UNIVERSITY OF LEICESTER

Programme Specification (Postgraduate)
For students entering in 2018/19
Amended March 2018

1. Programme Title(s):
MSc Data Analysis for Business Intelligence with Industry

2. Awarding body or institution:
University of Leicester

3. a) Mode of study
Full time

b) Type of study
Campus-based

The Industrial placement is off campus, on the site of the company concerned.

4. Registration periods:

The normal period of registration is 24 months.

The maximum period of registration is 36 months.

5. Typical entry requirements:
2:2 UG degree in Mathematics or other numerate subject such as Physics from a British university or equivalent international level as defined under regulations. Applicants from a computer science background would be considered on a case by case basis through the assessment of the student transcript. Applicants with non-standard first degrees and/or significant work experience will again be assessed on a case by case basis, taking the nature and currency of their work experience into account. This will be done through personal interviews of such applicants, taken by the programme director.

Standard College English language requirements, in line with Senate Regulation 1.

6. Accreditation of Prior Learning:
None.

7. Programme aims:
The programme aims to provide a route for students in their transition from undergraduate study to employment in data-led sectors. It provides the opportunity to gain practical experience in databases (and achieve two professionally accredited certificates) and a rigorous understanding of applied statistics, data mining, operational research and related areas.

In particular it aims to

- foster confidence, convey knowledge and develop expertise in data analysis and handling;
- provide an advanced education in the fundamental mathematical concepts and techniques relevant to data analysis;
- develop the ability to produce rigorous justifications of assertions by logical arguments;
- enhance the ability to model the world using mathematical models, and to be able to produce innovative, cost-effective, and robust solutions to real-world problems;
- enhance the ability to infer valid conclusions from raw data;
- stimulate intellectual development and hone powers of critical analysis, problem solving, written communication skills and improve presentational skills;
- develop the ability to communicate solutions to problems using language appropriate to any

target audience;
- develop project-management skills
- enhance practical computing skills in software relevant to industry;
- raise students' expertise and understanding to a point where they could embark upon doctoral interdisciplinary study or enter data-led industrial sectors;
- raise students' ability to complete independent project work and foster the skill of developing innovative tools

8. Reference points used to inform the programme specification:

- QAA Framework for Higher Education Qualifications in England, Wales and Northern Ireland
- QAA Master's Degree Characteristics
- QAA Benchmarking Statement Mathematics, Statistics and Operational Research (MMath)
- QAA Annex to subject benchmark statement: Mathematics, statistics and operational research (2009)
- University Learning Strategy
- University Employability Strategy
- Graduate Survey (2014)
- First Destination Survey
- External Examiner's Reports
- Informal concept document used to aid discussion with partner departments

9. Programme Outcomes:

Intended Learning Outcomes	Teaching and Learning Methods	How Demonstrated?
(a) Subject and Professional skills		
Knowledge		
Advanced knowledge of fundamental theories and techniques. Knowledge and understanding of key techniques and algorithms in data analysis. Ability to modify and innovate. Familiarization with common industrial applications of data modeling and commonly used techniques. Knowledge of relevant computing languages and relevant software.	Lectures. Specified reading. Problem classes. Lectures. Practical sessions. Project	Written examinations, assessed coursework, project.
Concepts		
Rigorous understanding of relevant methods. Practical understanding of implementations.	Lectures. Specified reading. Problem classes. Lectures. Specified reading. Problem classes. Project	Written examinations, assessed coursework, project.

Intended Learning Outcomes	Teaching and Learning Methods	How Demonstrated?
Techniques		
Ability to code algorithms in a range of commonly used languages. Ability to develop and apply strategies to solve problems. Ability to use commonly used commercial software.	Practical sessions. Project	Assessed coursework, project.
Critical analysis		
Analysis of problem and development of appropriate solution strategy. Analyze and solve `messily defined' industrial problems.	Lectures. Problem classes. Feedback on assessed problems. Project	Written examinations, assessed coursework, project.
Presentation		
Presentation of concepts, algorithms and solutions.	Practical sessions. Tutorials. Project	Assessed coursework, project.
Appraisal of evidence		
Critical appraisal of algorithms and solutions.	Course work. Project .	Written examinations, assessed coursework, project.
(b) Transferable skills		
Research skills		
Conduct background research and literature surveys. Summarize content from information sources.	Course work. Project	Assessed coursework. Project.
Communication skills		
Response to questioning. Scientific communication (written and oral). Project presentation (written and oral.)	Practical sessions. Tutorials. Project	Assessed coursework. Project.
Data presentation		
Project presentation (written and oral.)	Practical sessions. Tutorials. Project	Assessed coursework, project.
Information technology		
Various computer languages (FORTRAN, C, C++) and specialist software (FLUENT). Office software.	Throughout. Coursework. Project	Assessed coursework, project.
Problem solving		
Analysis, breakdown, synthesis, critical examination. Computational modeling skills.	Practical sessions. Tutorials. Project. Coursework. Project .	Written examinations, assessed coursework, project. Assessed coursework, project.

Intended Learning Outcomes	Teaching and Learning Methods	How Demonstrated?
Working relationships		
Scientific discussion.	Practical sessions. Tutorials. Project .	Project.
Managing learning		
Study skills.	Throughout.	Written examinations, assessed coursework, project.
Independence and time management.	Structured support decreasing through year. Project	Meeting deadlines.
Information retrieval.	Coursework. Project	Assessed coursework, project.
Ability to identify key issues affecting the effectiveness of a company by using the internal and external sources of business information.	Writing summaries about the factors that determine the effectiveness of a company in comparison with other companies. Discussion with a mentor	Written summary (at least 200 words).
Career management		
Scientific discussion.	Practical sessions. Tutorials. Project	Project.
Organisation. Time management.	Structured support decreasing through year. Project	Meeting deadlines.
Careers and business awareness.	Careers workshops. Industry-led project. Guest speakers.	Destination data. Student feedback.
Knowledge of how their work fits into a company and into the industry sector, appreciation of the knowledge and skills required by an engineer in a commercial industrial setting	Talk from Student Support in induction, and reminder in tutorial, Industry-based experience, individual advice from project supervisor	Industry report

10. Special features:

- Interdisciplinary programme using expertise from across the College.
- Industry-linked dissertations.

Placements

Students registered on the 'with Industry' variant of their degree programme undertake an industrial placement after completing the taught modules of their programme and before undertaking the final project/dissertation. The placement must be 12 months in duration.

As a condition of the 'with Industry' programme, students are required to undertake preparatory training during the first year of the degree.

Students are responsible for securing their own placement but will receive support in this from the Career Development Service.

Progression criteria for placements

Students on the "with Industry" programme are subject to the following four progression rules (in addition to any rules applicable to their core programme):

1. If a student does not achieve an overall merit level or fail (<50) more than 15 credits at the end of their first taught semester or fail (<40) 15 or more credits at the end of their first semester they will revert to the degree without industry.

2. If a student fails more than 60 credits at the end of their second semester they will not be able to proceed with the programme, in accordance with Senate Regulation 6.28, and will have to cancel any arrangements made for placements.

3. If a student fails to secure a placement they will revert to the non-industry variant of their degree programme and will continue on to their final project/dissertation.

4. Failure to satisfactorily perform (attendance, participation and completion of set tasks) in the employability modules will lead to the student being transferred to the degree without industry.

In the course of their placement the student will receive one or two support visits from a member of staff. The second 'visit' can be in the form of a Skype call. Typically where an overseas placement is secured both visits will be conducted via a Skype call.

Assessment of the Year in Industry

Students will be required to undertake reflective activities whilst on placement which are marked on a pass/fail basis.

11. Indications of programme quality:

Letters of support from industry.

External examiners' reports.

12. Scheme of Assessment

As defined in Senate Regulation 6: Regulations governing Taught Postgraduate Programmes of Study (see Senate Regulations)

13. Progression points

As defined in Senate Regulation 6: Regulations governing Taught Postgraduate Programmes of Study (see Senate Regulations). Please also see Progression criteria for placements above.

In cases where a student has failed to meet a requirement to progress he or she will be required to withdraw from the course and a recommendation will be made to the Board of Examiners for an intermediate award where appropriate.

14. Rules relating to re-sits or re-submissions:

As defined in Senate Regulation 6: Regulations governing Taught Postgraduate Programmes of Study (see Senate Regulations)

15. Additional information [e.g. timetable for admissions]

Given that Informatics is a partner department in this programme, programme-level monitoring will be carried out between Maths and Informatics - the existing MSc Committee within the Department of Mathematics undertakes the role of the Board of Studies for this degree, with representation from the Department of Informatics invited to the meetings twice a year. At these

joint meetings the MSc Committee will undertake the annual developmental review of the programme and monitor students' performances.

16. External examining

The details of the External Examiner(s) for this programme and the most recent External Examiners' reports can be found here

Appendix 1: Programme structure (programme regulations)

All programmes to formally include range of non-credit bearing attendance only activities for careers, student support etc.:

MA7903 – House hours
MA7094 – SQL
MA7902 - VBA Training
MA7901 - SAS Training
MA7905 - Employability: Core Skills
MA7906 - Employability: Placement Preparation

	Code	Title	Credits
Semester 1			
Core modules			
	MA7080	Mathematical Modelling	15
	CO7219	Internet and Cloud Computing	15
	MA7023	Business Statistics	15
Options			
15credits selected from:			
	CO7105	C++ Programming and Advanced Algorithms	15
	PA7081	Practical Programming	15
Semester 2			
Core modules:			
	MA7022	Data Mining and Neural Networks	15
	CO7218	Financial Services Information Systems	15
	CO7002	Analysis and Design of Algorithms	15
Options			
15 credits selected from:			
	MA7011	Computational Partial Differential Equations with Applications	15
	MA7406	Further Statistics	15
	MA7416	Advanced Statistics	15
	CO7212	Game Theory	15
	MA7092	Data Analytics for eSports	15
Summer			
Core modules			
	MA7098	MSc DABI Project	60
Total			180

Appendix 2: Module Specifications

See module specification database http://www.le.ac.uk/sas/courses/documentation