***MSc/PG Dip/PG Cert Management Science and Operational Research***

Programme Specification



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| **1. Programme title** | Management Science and Operational Research |
| **2. Awarding institution**  | Middlesex University |
| **3. Teaching institution**  | Middlesex University |
| **4. Programme accredited by**  |  |
| **5. Final qualification**  | Master of Science Postgraduate DiplomaPostgraduate Certificate |
| **6. Academic year** | 2011/2012 |
| **7. Language of study** | English |
| **8. Mode of study** | Full Time/Part Time |
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| **9. Criteria for admission to the programme** |
| 1. UK undergraduate degree or equivalent with a minimum of lower second in a subject area with a high quantitative content including but not limited to Mathematical Sciences, Physical Sciences, Computer Sciences, Engineering, Economics, Finance; or a suitable professional qualification with evidence of quantitative ability
2. Good command of the English language, as evidenced by a score of at least 6.5 on the IELTS test or recognised equivalent.

Candidates not meeting these requirements may, in exceptional cases, be considered for admission where there is strong evidence of supporting education or experience. All such cases will be at the discretion of the programme admissions team. |
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| **10. Aims of the programme** |
| The following programme aims have been developed with reference to QAA Subject Benchmarks for Mathematics, statistics and operational research, and Business and management. The programme aims to:* provide students with thorough grounding in fundamental concepts, techniques and tools of management science, operational research and operations management;
* develop advanced skills in quantitative and statistical analysis and critical evaluation;
* develop students’ knowledge and understanding of the practical applications of analytical methods;
* develop students’ decision-making and problem solving abilities in an organisational and operational context.
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| **11. Programme outcomes** |
| **A. Knowledge and understanding**On completion of this programme the successful student will have knowledge and understanding of :1. key concepts, techniques and tools in management science, operational research and operations management
2. current theory and practice of key analytical methods in managerial decision-making and problem solving
3. the capabilities and limitations of statistical, operational research and simulation techniques
4. the role of management science and operational research in business and industry
5. methods, techniques and theoretical perspectives deployed in management science research and scholarship
 | **Teaching/learning methods**Students develop knowledge and understanding towards the specified outcomes through a combination of lectures, directed reading, independent study, case studies, group work, coursework, electronic and online learning methods, facilitated discussion, guest speakers and individual and group research.**Assessment methods**Students’ knowledge and understanding is assessed by a combination of individual and group coursework, presentations, examinations and individual project work. |
| **B. Cognitive (thinking) skills**On completion of this programme the successful student will be able to:1. critically evaluate management science, operational research and operations management concepts, theories, models and techniques
2. select and apply appropriate operational research models and tools for real world problems and critically evaluate their impact for business and industry
3. synthesise information from multiple sources, evaluate options and reach justifiable conclusions in relation to managerial problem solving and decision-making
4. analyse and develop analytical techniques and tools for organisational and operational problem solving
 | **Teaching/learning methods**Students develop their cognitive skills through a combination of lecturers, directed reading, independent study, case studies, group work, coursework, electronic and online learning methods, facilitated discussion, guest speakers and individual and group research. Analyses and critical thinking are strengthened through seminar participation and independent study. Formative and post-assessment feedback is provided on all assessed coursework.**Assessment**Students’ cognitive skills are assessed by a combination of individual and group coursework, presentations, examinations and dissertation. |
| **C. Practical skills**On completion of the programme the successful student will be able to:1. formulate, analyse and solve practical organisational and operational problems using appropriate analytical, numerical and computational techniques
2. effectively organise, present and interpret quantitative information and results of statistical analyses
3. make effective managerial decision to improve organisational performance
4. deploy a range of communication and interpersonal skills
5. undertake substantial research in the context of management science and operational research
 | **Teaching/learning methods**Students learn practical skills through participation in workshops, seminars, guided discussions, individual and group coursework, independent study and research methods training.**Assessment**Students’ practical skills are assessed by individual and group coursework, presentations, lab coursework, examination and dissertation. |
| **D. Graduate skills**On completion of the programme the successful student will be able to:1. deploy a range of analytical, numerical and computational tools
2. evaluate complex material and use it both orally and in writing in the pursuit of both analysis and argument
3. exercise critical judgment in the development of hypothesis or in analysing flaws in reasoning
4. appreciate how to apply management science concepts to work settings.

demonstrate self-direction and originality in tackling problems and communicate solutions and conclusions to a critical audience. | **Teaching/learning methods**Students are taught these skills when discussing issues in class and workshops and when preparing oral or written materials. Students are required to manage their own time in order to prepare for class and submit coursework by specified deadlines.**Assessment:** Students are assessed formatively through feedback on oral communication in class and workshop discussions and summative through the coursework assignments, the research proposal and dissertation. |
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| **12. Programme structure (levels, modules, credits and progression requirements)** |
| **12. 1 Overall structure of the programme** |
| **MSc Management Science and Operational Research****Compulsory Modules**MGT4002 - Operations Management (30 credits)STX4008 - Operational Research Methods (30 credits)MGT4004 - Decision Modelling and Simulation (30 credits)MGT4006 - Management Science Dissertation (60 credits)**Optional modules****Choose one from the following:**MGT4127 – Managing Projects (30 credits)STX4010 - Advanced Operational Research (30 credits)PRS4604 - Risk Management Techniques (30 credits)**PG Diploma Management Science and Operational Research****Compulsory Modules**MGT4002 - Operations Management (30 credits)STX4008 - Operational Research Methods (30 credits)MGT4004 - Decision Modelling and Simulation (30 credits)**Optional modules****Choose one from the following:**MGT4127 – Managing Projects (30 credits)STX4010 - Advanced Operational Research (30 credits)PRS4604 - Risk Management Techniques (30 credits)**PG Certificate Management Science and Operational Research****Compulsory Modules**MGT4002 - Operations Management (30 credits)STX4008 - Operational Research Methods (30 credits) |
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| **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 |
| COMPULSORY | OPTIONAL  | PROGRESSION REQUIREMENTS |
| Students must take all of the following:MGT4002STX4008MGT4004MGT4006 | Students must also choose at least one from the following:MGT4127STX4010PRS4604 | Students are normally required to complete taught modules before progressing onto the dissertation. |

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| ***12.3 Non-compensatable modules (note statement in 12.2 regarding FHEQ levels)*** |
| ***Module level*** | ***Module code*** |
| **7** | MGT4006 |
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| **13. A curriculum map relating learning outcomes to modules**  |
| See Curriculum Map attached. |
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| **14. Information about assessment regulations** |
| Assessment regulations will follow the University’s general regulations for postgraduate programmes. |
| **15. Placement opportunities, requirements and support (if applicable)** |
| N/A |
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| **16. Future careers (if applicable)** |
| The programme develops students’ knowledge, skills and capabilities to an advanced level in management science and operational research preparing them for managerial positions in a variety of public and private sector organisations. As a result of the enhancement of students’ independent problem-solving and decision-making abilities during the programme, graduates are also better equipped for entrepreneurial activity.For students who have taken a career break in order to pursue this programme of study, will enhance opportunities for career progression. |
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| **17. Particular support for learning (if applicable)** |
| * Induction programme
* Full Programme and Module Handbooks (also available on-line)
* Module information and learning/support material on OasisPlus virtual learning environment
* Library and learning centre resources with extensive on-line facilities
* Postgraduate room in Sheppard Library
* In-module and on-programme guest lecturers
* English Language and Learning Support in Sheppard Library

Designated ‘office hours’ for drop-by guidance and other one-to-one meetings at appropriate points with teaching staff |
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| **18. JACS code (or other relevant coding system)** | N200, N210, G200 |
| **19. Relevant QAA subject benchmark group(s)** | Mathematics, Statistics and Operational Research; and Business and Management |
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| **20. Reference points** |
| The following reference points were used in designing the programme:* Relevant QAA subject benchmarks
* University Learning and Teaching policies and strategies
* Middlesex University Learning Framework

University Regulations |

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 student programme handbook and the University Regulations.

**Curriculum map**

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.

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| Module Title  | Module Codeby Level | Programme outcomes |
| A1 | A2 | A3 | A4 | A5 | A6 | A7 | B1 | B2 | B3 | B4 | B5 | B6 | C1 | C2 | C3 | C4 | C5 | C6 | D1 | D2 | D3 | D4 | D5 | D6 | D7 |
| Operations Management | MGT 4002 | x | x | x | x |  |  |  | x | x |  |  |  |  | x |  | x | x |  |  | x | x |  |  | x |  |  |
| Operational Research Methods | STX 4008 | x | x | x | x |  |  |  | x | x | x |  |  |  | x | x |  | x |  |  | x |  |  | x |  |  |  |
| Decision Modelling and Simulation | MGT 4004 | x | x | x |  |  |  |  | x | x | x |  |  |  | x | x | x | x |  |  | x | x | x | x | x |  |  |
| Managing Projects | MGT4127 |  | x | x |  | x |  |  | x |  | x | x |  |  |  | x | x | x |  |  |  | x | x |  | x |  |  |
| Advanced Operational Research | STX4010 | x | x | x | x | x |  |  | x | x | x | x |  |  | x | x | x | x |  |  | x | x | x | x | x |  |  |
| Risk Management Techniques | PRS4604 |  | x |  |  | x |  |  |  |  | x | x |  |  | x |  |  | x |  |  | x | x |  |  | x |  |  |
| Management Science Dissertation | MGT 4006 | x | x | x | x | x |  |  | x | x | x | x |  |  | x | x | x | x | x |  | x | x | x | x | x |  |  |

**Programme learning outcomes**

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| **Knowledge and understanding** | **Practical skills** |
| A1 | key concepts, techniques and tools in management science, operational research and operations management | C1 | formulate, analyse and solve practical organisational and operational problems using appropriate analytical, numerical and computational techniques |
| A2 | current theory and practice of key analytical methods in managerial decision-making and problem solving | C2 | effectively organise, present and interpret quantitative information and results of statistical analyses |
| A3 | the capabilities and limitations of statistical, operational research and simulation techniques | C3 | make effective managerial decision to improve organisational performance |
| A4 | the role of management science and operational research in business and industry | C4 | deploy a range of communication and interpersonal skill |
| A5 | methods, techniques and theoretical perspectives deployed in management research and scholarship | C5 | undertake substantial research in the context of management science and operational research |
| **Cognitive skills** | **Graduate Skills** |
| B1 | critically evaluate management science, operational research and operations management concepts, theories, models and techniques | D1 | deploy a range of analytical, numerical and computational tools |
| B2 | select and apply appropriate operational research models and tools for real world problems and critically evaluate their impact for business and industry | D2 | evaluate complex material and use it both orally and in writing in the pursuit of both analysis and argument |
| B3 | synthesise information from multiple sources, evaluate options and reach justifiable conclusions in relation to managerial problem solving and decision-making | D3 | exercise critical judgment in the development of hypothesis or in analysing flaws in reasoning |
| B4 | analyse and develop analytical techniques and tools for organisational and operational problem solving | D4 | appreciate how to apply management science concepts to work settings. |
| B5 |  | D5 | demonstrate self-direction and originality in tackling problems and communicate solutions and conclusions to a critical audience. |