

# **University of Plymouth**

Faculty of Science and Engineering

School of Computing, Electronics and Mathematics

## **Programme Specification**

MSc Data Science and Business Analytics (5764)

September 2021

## 1. **MSc Data Science and Business Analytics**

**Final award title**      **MSc Data Science and Business Analytics**  
(completion of 180 Level 7 credits)

**Level 7 Intermediate award title(s)**      **Postgraduate Certificate**  
(completion of 60 Level 7 credits)

**Level 7 Intermediate award title(s)**      **Postgraduate Diploma**  
(completion of 120 Level 7 credits)

**UCAS code**    **N/A**

**JACS code**    **-**

2. **Awarding Institution:**      University of Plymouth

**Teaching institution(s):**      University of Plymouth

## 3. **Accrediting bodies**

The programme will not be accredited in the first instance. The opportunity of accreditation from BCS, RSS and other institutions will be investigated as soon as possible, taking into account the multi-disciplinary nature of the programme.

## 4. **Distinctive Features of the Programme and the Student Experience**

The distinctive strengths of the MSc Data Science and Business Analytics are built around:

- Equipping applicants from almost all undergraduate degrees with broad professional competence in one of the world economy's most sought-after postgraduate subject areas.
- Offering an equal number of taught credits in the three areas of Data Modelling, Computing and Business, with a wide choice of available Business modules.
- Providing a flexible individual project in one or more of the three taught areas supervised by world-leading subject experts.
- Establishing high proficiency in the use and application of state-of-the-art programming languages including R.
- Developing modern analytics expertise for obtaining business, scientific and social insights from Big Data sources and social networks such as Facebook and Twitter.

## **5. Relevant QAA Subject Benchmark Group(s)**

Quality Assurance Agency for Higher Education (QAA) (2011) *Subject Benchmark Statement Master's Degree in Computing*, QAA, Gloucester

(Full version available at: <http://www.qaa.ac.uk/en/Publications/Documents/SBS-Masters-degree-computing.pdf>)

Quality Assurance Agency for Higher Education (QAA) (2015) *Subject Benchmark Statement Master's Degree in Business and Management*, QAA, Gloucester

(Full version available at: <http://www.qaa.ac.uk/en/Publications/Documents/SBS-Business-and%20Management-15.pdf>)

Quality Assurance Agency for Higher Education (QAA) (2015) *Subject Benchmark Statement Mathematics, Statistics and Operational Research*, QAA, Gloucester

(Full version available at: <http://www.qaa.ac.uk/en/Publications/Documents/Subject-benchmark-statement-Mathematics-statistics-and-operational-research.pdf>)

## **6. Programme Structure**

The programme is usually only offered as a full-time course, with one intake in September.

The Plymouth MSc Data Science and Business Analytics is a multi-disciplinary programme, involving three subject areas: Computing, Business and Statistics. Two-thirds of the module content will be delivered by the Faculty of Science and Engineering, and one-third of the module content will be delivered by the Faculty of Business. The design of the Masters programme in Data Science and Business Analytics includes 80 credits of core modules, 40 credits of option modules and 60 credits of dissertation. The programme structure is described in Figure 1.

**Figure 1: Programme structure of MSc Data Science and Business Analytics**

	Module	Subject Area	Core/Option	Credits
Semester 1	COMP5000 Software Development and Databases	Computing	Core	20
	COMP5001 Non-Relational Databases in a Big Data Environment	Computing	Core	20
	MATH513 Big Data and Social Network Visualization	Statistics	Core	20
Semester 2	MATH501 Modelling and Analytics for Data Science	Statistics	Core	20
	Option module	Business	Option	30
	MATH514 Contemporary Issues in Data Science	Data Science	Core	10
All Year	PROJ518 MSc Dissertation and Research Skills	Data Science	Core	60

**Business option modules:**

ACF7003 International Finance

ACF7004 Analysis of Financial Statements

MKT7004 Social Media Theory and Practice

STO7002 Current Issues in International Business

STO7003 International Business Strategy for Competitive Advantage

STO7006 Operations and Project Management

STO7007 Data Analytics and Finance

The Business option modules are subject to availability.

## **Sustainability**

The whole programme team embraces the University's Sustainability Strategy. Some of the applied examples that we will use will enable students to learn about sustainability and its application in future research and workplace activities. The statistical modelling of extreme values (such as storm events) is a highly developed part of the discipline.

## **7. Programme Aims**

The MSc Data Science and Business Analytics programme shares the following general aims with other MScs delivered by the School of Computing, Electronics and Mathematics:

1. To be informative and challenging, and to establish an advanced knowledge base suitable for a career in relevant industries;
2. To provide students holding a variety of entry qualifications with an opportunity to advance their potential by significantly expanding their knowledge and skills base;
3. To enrich curriculum content through the professional and research expertise of a broad staff base and extensive external links;
4. To develop a wide range of subject-specific and generic key skills, such as critical research awareness, creative problem-solving, effective team-working and up-to-date ICT familiarity, that will facilitate continuing professional development and life-long learning;
5. To create critical, rational, innovative, self-reflective and creative thinkers who are highly employable, confident and adaptable and who can progress rapidly in their chosen profession.

In addition, the MSc Data Science and Business Analytics programme has the following programme specific aims:

6. To deliver a contemporary, multidisciplinary data science and business analytics curriculum that provides students with opportunities to apply acquired techniques critically to develop strategic solutions in an ever more data-dependent world, taking account of basic data protection and security issues;
7. To develop high theoretical and practical competence in the use of software for manipulating, visualizing and modelling structured and unstructured data, together with a broad awareness of computational tools used in analytics applications such as eHealth;
8. To provide an up-to-date tool set, including sentiment analysis, for extracting deep insights relevant to business, science or society from social media and other sources;
9. To cultivate generic skills in structured, methodological programming practice and specific knowledge of computer architectures and data representation mechanisms that allow computational solutions to real-world analytics problems to be critically identified and strategically produced;

10. To offer a choice of modules in finance, marketing or international business that provide cutting edge exposure to an advanced and broad range of business topics;
11. To develop an enhanced ability to communicate effectively critiqued complex technical and professional concepts, including some of their social and ethical aspects, to specialized and non-specialized audiences using modern presentational tools.

## **8. Programme Intended Learning Outcomes**

### **8.1. Knowledge and understanding**

On successful completion graduates should demonstrate knowledge and understanding of:

- 1) a broad range of subject-specific concepts for effective and integrated data science and business analytics;
- 2) fundamental and advanced data science and business analytics techniques for the efficient solution of a wide range of important problems including data visualization and information extraction;
- 3) current practice, issues and developments in data science and business analytics to allow a critical evaluation of existing challenges and new insights.

### **8.2. Cognitive and intellectual skills**

On successful completion graduates should be able to:

- 1) plan, conduct and report a self-directed and substantial programme of critically evaluated research in contemporary areas of data science and business analytics enquiry;
- 2) critically analyse and identify limitations in current practice and creatively identify avenues for further development, exploration or explanation;
- 3) systematically produce work which applies to and is informed by research and practice at the forefront of societal developments in data science and business analytics.

### **8.3. Key and transferable skills**

On successful completion graduates should have developed the ability to:

- 1) effectively communicate and translate complex ideas, principles and theories by well reasoned oral, written and visual arguments to technical and non-technical audiences;
- 2) critically engage in the peer review process so as to evaluate the rigour, validity and feasibility of developments in research and practice;
- 3) set goals and identify resources for effective continuing professional development and autonomous life-long learning.

#### **8.4. Employment related skills**

On successful completion graduates should have developed:

- 1) the professional exercise of strongly developed personal and inter-personal skills to facilitate efficient individual or team work;
- 2) a systematic approach to problem solving and decision-making in complex and unpredictable situations, identifying avenues for innovation;
- 3) a facility for engaging critically in self-awareness, self-reflection and self-management in a rapidly changing global context.

#### **8.5. Practical skills**

On successful completion graduates should be able to:

- 1) efficiently identify and visualize the underlying patterns in a range of data sources using up-to-date software;
- 2) turn such information into critically appraised innovative insights for business, scientific or social innovation;
- 3) consistently apply knowledge and subject-specific and wider intellectual skills to deal with complex issues both systematically and creatively.

### **9. Admissions Criteria, including APCL, APEL and DAS arrangements**

The Programme Leader (who is also responsible for admissions) will use the criteria below as a guide in making admissions decisions. Wherever possible, established relationships or equivalencies to other national or international qualifications will be used in making decisions.

Students admitted to the MSc programme are expected to have a good first or second class Honours degree, or an overseas equivalent qualification, in any discipline, and a minimum grade C in English Language at GCSE level or a minimum overall score of 6.5, with at least 5.5 in each element, IELTS.

The programme adheres to the University regulations and guidelines for Accreditation of Prior Experiential Learning (APEL) and Accreditation of Prior Certificated Learning (APCL) for Masters programmes.

The Programme Leader will be responsible for ensuring that applicants have, through prior learning (formal study and/or experience), developed the requisite knowledge, understanding and skills required for the successful participation in this programme. The suitability of candidates will be assessed through a combination of the written application, evidence of formal qualifications, personal references and candidate interviews (where appropriate). Such evidence will be considered on an individual basis by the Programme Leader in consultation with the programme team.

In compliance with the University's equal opportunities policy, all appropriately qualified applicants will be given equal consideration during the selection process and will not be discriminated against on the grounds of gender, ethnicity, colour,

disability, religion, nationality, age, occupation, marital status, sexual orientation or any other irrelevant distinction.

The University welcomes applications from people with disabilities who will be considered on the same academic grounds as other potential students. Considerations about individual needs arising from disability will be made separately, and the University will strive to meet an individual disabled student's needs wherever possible.

Students submit their application to the Admissions Office in the University either by post or email. The Admissions Office then sends the application to the Programme Leader for consideration, who, if necessary, will arrange an interview with the applicant. On the basis of the interview and discussions, a decision will be reached about whether the applicant is capable of coping with the programme. All applications will be considered on an individual basis.

All students may take advantage of the full range of support structures offered by University of Plymouth and the School of Computing, Electronics and Mathematics, such as the University's Learning Gateway and SUM:UP.

#### **10. Progression criteria for Final and Intermediate Awards**

The MSc Data Science and Business Analytics programme follows the University's normal academic regulations for progression to final and intermediate awards, including the award of the MSc with merit and distinction.

#### **11. Exceptions to Regulations**

None.

#### **12. Transitional Arrangements**

PROJ518 replaces PROJ516 from Sept 2020. Any student needing to repeat PROJ516 should take PROJ518.

ACF719 replaces ACF705 from Sept 2020. Any student needing to repeat ACF705 should take ACF719.



### 13. Mapping and Appendices:

#### 13.1. ILO's against Modules Mapping

Please note that core modules are indicated using **BOLD** font. Students must take two of the other business modules listed.

PROGRAMME LEARNING OUTCOME	MODULES
<b>KNOWLEDGE AND UNDERSTANDING</b>	
1) a broad range of subject-specific concepts for effective and integrated data science and business analytics	<b>COMP5000, COMP5001, MATH501, MATH513, MATH5XX, ACF7003, 04, MKT7004, STO7002, 03, 06, 07, PROJ518</b>
2) fundamental and advanced data science and business analytics techniques for the efficient solution of a wide range of important problems including data visualization and information extraction	All, with special emphasis on data visualization and information extraction being provided by <b>MATH501, MATH513</b> and <b>COMP5000</b>
3) current practice, issues and developments in data science and business analytics to allow a critical evaluation of existing challenges and new insights	<b>COMP5000, COMP5001, MATH501, MATH513, MATH5XX, ACF7003, 04, MKT7004, STO7002, 03, 06, 07, PROJ518</b>

<b>COGNITIVE AND INTELLECTUAL SKILLS</b>	
1) plan, conduct and report a self-directed and substantial programme of critically evaluated research in contemporary areas of data science and business analytics enquiry	<b>PROJ518</b>
2) critically analyse and identify limitations in current practice and creatively identify avenues for further development, exploration or explanation	<b>COMP5000, COMP5001, MATH501, MATH513, MATH5XX, ACF7003, 04, MKT7004, STO7002, 03, 06, 07, PROJ518</b>
3) systematically produce work which applies to and is informed by research and practice at the forefront of societal developments in data science and business analytics	<b>COMP5000, COMP5001, MATH501, MATH513, MATH5XX, ACF7003, 04, MKT7004, STO7002, 03, 06, 07, PROJ518</b>
<b>KEY AND TRANSFERABLE SKILLS</b>	
1) effectively communicate and translate complex ideas, principles and theories by well reasoned oral, written and visual arguments to technical and non-technical audiences	<b>COMP5000, COMP5001, MATH501, MATH513, MATH5XX, ACF7003, 04, MKT7004, STO7002, 03, 06, 07, PROJ518</b>
2) critically engage in the peer review process so as to evaluate the rigour, validity and feasibility of developments in research and practice	<b>MATH5XX, PROJ518</b>
3) set goals and identify resources for effective continuing professional development and autonomous life-long learning	<b>PROJ518</b>

<b>EMPLOYMENT RELATED SKILLS</b>	
1) the professional exercise of strongly developed personal and inter-personal skills to facilitate efficient individual or team work	<b>MATH501, MATH513, MATH5XX, ACF7003, 04, MKT7004, STO7002, 03, 06, 07, PROJ518</b>
2) a systematic approach to problem solving and decision-making in complex and unpredictable situations, identifying avenues for innovation	<b>COMP5000, COMP5001, MATH501, MATH513, MATH5XX, ACF7003, 04, MKT7004, STO7002, 03, 06, 07, PROJ518</b>
3) a facility for engaging critically in self-awareness, self-reflection and self-management in a rapidly changing global context	<b>PROJ518</b>
<b>PRACTICAL SKILLS</b>	
1) efficiently identify and visualize the underlying patterns in a range of data sources using up-to-date software	<b>COMP5001, MATH501, MATH513</b>
2) turn such information into critically appraised innovative insights for business, scientific or social innovation	<b>MATH501, MATH513</b>
3) consistently apply knowledge and subject-specific & wider intellectual skills to deal with complex issues both systematically and creatively	<b>COMP5000, COMP5001, MATH501, MATH513, MATH5XX, ACF7003, 04, MKT7004, STO7002, 03, 06, 07, PROJ518</b>

## 13.2. Assessment against Modules Mapping

Module	Title	C1	T1	P1	E1
COMP5000	Software Development and Databases	100%			
COMP5001	Non-Relational Databases in a Big Data Environment	100%			
MATH501	Modelling and Analytics for Data Science	100%			
MATH513	Big Data and Social Network Visualization	60%		40%	
MATH5XX	Contemporary Issues in Data Science	100%			
ACF7003	International Finance	60%	40%		
ACF7004	Analysis of Financial Statements	100%			
MKT7004	Social Media Theory and Practice	100%			
STO7002	Current Issues in International Business	100%			
STO7003	International Business Strategy for Competitive Advantage	100%			
STO7006	Operations and Project Management	50%		50%	
STO7007	Data Analytics and Finance	50%		50%	
PROJ518	MSc Dissertation and Research Skills	100%			

### 13.3. Skills against Modules Mapping

Module	Presentation skills	ICT programming	Team work	Reflective Skills	Research Skills
COMP5000	✓	✓	✓	✓	
COMP5001	✓	✓	✓	✓	
MATH501	✓	✓		✓	✓
MATH513	✓	✓	✓	✓	✓
MATH5XX	✓		✓	✓	✓
ACF7003	✓			✓	
ACF7004	✓			✓	
MKT7004	✓			✓	
STO7002	✓			✓	
STO7003	✓			✓	
STO7006	✓			✓	
STO7007	✓			✓	
PROJ518	✓	✓	✓	✓	✓

### 13.4. Appendices

N.A.