

## Programme Specification



<b>1. Programme title</b>	MSc Network Management and Cloud Computing
<b>2. Awarding institution</b>	Middlesex University
<b>3. Teaching institution</b>	Middlesex University: London Middlesex University: Dubai
<b>4. Details of accreditation by professional/statutory/regulatory body</b>	
<b>5. Final qualification</b>	MSc Network Management and Cloud Computing, PGDip Network Management and Cloud Computing & PGCert Network Management and Cloud Computing
<b>6. Year of validation</b>	2019/20
<b>Year of amendment</b>	
<b>7. Language of study</b>	English
<b>8. Mode of study</b>	Full-Time & Part-Time

### **9. Criteria for admission to the programme**

A minimum of a second-class Honours degree (UK), or an equivalent overseas qualification – in computer science or in a science or engineering related subjects. Candidates with other degrees but with relevant work experience may also be considered and are encouraged to apply.

Whilst consideration of Recognition of Prior Learning (RPL) has been given, the programme team decided that it will not be accepted for candidates admitted onto this programme.

**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 with a minimum score of 6 in each band.

## 10. Aims of the programme

The programme aims to equip students with:

- An awareness of the fundamental importance of cloud computing and information management related to the business objectives of an organisation
- Ability to involve both the management and the user in the process of awareness, decision and implementation of a computer network
- Ability to prepare a project budget and implementation strategy appropriate for the management of a major IT project
- Ability to evaluate cloud computing architecture as well as organisational and economic aspects of developments as new opportunities for business process redesign and/or expansion
- Ability to make a functional and technical design of an information system based on project goals and company's standards and quality systems
- 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. computer networks and the Internet as an enabling technology including the theoretical underpinnings of computer networks and their topologies
3. cloud computing theory that underpins the analysis and design of such systems as well as the ability to analyse and identify the main threats to cloud computing systems security.
4. the technical aspects of cloud computing and the operation of computer networks, with an appreciation of the capabilities of

### Teaching/learning methods

Students gain knowledge and understanding through

- Traditional lecture delivery (outcomes A1-A8)
  - Group and individual research, presentations and written reports (outcomes A4-A5, A7-A8)
  - Laboratory sessions (outcome A2-A5, A7-A8)
  - The use of various network software ranging from operating systems to applications (outcomes A5-A7)
  - 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-A8)

<p>intranets and internetworks</p> <ol style="list-style-type: none"> <li>5. the theoretical underpinnings of operating systems and application environments</li> <li>6. the use and operation of network management software and cloud computing access policies.</li> <li>7. explaining and applying the basic processes involved in planning and implementing IT projects</li> <li>8. critically evaluating IT product/system performance and recommend improvements supported with evidence/arguments and draw up a system requirements specification</li> </ol>	<p><b>Assessment methods</b> Students' knowledge and understanding is assessed by:</p> <p>Group and individual coursework, presentations, group and individual reports, and the unseen examination and the project thesis assess students' knowledge and understanding.</p> <ul style="list-style-type: none"> <li>• Outcomes A1-A8 assessed by examination.</li> <li>• Outcomes A2, A5 – A7 are assessed by laboratory sessions and practical assignments</li> </ul> <p>Outcome A1-A8 is assessed by individual essay and final project thesis.</p>
<p><b>B. Skills</b> On completion of this programme the successful student will be able to:</p> <ol style="list-style-type: none"> <li>1. critically evaluate the need for information networks and cloud computing systems in an organisational context</li> <li>2. apply network modelling, analysis and simulation skills</li> <li>3. demonstrate an understanding of the commercial possibilities of the Internet, cloud computing and the Web and their social implications</li> <li>4. demonstrate an understanding to identify the service level requirements for information networks</li> <li>5. create a network model, use this model to describe the current network situation, identify system risks and security issues</li> <li>6. provide a critical analysis of various</li> </ol>	<p><b>Teaching/learning methods</b> Students learn cognitive skills through</p> <ul style="list-style-type: none"> <li>• Traditional lecture delivery (outcomes B1-B10)</li> <li>• Group research (outcomes B1, B4, B8)</li> <li>• Presentations and written reports (outcomes B1, B2, B4)</li> <li>• Small group and individual exercises (outcomes B1-B4)</li> <li>• Laboratory sessions (outcome B4)</li> <li>• The use of various network software ranging from operating systems to applications (outcomes B3-B4 and B10)</li> <li>• Individual and group design work (outcomes B1-B4)</li> <li>• The project thesis (outcomes B1–B10 depending on project title)</li> </ul> <p>Analysis, design and problem solving skills are further developed through various design activities as well as case</p>

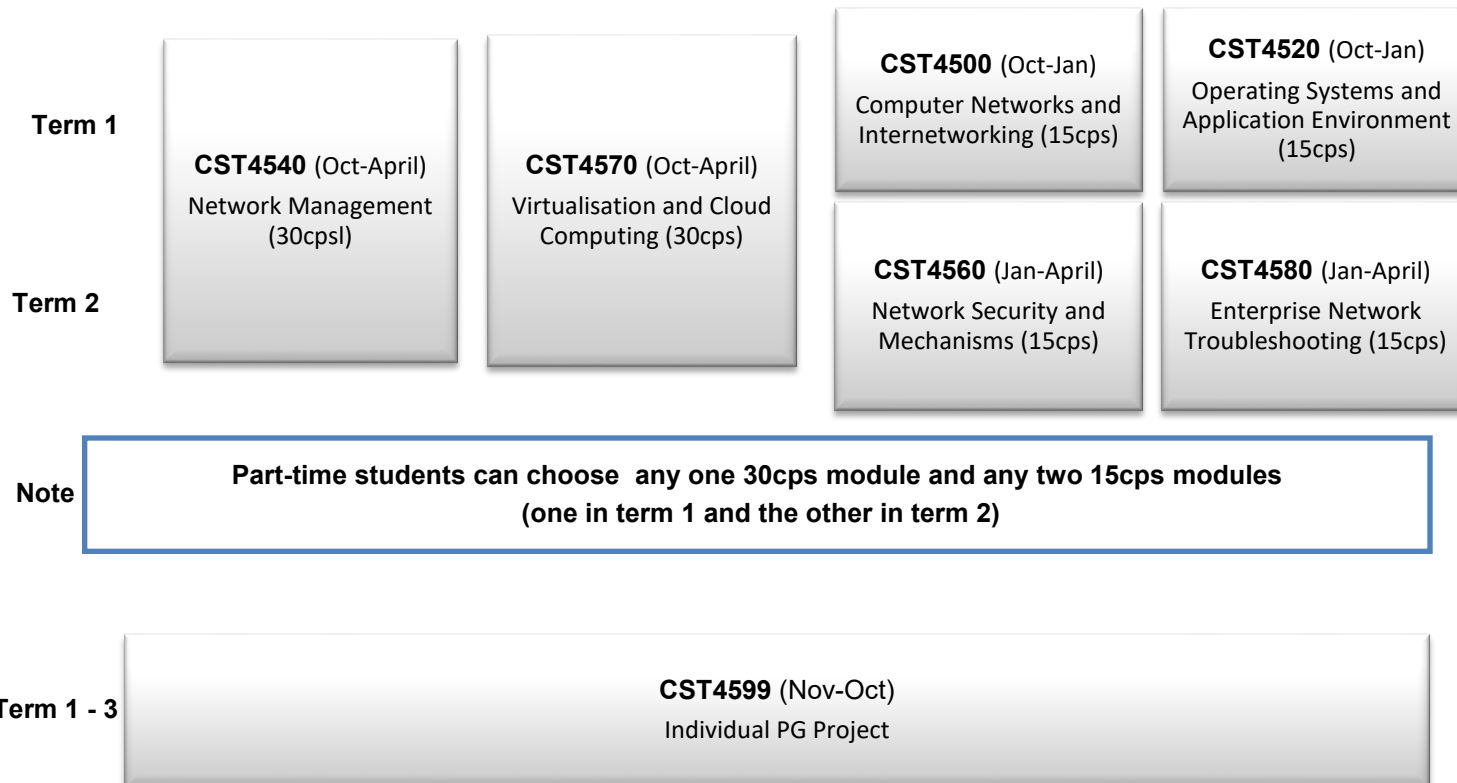
<p>NOSs and access mechanisms in cloud computing and show an appropriate technical understanding of security and implementation issues</p> <p>7. analyse and identify the main threats to network security and cloud computing systems</p> <p>8. evaluate and implement computer networks for companies and organisations</p> <p>9. configure and operate network management software (SNMP)</p> <p>10. install and administer NOSs such as Linux, MS Windows and Android</p>	<p>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)</p> <p><b>Assessment Method</b></p> <p><b>Assessment methods</b> Students' cognitive skills are assessed by:</p> <ul style="list-style-type: none"> <li>• Group and individual coursework (outcomes B1-B4)</li> <li>• Presentations (outcome B1)</li> <li>• Laboratory logbooks (outcome B4)</li> <li>• Reports (outcomes B1, B2, B4 and B10)</li> <li>• The unseen examination (outcomes B1-B10)</li> <li>• The project thesis (outcomes B1-B10 depending on project title)</li> </ul>
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## 12. Programme structure (levels, modules, credit P:onits (CPS) and progression requirements)

### 12. 1 Overall structure of the programme

#### Your Modules

Full-Time/ Part-Time



### 12.2 Levels and modules

Starting in academic year 2010/11 the University is changing the way it references modules to state the level of study in which these are delivered. This is to comply with the national Framework for Higher Education Qualifications. This implementation will be a gradual process whilst records are updated. Therefore the old coding is bracketed below.

Level 7 (4)

COMPULSORY	OPTIONAL	PROGRESSION REQUIREMENTS
Students must take all of the following: Students must take all of the following:  <b>CST4500:</b> Computer Networks and Internetworking  <b>CST4520:</b> Operating Systems and Application Environment  <b>CST4540:</b> Network Management  <b>CST4570:</b> Virtualisation and Cloud Computing  <b>CST4560:</b> Network Security and Mechanisms  <b>CST4580:</b> Enterprise Network Troubleshooting  <b>CST4599:</b> Individual PG Project	NONE	<b>Students must <u>pass all the taught modules and submit a formal proposal</u> before they can progress onto the project.</b>  <b>To pass a module, students must pass all components of assessment (i.e. examinations, coursework)</b>

### 12.3 Non-compensatable modules (note statement in 12.2 regarding FHEQ levels)

Module level	Module code
7	CST4540: Network Management
7	CST4599: Individual PG Project

### 13. Curriculum map

See attached.

#### **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.

- 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/](http://www.mdx.ac.uk/regulations/).
- Modules are assessed in accordance with the Faculty of Science and Technology assessment strategy. Most modules adhere to a standard pattern of final grades being made up of examinations and/or coursework.
- 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 a combination of both coursework and examination at level 7.
- Grades are awarded on the standard University scale of 1–20, with Grade 1 (80–100%) being the highest. To pass a module all components, both coursework and examination, must be passed individually with a minimum grade of 16 (40%). 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**

- Industrial placement is an option available for students who wish to work in industry for a maximum period of 12 weeks during the summer. 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 7 need to be successfully completed before embarking on an industrial placement.
- The campus Placement Office manages University-industry relations and will assist 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.

Note: In this programme placements are normally a student initiated process for which the University will provide support.

#### **16. Future careers (if applicable)**

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

- Campus Career Offices can be found on 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 Faculty has an Industrial Advisory Group which meets to advise and inform the department and the faculty.

The employer links with the faculty 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)**

In support of the student learning experience:

please check this link: <http://unihub.mdx.ac.uk/study>

- The School's teaching and Learning Strategy is compliant with those of the University, in seeking to develop learner autonomy and resource-based learning. In support of the students learning experience:
- All new students go through an induction programme and some have early diagnostic numeric and literacy testing before starting their programme. The Learner Development Unit (LDU) provides one-to-one tutorials and 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
- A programme handbook is made available to students at enrolment (electronic copies for all students are available via virtual learning environment).
- New and existing students are given module handbooks for each module they study. Soft copies of all module handbooks can be found on Unihub. Web-based learning materials are provided to further support learning.
- Extensive library facilities are available at the base campus.
- Students can access advice and support on a wide range of issues from the Student Services Counter and the Student Information Desk. Student Advisers aligned to subject areas offer confidential one to one advice and guidance on programme planning (if applicable) and regulations.
- High quality specialist laboratories equipped with industry standard software and hardware where appropriate, for formal teaching as well as self-study.
- 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 for all modules (which are assessed by examination) are available



for students via Unihub.

- Research activities of academic staff feed into the teaching programme, which can, on some occasions, provide an opportunity for students to work with academics on some aspect of research.

Middlesex University encourages and supports students with disabilities. Some practical aspects of School of Science & Technology 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 the Disability Support Service (email: [disability@mdx.ac.uk](mailto:disability@mdx.ac.uk)).

<b>18. JACS code (or other relevant coding system)</b>	0111111
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<b>19. Relevant QAA subject benchmark group(s)</b>	Computing
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#### **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
- Middlesex University and School of Science & Technology
- Teaching Learning and Assessment policies and strategies
- University policy on equal opportunities.

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 rest of your programme handbook and the university regulations.

## Curriculum map for [MSc Network Management and Cloud Computing Programme]

This section shows the highest level at which programme outcomes are to be achieved by all graduates, and maps programme learning outcomes against the modules in which they are assessed.

### Programme learning outcomes

Knowledge and understanding	
A1	Current network systems with an emphasis on those systems that integrate existing technologies and their applications in novel ways for increased organisational efficiency
A2	Computer networks and the Internet as an enabling technology including the theoretical underpinnings of computer networks and their topologies
A3	Cloud computing theory that underpins the analysis and design of such systems as well as the ability to analyse and identify the main threats to cloud computing systems security.
A4	The technical aspects of cloud computing and the operation of computer networks, with an appreciation of the capabilities of intranets and internetworks
A5	The theoretical underpinnings of operating systems and application environments.
A6	The use and operation of network management software and cloud computing access policies.
A7	Explaining and applying the basic processes involved in planning and implementing IT projects.
A8	Critically evaluate IT product/system performance and recommend improvements supported with evidence/arguments and draw up a system requirements specification
Skills	
B1	Critically evaluate the need for information networks and cloud computing systems in an organisational context.
B2	Apply network modelling, analysis and simulation skills

B3	Demonstrate an understanding of the commercial possibilities of the Internet, cloud computing and the Web and their social implications
B4	Demonstrate an understanding to identify the service level requirements for information networks
B5	Create a network model, use this model to describe the current network situation, identify system risks and security issues
B6	Provide a critical analysis of various NOSs and access mechanisms in cloud computing and show an appropriate technical understanding of security and implementation issues
B7	Analyse and identify the main threats to network security and cloud computing systems
B8	Evaluate and implement computer networks for companies and organisations
B9	Configure and operate network management software (SNMP)
B10	Install and administer NOSs such as Linux, MS Windows and Android

Programme outcomes																	
A1	A2	A3	A4	A5	A6	A7	A8	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10
Highest level achieved by all graduates																	
7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7

Module Title	Module Code by Level	A1	A2	A3	A4	A5	A6	A7	A8	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10
		Computer Networks and Internetworking	CST4500	✓	✓	✓					✓	✓	✓				✓	✓	✓
Operating Systems and Application Environment	CST4520	✓	✓	✓		✓	✓	✓		✓	✓	✓		✓		✓	✓	✓	
Network Management	CST4540	✓	✓	✓			✓			✓	✓	✓	✓	✓		✓			✓
Network Security and Mechanisms	CST4560	✓		✓	✓		✓	✓			✓				✓	✓	✓	✓	
Virtualisation and Cloud Computing	CST4570		✓			✓		✓	✓			✓			✓		✓	✓	✓
Enterprise Network Troubleshooting	CST4580				✓	✓				✓	✓	✓	✓		✓		✓		
Individual PG Project	CST4990	✓	✓			✓		✓	✓		✓		✓	✓	✓	✓	✓	✓	✓