

Programme Specification and Curriculum Map for MSc Computer Network Management



1. Programme title	MSc Computer Network Management
2. Awarding institution	Middlesex University
3. Teaching institution	Middlesex University
4. Programme accredited by	BCS – CITP & CSI
5. Final qualification	Masters of Science
6. Academic year	2014/2015
7. Language of study	English
8. Mode of study	Full-time & Part-time

9. Criteria for admission to the programme

Applicants should normally have one of the following:

- A minimum of second class Honours degree (UK), or a degree deemed by the University to be equivalent, in computer science or networks, or in a field that provided significant exposure to IT, for example, management, business, mathematics, science or engineering
- Degrees in other fields combined with relevant industrial experience of at least five years, together with an extensive IT background

International students whose first language is not English or who have not been taught in the English medium throughout, and whose first degree is not from a British university, must achieve an IELTS score of 6.5 or TOEFL 575 (paper based) 233 (computer based).

Note: University policies supporting students with disabilities apply, as described in the University Regulations, 'Information for Students with Disabilities'.

10. Aims of the programme

The programme aims to develop:

- An awareness of the fundamental importance of information management related to the business objectives of an organisation
- The ability to involve both the management and the user in the process of awareness, decision and implementation of a computer network
- The ability to prepare a project budget and implementation strategy appropriate for the management of a major IT project
- The ability to evaluate the technical, organisational and economic aspects of developments as new opportunities for business process redesign and/or expansion
- The ability to make a functional and technical design of an information system based on project goals and company's standards and quality systems

The ability to evaluate the performance of a communication system using analytical and/or simulation tools and manage the implementation of a complete communication design project

11. Programme outcomes

A. Knowledge and Understanding

On completion of this programme the successful student will have knowledge and understanding of:

1. Current network systems with an emphasis on those systems that integrate existing technologies and their applications in novel ways for increased organisational efficiency
2. The difference between the major types of information systems applications in decision making and how to distinguish between decision support systems and other business information systems with particular reference to the managerial processes
3. Computer networks and the Internet as an enabling technology including the theoretical underpinnings of computer networks and their topologies
4. The fundamentals of online database technology and its importance for electronic commerce
5. Computer networks theory that underpins the analysis and design of such systems

6. The technical aspects of the operation of computer networks, with an appreciation of the capabilities of intranets and internetworks
7. The theoretical underpinnings of computer networks, international standards, network topologies and related technologies
8. The use and operation of network management software.
9. The uses of different research methods in order to produce an independent research report
10. NOSs and show an appropriate technical understanding of security and implementation issues
11. Analyse and identify the main threats to network security.
12. Explain and apply the basic processes involved in planning and implementing IT projects
13. Analyse the database requirements for an on-line business
14. The operation and analysis of mobile and wireless networks
15. The QoS issues relevant to fixed, mobile and wireless networks
16. Computer communication systems as an enabling technology
17. The importance of Human Resources Management in network management

Identify advantages and limitations of peer-to-peer and server based NOSs

Teaching/learning methods

Students gain knowledge and understanding through:

- Traditional lecture delivery (outcomes A1-A7, A10, A11 and A13-A18)
- Group and individual research, presentations and written reports (outcomes A9, A10, A11 and A17)
- Laboratory sessions (outcome A8, A9, A12 and A14)
- The use of various network software ranging from operating systems to applications (outcomes A8 and A12)
- Individual and group design work (outcomes A8, A12 and A14)
- The individual project

Throughout the students are encouraged to undertake independent reading both to supplement and consolidate what is being taught / learnt and to broaden their individual knowledge and understanding of the subject (outcomes A1-A13).

Assessment Methods

Students' knowledge and understanding is assessed by:

Group and individual coursework, presentations, group and individual

reports, and the unseen examination and the project thesis assess students' knowledge and understanding.

- Outcomes A1-A8, A10 and A13-A18 are assessed by examination
- Outcomes A8, A12 and A14 are assessed by laboratory sessions
- Outcomes A10 and A14 are assessed by individual essay and final project thesis
- Outcomes A8, A14-A15 are assessed by practical laboratory assignments
- Outcomes A9, A12 and A14-A17 are assessed by presentation, unseen examination, project thesis and individual coursework assignments

B. Cognitive (thinking) skills

On completion of this programme the successful student will be able to:

1. Critically evaluate the need for information networks in an organisational context
2. Apply network modelling, analysis and simulation skills
3. Critically assess the performance of wired and wireless computer networks
4. Demonstrate an understanding of the commercial possibilities of the Internet and the Web and their social implications
5. Identify the service level requirements for information networks
6. Use probability theory to analyse computer networks
7. Create a network model, use this model to describe the current network situation, identify system risks and security issues
8. Identify the major management challenges to building and using
9. Information systems
10. Provide a critical analysis of various NOSs and show an appropriate technical understanding of security and implementation issues
11. Analyse and identify the main threats to network security
12. Explain and apply the basic processes involved in planning and implementing IT projects
13. Analyse the database requirements for an on-line business

Teaching/learning methods

Students learn cognitive skills through

- Traditional lecture delivery (outcomes B1-B12)
- Group research (outcomes B1, B4, B11)
- Presentations and written reports (outcomes B1, B2, B4 and B10)

- Small group and individual exercises (outcomes B1-B4 and B12)
 - Laboratory sessions (outcome B4)
 - The use of various network software ranging from operating systems to applications (outcomes B3-B4)
 - Individual and group design work (outcomes B1-B4)
 - The project thesis (outcomes B1–B12 depending on project title)
- Analysis, design and problem solving skills are further developed through various design activities as well as case studies, and extensive computer laboratory sessions. Feedback is given to students on all assessed coursework as well as written exams (in the form of exam reports produced each term)

Assessment Method

Students' cognitive skills are assessed by

- Group and individual coursework (outcomes B1-B4)
- Presentations (outcome B1)
- Laboratory logbooks (outcome B4)
- Reports (outcomes B1, B2, B4, B10 and B11)
- The unseen examination (outcomes B1-B12)
- The project thesis (outcomes B1-B12 depending on project title)

C. Practical skills

On completion of the programme the successful student will be able to:

1. Apply appropriate techniques and solutions in an area pertinent to the student's own working and/or organisational background and interests
2. Draw up a system requirements specification
3. Evaluate and implement computer communication systems
4. Evaluate network performance
5. Configure and operate network management software (SNMP)
6. Install and administer NOSs such as Linux, MS Windows NT/2000 and Novell NetWare 4.x/5.x
7. Critically evaluate IT product/system performance and recommend improvements supported with evidence/arguments and draw up a system requirements specification
8. Design and implement database applications that can be accessed interactively from the Internet

Teaching/learning methods

Students learn practical skills through the teaching and learning programme outlined above.

These skills are also nurtured through

- Small group discussions and individual exercises
- Laboratory sessions (outcomes C4-C8)
- On-line examples (outcome C1)
- The individual/group research project (outcomes C1-C4)

Assessment Method

Students' practical skills are assessed by coursework reports and the thesis report.

- Skills C1-C8 are assessed through coursework and written exam
- Skills C4-C8 are assessed by laboratory sessions

12. Programme structure (levels, modules, credits and progression requirements)

12.1 Overall structure of the programme

The programme is designed as a full-time course including industrial placement where applicable, or as a part-time programme. The normal University year is split into two terms of approximately 24 weeks each and students can start the programme in either Autumn term (September) or winter term (Late January/February).

The programme conforms to the requirements of the New Academic Learning Framework (NLF) of Middlesex University and comprises four taught modules (each worth 30cps) and a final project module (worth 60cps). Each 30cps module involves approximately 180 hours of study. This includes attendance at lectures, tutorials, laboratory activities and study at home or in industry. All modules on the programme are compulsory.

1. **Full-time** students joining the programme in **September** pursue the following study schedule:
 - ❖ Four modules (totalling 120cps) for Autumn Term start (September)
 - ❖ One project research and communications skills module (0cps) for Autumn/Winter Terms (weeks 6 to 18)
 - ❖ Undertake the postgraduate project module (60cp) in the Summer Term

Students who enrol in September may be able to complete their project over the following Spring term, thereby completing the programme in one year.

2. **Full-time** students joining the programme in **January** pursue the following study schedule:
 - ❖ Four modules (totalling 120 cps) For Winter start Term (January)
 - ❖ One project research and communications skills module (0cps) for Winter/Spring Terms (weeks 6 to 18)
 - ❖ Undertake the postgraduate project module (60cp) in the Autumn Term

Students who enrol in January may be able to complete their project over the following Autumn, thereby completing the programme in one year.

3. **Part-time** students joining the programme in **September** pursue the following study schedule:
 - ❖ Two modules (60cps) in the Autumn Term of the 1st year
 - ❖ Two modules (60cps) in the Autumn Term of the 2nd year
 - ❖ One project research and communications skills module (0cps) for Autumn/Winter Terms (weeks 6 to 18) of the 2nd year
 - ❖ Undertake the postgraduate project module (60cp) in the Spring and Autumn Terms of the 2nd year
4. **Part-time** students joining the programme in **January** pursue the following study schedule (see page 16 below):
 - ❖ Two modules (60cps) in the Winter Term of the 1st year
 - ❖ Two modules (60cps) in the Spring Term of the 2nd year
 - ❖ One project research and communications skills module (0cps) for Winter/Spring Terms (weeks 6 to 18) of the 2nd year
 - ❖ Undertake the postgraduate project module (60cp) in the Spring and Autumn Terms of the 2nd year

STUDENTS MUST SUCCESSFULLY COMPLETE ALL THE MODULES OF THE TAUGHT PART OF THE PROGRAMME BEFORE THEY CAN REGISTER FOR THE PROJECT MODULE

The duration of postgraduate project is one term for full-time and two terms for part-time students.

Examinations for taught modules take place at the end of the Winter and Spring Terms only, with a reassessment opportunity before the start of the Autumn Term. There are no examinations at the end of the

Autumn Term.

The general teaching and learning strategy is a lecture programme, with a module handbook, handouts and tutorial material supported by seminar sessions and practical laboratory activities and extended exercises for private study.

Projects should be appropriate to the Programme studied (i.e. Computer Network Management) and supervised accordingly. All project proposals must be approved by the Programme Leader or a member of the academic team delegated by the Programme Leader. Students must pass all the taught modules before they can progress to the project.

Details of each module can be found on MISIS or in the Science and Technology Subject Handbook

12.2 Levels and modules		
Level 7		
COMPULSORY	OPTIONAL	PROGRESSION REQUIREMENTS
<p>Students must take all of the following:</p> <p>CCM4300 Computer Networks, Wireless and Mobile Communication Systems</p> <p>CCM4340 Network Management, Security and Disaster Recovery</p> <p>CCM4320 Network Systems and Services</p> <p>BIS4430 Web-based Information Systems Management</p> <p>CCM4901 Project Research and Communication Skills</p> <p>CCM4902 Postgraduate Project in Computer Communications</p>	NONE	<p>Students must <u>pass all the taught modules and including CCM4901</u> before they can progress onto the project.</p> <p>To pass a module, students must pass all components of assessment (i.e. examinations and/or coursework)</p>

12.3 Non-compensatable modules (note statement in 12.2 regarding FHEQ levels)	
Module level	Module code
Level 7	CCM4901
Level 7	CCM4902

13. Curriculum map

Curriculum map for MSc Computer Network Management

A curriculum map relating learning outcomes to modules

Module Title	Code	Programme Outcomes																	
		A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A12	A13	A14	A15	A16	A17	A18
Computer Networks, Wireless and Mobile Communication Systems	CCM4300	✓		✓				✓						✓	✓	✓	✓		
Network Systems and Services	CCM4320	✓	✓	✓	✓	✓	✓	✓		✓							✓		
Network Management, Security and Disaster Recovery	CCM4340								✓	✓	✓							✓	
Web-based Information Systems Management	BIS4430	✓	✓		✓														
Project Research and Communication Skills	CCM4901									✓	✓								
Postgraduate Project in Computer Communications	CCM4902							✓		✓					✓			✓	

Module Title	Code	Programme Outcomes																			
		B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	C1	C2	C3	C4	C5	C6	C7	C8
Computer Networks, Wireless and Mobile Communication Systems	CCM4300	✓	✓	✓	✓		✓	✓	✓					✓	✓	✓	✓	✓		✓	
Network Systems and Services	CCM4320	✓				✓	✓	✓		✓	✓			✓	✓					✓	
Network Management, Security and Disaster Recovery	CCM4340	✓						✓			✓	✓		✓	✓			✓			
Web-based Information Systems Management	BIS4430	✓			✓	✓			✓	✓			✓	✓							
Project Research and Communication Skills	CCM4901	✓											✓	✓							
Postgraduate Project in Computer Communications	CCM4902				✓			✓			✓	✓		✓			✓			✓	

14. Information about assessment regulations

Compulsory modules are those that must be taken; that is, the qualification cannot be made unless these modules have been successfully completed. Each of these modules makes a unique contribution to the learning objectives of the programme or subject major/minor.

Optional modules are modules that may be taken at the discretion of the student. It is not necessary to complete optional modules to achieve the award (assuming other awarding conditions are met). Optional modules make a non-unique contribution to the achievement of the learning objectives of the programme or subject major/minor.

- Information on how the University formal assessment regulations work, including details of how award classifications are determined, can be found in the University Regulations at www.mdx.ac.uk/regulations/.
- Modules are assessed in accordance with the School of Engineering and Information Sciences' assessment strategy. Most modules adhere to a standard pattern of final grades being made up of 70% from examination and 30% coursework. Different patterns are permitted if approved by the School Academic Planning Committee.
- Practical aspects of the programme are often assessed via coursework that may be carried out using specialist software and may include lab tests.
- Theoretical material is normally assessed by coursework only at levels 0 and 1 and normally by a combination of both coursework and examination at levels 2, 3 and 4.
- Grades are awarded on the standard University scale of 1–20, with Grade 1 being the highest. To pass a module all components, both coursework and examination, must be passed individually with a minimum grade of 16. Failure in one of the components will result in the failure of the module.

For additional information on assessment and how learning outcomes are assessed please refer to the individual module narratives for this programme.

15. Placement opportunities, requirements and support (if applicable)

- Industrial placement is an option available for students who wish to work in industry for a maximum period of 12 weeks. During this period students are expected to work on their project, part of which should be relevant to the company where the placement is arranged.
- Industrial placement is conditional on the successful completion of all taught modules. Therefore 120 credits at level four need to be successfully completed before embarking on an industrial placement.
- The campus Placement Office manages University-industry relations and assists students in obtaining industrial placements. Further information on placement opportunities can be obtained there. Students are visited by an academic from the programme team at least once.

Postgraduate placements are normally a student-initiated process for which the University will provide support.

16. Future careers (if applicable)

All programmes in the School of Science and Technology – their curricula and learning outcomes – have been designed with an emphasis on currency and the relevance to future employment.

- Campus Careers Offices can be found on each campus for advice, support and guidance
- The majority of graduates are employed in IT posts relevant to the subject.
- Over 20% of students pursue further postgraduate study or research.
- The School has an Industrial Advisory Group, which meets to advise and inform the School.

The employer links with the School are encouraged and take part in a number of ways: by inviting practitioners from industry as guest speakers in lectures; through links with companies where students are employed as part of their Industrial placement and alumni both in the UK and overseas.

17. Particular support for learning (if applicable)

The School's Teaching and Learning Strategy is compliant with that of the University; it aims to develop learner autonomy and to encourage resource-based learning.

In support of the student learning experience:

- All new students go through an induction programme and some have early diagnostic numeric and literacy testing before starting their programme. Learning Resources provide workshops for those students needing additional support in these areas.
- Students are allocated a personal email account, secure networked computer storage and dial-up facilities.
- New students are provided with a CD containing the schools Subject Handbook at enrolment (electronic copies for all students can also be found on Unihub. If you require a hard copy of this Subject Handbook please request them from the School of Science and Technology Academic Advice office at Hendon.
- Each term new and existing students are given module handbooks for each module they study. Soft copies of all module handbooks on a CD will also be provided to students at enrolment. Web-based learning materials are provided to further support learning
- Extensive library facilities are available on all campuses. WebCT pages are available as learning resources through the Oasis system.
- Campus Student Offices offer advice and support to students through their Student Advice Centres.
- A Dean of Students for general academic advice is available on each campus.
- High quality specialist laboratories equipped with industry-standard software and hardware are available for formal teaching and personal study.
- To provide assistance and guidance in support of particular learning needs, campus-based, drop-in sessions are arranged by the School as needed.
- School Academic Advisors for each subject are available to offer personal academic advice and help. Rotas for the operation of

Academic Advice Rooms at each campus can be found at the Unihelp.

- Tutorial sessions for each module, organised for groups of up to 20 students, are provided for additional teaching support.
- Formative feedback is given on completion of student coursework.
- Past exam papers with solutions and marking schemes for all modules are available for students in module handbooks and on the Unihub.
- Research activities of academic staff feed into the teaching programme, which can provide individual students with ad hoc opportunities to work with academics on some aspect of research.

Middlesex University encourages and supports students with disabilities. Some practical aspects of Engineering and Information Systems programmes may present challenges to students with particular disabilities. You are encouraged to visit our campuses at any time to evaluate facilities and talk in confidence about your needs. If we know your individual needs we'll be able to provide for them more easily. For further information contact Sobia Hussain at the Disability Support Service (email: s.hussain@mdx.ac.uk).

18. JACS code (or other relevant coding system)	G420
19. Relevant QAA subject benchmark group(s)	Computing

20. Reference points

The following reference points were used in designing and reviewing the programme:

- QAA Framework for Higher Education Qualification in England, Wales and Northern Ireland
- QAA Computing subject benchmarks
- QAA/QAAS guidelines for programme specification
- QAA Code of Practice for the assurance of academic quality and standards in HE
- University' Policy, Regulations and guidelines

- British Computer Society (BCS) Guidelines for Exemption and Accreditation
- Module Narratives
- Middlesex University and School of Science & Technology
- Teaching Learning and Assessment policies and strategies
- University policy on equal opportunities

21. Other information

Middlesex University has formal links with 250 institutions world-wide, including student exchange agreements with more than 100 institutions. Currently a number of students both from the UK/EU and overseas take part in such exchanges.

Please note programme specifications provide a concise summary of the main features of the programme and the learning outcomes that a typical student might reasonably be expected to achieve if s/he takes full advantage of the learning opportunities that are provided. More detailed information about the programme can be found in the programme handbook and the University Regulations.