

# Programme Specification



## *MSc Data Science*

<b>1. Programme title</b>	MSc Data Science
<b>2. Awarding institution</b>	Middlesex University
<b>3. Teaching institution</b>	Middlesex University
<b>4. Details of accreditation by professional/statutory/regulatory body</b>	
<b>5. Final qualification</b>	MSc Data Science
<b>6. Year of validation</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

- We normally require a 2:2 honours degree or above in computer science or IT
- Candidates with other degrees are welcome to apply provided they can demonstrate appropriate levels of experience within the computing sector
- Candidates without formal qualifications need to demonstrate relevant work experience within the computing sector and the ability to study at postgraduate level.

UK/EU and international students are eligible to apply for this course.

If you have relevant qualifications or work experience, academic credit may be awarded towards your Middlesex University programme of study. For further information please visit our [Accreditation of Prior Learning page](#)

## 10. Aims of the programme

Data-Science and Data-Analytics are increasingly identified as key industrial activities; this is reflected, in human resourcing terms, within recently-minted job specifications such as “Data Scientist”, “Big Data Analyst” etc. University postgraduate course offerings have begun to reflect this industrial demand with a sudden expansion (especially within the last year) in courses catering to the Data Scientist job specification.

The Data-Science/Data-Analytics distinction is deployed rather loosely in the corporate sector as a whole, but Data Science, where specified, tends to lean more on machine-learning, regression and pattern recognition than Data Analytics per se; big data (ie algorithmic scaling) and visualisation are also explicit foci of Data Science. Data Analytics tends to be more ungrounded, by contrast; there is more of an emphasis on exploratory statistics than on modelling – data inspection, cleaning and transformation are particularly emphasised. Both are equally concerned with data mining and supporting decision making. Middlesex’s MSc offering in Data Science therefore also covers Data Analytics.

The curriculum for the MSc in Data Science is designed to offer those postgraduates with a familiarity in maths, science or computing an opportunity to develop a key set of skills for future employment in a way that builds on their existing knowledge and skill base. We thus anticipate that, on completing the course, postgraduates will be in a position to fulfill the requirements of the position of *Data Scientist*, which is rapidly becoming a required post for any company in the corporate sector that wishes to take full advantage of the data that they collect. The Middlesex Data Science M.Sc. focuses on the intertwining areas of *machine learning*, *visual analytics* and *data governance*, with the aim being to strike a balance between theoretical underpinnings, practical hands-on experience, and acquisition of industrially-relevant languages and packages. Students will also be exposed to cutting-edge contemporary research activity within data science that will equip research-oriented students with the potential to pursue a research-based career, and, in particular, further PhD study.

## 11. Programme outcomes

### A. Knowledge and understanding

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

1. Appraise the ideas and concepts underlying a selected set of advanced topics in data science
2. Apply appropriate data science techniques to a given problem
3. Analyse, reason about and implement complex data science systems.

### Teaching/learning methods

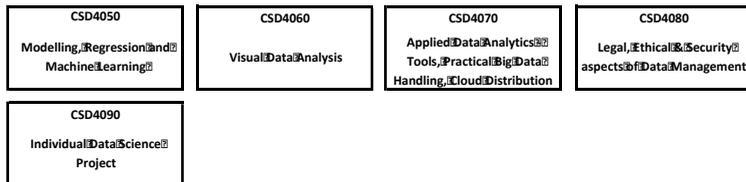
Students gain knowledge and understanding through a combination of traditional lecture delivery, small group discussions, small group and individual exercises, lab sessions and the individual project. Throughout their studies students are encouraged to undertake independent study both to supplement and consolidate what is being learned, and to broaden their individual knowledge and understanding of the subject. Critical evaluation and selection of techniques and solutions engage

<p>4. Appraise the professional, legal and ethical framework within which a data science professional must operate</p>	<p>the students in relating theory to practice.</p> <p><b>Assessment methods</b></p> <p>Students' computing-related cognitive abilities (A1 through A4) are assessed by a combination of coursework, in- class tests and an individual dissertation. Coursework may comprise group and individual assignments, presentations and viva-voce examination.</p>
<p><b>B. Cognitive (thinking) skills</b></p> <p>On completion of this programme the successful student will be able to:</p> <ol style="list-style-type: none"> <li>1. Plan and apply appropriate techniques for the solution of problems in data science</li> <li>2. Utilise a range of modelling and abstraction techniques for the specification and design of data science systems</li> <li>3. Critically evaluate a range of data science methodologies</li> <li>4. Plan and execute a challenging and substantial data science project by application of</li> </ol>	<p><b>Teaching/learning methods</b></p> <p>Students learn cognitive skills through the teaching and learning strategy indicated in Section A. These abilities are nurtured in particular by self-directed learning, small group teaching and discussions, small group and individual exercises, laboratory sessions and the group project. Seminar sessions provide an opportunity to address questions, queries and problems.</p> <p><b>Assessment methods</b></p> <p>Students' cognitive skills (B1 through B4) are assessed by coursework and an individual dissertation. Coursework may comprise group and individual assignments, tests, presentations and viva-voce examination.</p>

<p>appropriate research methods</p>	
<p><b>C. Practical skills</b></p> <p>On completion of the programme the successful student will be able to:</p> <ol style="list-style-type: none"> <li>1. Learn effectively and independently to acquire new knowledge and skills for the purpose of continuing professional development</li> <li>2. Analyse complex problems systematically and implement effective solutions</li> <li>3. Communicate effectively in writing, verbally and by presentation</li> <li>4. Effectively manage time and other resources</li> <li>5. Reflect critically on her, or his, own work and that of colleagues</li> <li>6. Display effective team working skills to make a positive contribution, as a member or leader, to the work of a group</li> </ol>	<p><b>Teaching/learning methods</b></p> <p>Students learn practical skills through the teaching and learning strategy outlined above. Although not all the skills are explicitly taught, they are nurtured and developed throughout the programme, which is structured and delivered in such a way as to promote this process.</p> <p><b>Assessment methods</b></p> <p>Students' practical skills (C1 through C6) are assessed by coursework and an individual dissertation. Coursework may comprise group and individual assignments, tests, presentations and viva-voce examination.</p>

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

### 12.1 Overall structure of the programme



The programme is available in full-time and part-time mode in the UK and Malta. The programme comprises four 30 credit taught modules and a 60 credit postgraduate project module. All modules are compulsory. The programme commences in the autumn term (October). Full-time students study the four 30-credit modules in parallel over a period of 24 weeks. They then undertake the project module (60 credits) over the spring and summer terms to complete the programme in approximately one calendar year. Part-time students typically study two 30-credit modules in their first academic year of study followed by two further 30-credit modules. It is acceptable within the regulations of the learning framework for part-time students to study 30 credits (i.e., one module) in a given academic year provided the overall programme is completed within the specified timescale for part-time registration.

Details of each module can be found in the Programme Handbook.

**Students must successfully complete all the modules of the taught part of the programme before they can register for the Project Module.**

## 12.2 Levels and modules

Level 7

COMPULSORY

OPTIONAL

PROGRESSION  
REQUIREMENTS

Students must take all of the following:

**CSD4050** - Modelling, Regression and Machine Learning

**CSD4060** - Visual Data Analysis

**CSD4070** – Applied Data Analytics - Tools, Practical Big Data Handling, Cloud Distribution

**CSD4080** - Legal, Ethical & Security aspects of Data Management

**CSD4090** - Individual Data Science Project

Students must successfully complete CSD4050, CSD4060, CSD4070 and CSD4080 before progressing to the individual project (CSD4090).

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

**Module level**

**Module code**

Level 7	CSD4090
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<b>13. Curriculum map</b>
See attached.

<b>14. Information about assessment regulations</b>

<b>15. Placement opportunities, requirements and support (if applicable)</b>
N/A

<b>16. Future careers (if applicable)</b>
Successful students will be equipped with the potential to pursue research-based careers in data science, including the possibility of progressing to PhD programmes such as that offered by Middlesex
The job specification “Data Scientist” is now in common currency and reflective of industrial demand; the course is designed to cater to the Data Scientist job specification.

<b>17. Particular support for learning (if applicable)</b>
N/A

<b>18. JACS code (or other relevant coding system)</b>	1100, 1460 and 1210
<b>19. Relevant QAA subject benchmark group(s)</b>	

<b>20. Reference points</b>
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<b>21. Other information</b>
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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.



