Definitive Documents and Version Control

This document has a version number and reference date in the footer.

The process leading to the introduction of new courses, major changes to courses, and minor changes to courses and modules follows the appropriate formal procedure as described in the Faculty's Academic Procedures and Quality Manual.

On the front sheet of this document, the date of course approval/review refers to the most recent full approval/review event. The version date will be that of the most recent event at which formal consideration was given to course changes.

Further details about the course and document development may be obtained from minutes of the approval or minor changes board. A history of the document since the last full approval/review event is summarised in the table below and further information relating to past versions can be obtained from the Faculty Office.

Version	Event	Date of event	Authorised by
2.01	Review and Re-approval meeting	26 Nov 2009	Dean of Faculty
2.02	Review and Re-approval meeting - conditions	26 Nov 2009	Panel Chair

Programme Specification
MSc Data Networks and Security

Date of Publication to Students: September 2010

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://mytid.bcu.ac.uk/, (2) in the Module Specifications 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.

Awarding Institution / Body:	Birmingham City University
Teaching Institution:	Birmingham City University
Interim Awards and Final Award:	PGCert, PGDip, MSc
Programme Title:	Data Networks and Security.
Main fields of Study:	Data Networking
Modes of Study:	Full & Part time
Language of Study:	English
UCAS Code:	n/a
JACS Code:	G420

Professional Status of the programme:
To be considered

Relevant subject benchmark statements and other external reference points used to inform programme outcomes:

- The FHEQ Level Descriptor
- QAA Benchmark statement for Computing
- "Benchmarking Standards for Taught Masters Degrees in Computing", Committee of Professors and Heads of Computing (CPHC) and the British Computer Society, 2008.

Programme philosophy and aims

The MSc in Data Networks and Security aims to provide in-depth insight and skills in the specialist areas of network management and security, enabling students to meet the industrial and commercial demand for engineers and administrators able to design, implement and manage secure computer network systems.

The course is designed primarily for technology graduates who have some prior knowledge of computing and/or networking and who wish to specialise in computer network engineering. An induction programme also caters for graduates of other disciplines, experienced network technologists who wish to update their skills and professionals with industrial experience in other sectors seeking to enter the industry.

The Faculty is home to a lead Cisco Academy Training Centre (CATC). The Cisco Academy provides training for network professionals and instructors throughout Europe, the Middle East and Africa. This has supported the development of a core of staff with exceptional expertise in networks and distributed systems, and outstanding resources and facilities.

The study programme is particularly linked to the Cisco Certified Network Professional (CCNP) curriculum. Students can work towards this internationally recognised qualification alongside their MSc degree. In addition to providing a strong theoretical underpinning, there is an emphasis on practical applications supported by the Faculty's extensive industry-standard devices, hardware and software.

In addition to further academic research opportunities, career prospects are expected to keep pace with the rapid advances in telecommunications technologies and there is expected to be continuing demand for competent, versatile postgraduates who can design and implement innovative solutions for industry.

The aims of the programme are to:

1. Provide a stimulating and rewarding learning experience that will foster the research and independent study skills required at masters level;

2. Enable students to gain in-depth knowledge and understanding of computer networking principles and practice and to plan, manage and implement secure network solutions;

3. Develop skills of analysis, synthesis, critical appraisal and the ability to solve complex problems;

4. Enable students to critically assess developments at the forefront of the discipline;

5. Promote an awareness of professional, legal and ethical considerations;

6. Enable students to research, manage data, communicate effectively and work as part of a team, to support career advancement.

Intended learning outcomes and the means by which they are achieved and demonstrated:

Learning Outcomes

1. Knowledge and Understanding
On completion of the course, students should be able to demonstrate:

1. A knowledge and understanding of concepts, theories and principles of data networks design and implementation;

2. A critical understanding of the key technologies used in secure networking systems;

3. Knowledge of emerging trends in communications networks;

4. An awareness of the social, environmental, ethical and regulatory aspects that impinge on the development of computer networking systems.

2. Intellectual Skills

On completion of the course, students should be able to:

1. Analyse and interpret network modelling data and system operation and performance;

2. Synthesise theory and practice systematically and creatively to specify, design and implement solutions to satisfy commercial networking requirements;

3. Critically evaluate networking technologies, protocols and management approaches and make recommendations for optimum data networking solutions;

4. Argue rationally and draw independent conclusions based on a rigorous, analytical and critical approach to network design and implementation.

3. Practical Skills

On completion of the course, students should be able to:

1. Use laboratory equipment safely to build and test complex network systems;

2. Apply software modelling tools and techniques to the design, testing and evaluation of advanced network systems;

3. Apply management tools such as protocol analysers to monitor and analyse network traffic;

4. Develop quality of service criteria for different network traffic;

5. Apply security systems to a network.

4. Transferable/Key Skills

On completion of the course, students should be able to:

1. Manage learning and self-development, including time management and prioritise work when tackling and solving complex problems;

2. Communicate effectively in writing, orally and in presentations to specialist and non-specialist audiences;

3. Make effective use of IT including word and data processing packages, internet and electronic information sources;

4. Systematically research a topic, synthesising and critically evaluating documents from a variety of web-based and traditional sources;

5. In cooperation with others, plan and implement tasks at a professional level and contribute to team goals through making sound judgements

Learning, teaching and assessment methods used

Knowledge and understanding are acquired though formal lectures, tutor-led seminars and practical activities, and a range of independent learning activities. Emphasis is placed on guided, self directed and student-centred learning with a progressively increasing independence of approach, thought and process. This independent learning includes an element of peer review in order to evaluate the effectiveness of the learning.

Lectures are used to introduce themes, theories and concepts, which are further explored in seminars. Technology enhanced learning is used, where appropriate, through the provision of online resources, discussion forums and other activities. Advanced textbooks are used, together with professional material and journal articles, in order to ensure that students develop a critical understanding of work at the forefront of their discipline. The module guides direct students to a full range of resources, including books and journals, as well as specialised course-based material.

Analytical and problem solving skills are further developed using a range of appropriate 'real' and 'theoretical' case studies and problem-based learning scenarios.

Practical, including lab-based, sessions are used throughout the programme to develop practical skills and to place theory in a work-related context. Where appropriate, students use commercial development environments.

Learners extend research skills ability in the first semester module, Professional Skills and Research Methods, which develops the key skills of research, academic writing and time management required for study at masters level. These skills are further developed and placed into context in the second semester Project Workshop and by undertaking a major individual project.

Transferable/key skills are pervasive and incorporated into modules and assessments as appropriate, e.g. team-working skills are fostered via group activities. Learners are encouraged to plan their own work schedules and are required to meet deadlines. Reflection and self awareness are fostered throughout.

A range of assessment methods are employed, assessment criteria being published in each assignment brief. Knowledge and skills are assessed, formatively and summatively, by a number of methods, coursework, examinations (seen and unseen, open and closed-book), presentations, practical assignments, vivas, online forums, podcasts, and project work.

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

The MSc programme is normally studied over one year full-time or two years part-time (one year and one term full-time for January start). Students may, if they wish, move between full and part-time modes of attendance. The academic year is divided into semesters of approximately 14 weeks each, which run from September to January and January to May.

The course is divided into taught modules of 15 and 30 credits and a Masters project of 60 credits. Students complete 60 credits for Postgraduate Certificate, 120 credits for Postgraduate Diploma and 180 credits for MSc. Each credit represents 10 notional hours of student learning and assessment.

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

MSc Data Networks and Security

Semester C

60 credits Masters Project PG

Award MSc (180 credits)

Semester B

15 credits Advanced Firewall Systems PG	15 credits Network Security PG	30 credits Management and Optimisation of Networking Systems PG

Award PgDip (120 credits)

Semester A

15 credits Professional Skills and Research Methods PG	15 credits Network Technology PG	30 credits Design of Scalable Networking Systems PG

Award PgCert (60 credits)

Support for Learning including Personal Development Planning (PDP)

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

- an induction programme dealing with orientation and the dissemination of essential information, including an introduction to PDP;
- 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, School, course and modules;
- access to administrative staff and to academic staff, including the tutors and Course Director;
- support staff to advise on pastoral and academic issues;
- access to Faculty resources, including a range of IT equipment and the services of, and guidance from, 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;
- provide resources for Professional Development Planning (PDP) to enable reflection on learning, performance and achievement and to plan personal, educational and career development. The university offers a range of on-line courses (www.moodle.bcu.ac.uk) to support PDP topics including: Reflection, Career & Employability, Action Planning, Self Awareness and Self Employment.

Criteria for admission

Candidates must satisfy the general admission requirements of the programme. The current admission requirements can be found under the 'Entry Requirements' tab of the web page for this course.

Methods for evaluation and enhancement of quality and standards including listening and responding to views of students

The following Faculty committees are involved in the evaluation and enhancement of quality, standards and student experience:
Board of Studies
Faculty Board and its sub-committees
Learning and Teaching Committee
Academic Standards and Quality Enhancement Committee
Student Experience Committee.

Evaluation processes, in which students are involved, include annual course and module reviews, course review and re-approval events, professional body accreditation visits and external examiner visits. Mechanisms for student input include meetings with course tutors, feedback questionnaires, student satisfaction surveys and representation on the committees referred to above.