Programme Specification Document

Approved, 2022.02

Overview

Programme Code	35659
Programme Title	Data Science
Awarding Institution	Liverpool John Moores University
Programme Type	Degree
Language of Programme	All LJMU programmes are delivered and assessed in English
Programme Leader	Syed Naqvi
Link Tutor(s)	

Awards

Award Type	Award Description	Award Learning Outcomes
Target Award	Bachelor of Science with Honours (SW) - SBSH	See Learning Outcomes Below
Recruitable Target	Bachelor of Science with Honours - BSH	A student successfully completing this award will have acquired the subject knowledge and understanding as well as skills and other attributes as detailed above but will not have successfully completed a placement year.
Alternative Exit	Diploma of Higher Education - DHE	Put into practice the theoretical knowledge and skills learned in lectures. Have a sound understanding of the principles of designing, deriving and developing solutions through the application of data scientific approaches. Evaluate the appropriateness of different approaches to problem solving. A student who successfully completes a placement year will be eligible for the Sandwich award and will, in addition to the above, be able to demonstrate the professional and personal skills necessary for effective employment within a professional environment.
Alternative Exit	Bachelor of Science (SW) - SBS	Students who obtain this award will have achieved most but not all of the programme learning outcomes of the equivalent Batchelors award with honours.
Alternative Exit	Certificate of Higher Education - CHE	Develop computer programs using elementary programming constructs. Develop computer programs using elementary programming constructs. Apply a variety of tools and techniques for website design. Apply a variety of tools and techniques for website design. Discuss a range of practical aspects of data science and apply the associated tools and techniques used. Discuss a range of practical aspects of data science and apply the associated tools and techniques used. Discuss computer architecture at the hardware and software levels and basic security concepts. Discuss computer architecture at the hardware and software levels and basic security concepts. Develop robust models for the storage and processing of data. Develop robust models for the storage and processing of data.

Alternate Award Names	

External Benchmarks

Subject Benchmark Statement	UG-Computing (2022)

Accreditation

Programme Accredited by

PSRB Name	Type of Accreditation	Valid From Date	Valid To Date	Additional Notes

BCS, the Chartered Institute for IT	Accredited by BCS, the Chartered Institute for IT for the purposes of fully meeting the academic requirement for registration as a Chartered IT Professional.		

Programme Offering(s)

Mode of Study, Mode of Delivery	Intake Month	Teaching Institution	Programme Length
Sandwich Year Out, Face to Face	September	LJMU Taught	4 Years

Aims and Outcomes

Educational Aims of the Programme

Data Science is a degree that provides students with a comprehensive education, skills and learning experience in the discipline of data science. The programme provides graduates with a solid computing background in general, specific knowledge and understanding of the latest developments in data science. The specific aims of the programme are as follows: • To provide students with a comprehensive understanding of current and developing data science approaches. • To provide students with relevant technical skill and experience in the application of the methodologies and techniques of data science. • To develop students' analytical, creative, problem-solving and evaluation skills. • To encourage students to become autonomous learners. • To provide a platform for career development, innovation and further postgraduate study. • To encourage students to engage with the development of employability skills by completing a self-awareness statement. • To facilitate students in the development of expertise in areas of direct and complementary relevance to gaining employment. • For students undertaking a placement year the aim is to provide students with an extended period of work experience at an approved partner that will complement their programme of study at LJMU. This will give the students the opportunity to develop professional skills relevant to their programme of study, as well as attitude and behaviours necessary for employment in a diverse and changing environment.

Learning Outcomes

Code	Description
PLO1	Comprehend current and developing principles and practices within data science.
PLO2	Creatively deploy appropriate tools and techniques for the development of data science applications.
PLO3	Appraise data science techniques and their range of applicability in different problems areas.
PLO4	Develop and evaluate applications for data problematic domains.
PLO5	Deploy effective data science solutions.
PLO6	Use and develop supporting technologies for data science.

Code	Description
PLO7	Use a wide range of computing facilities effectively.
PLO8	Plan and manage projects.
PLO9	Use information technology, e.g. Software Development tools.
PLO10	Apply numerical and formal methods skills to cases involving a quantitative dimension.
PLO11	Communicate effectively by written or verbal means.
PLO12	Have widened and deepened their knowledge and skills in the area of data science, their applications and supporting technologies.
PLO13	Plan and manage learning and development.
PLO14	Have been exposed to and applied a range of tools, techniques and approaches currently being used in the application of data science.
PLO15	Have analysed and developed a major piece of work in the area.
PLO16	Be able to understand current issues in the relevant aspects of data science.
PLO17	Be able to study independently and have developed transferable skills.
PLO18	Work more effectively as part of a team or as a team leader.
PLO19	Demonstrate knowledge and understanding of current issues, concepts, principles and theories related to data science use and development.
PLO20	Utilise problem solving skills.

Programme Structure

Programme Structure Description

The placement year, module 5107COMSCI, will follow Level 5 and students will be enrolled on a 480 credit honours sandwich programme. The Level 5 mean for the final award mark will be calculated based upon the 240 credits at Level 5. Students successfully completing the assessment of the placement year are eligible for a Sandwich award. Students not undertaking a placement year are registered on the non-sandwich version of the programme and will have the opportunity of an additional study year abroad following Level 5. Students will be enrolled on a 480 credit honours with study abroad programme. Of those 480 credits, 120 will be taken via a Level 5 study abroad module 5117COMSCI. The modules to be studied in the host institution must be agreed in advance. The Level 5 mean for the final award mark will be calculated based upon the 240 credits at Level 5.

Programme Structure - 360 credit points	
Level 5 - 120 credit points	
Level 5 Core - 120 credit points	CORE
[MODULE] 5100COMP Research Skills Approved 2022.01 - 10 credit points	
[MODULE] 5101COMP Professional Issues Approved 2022.01 - 10 credit points	
[MODULE] 5102COMP Database Systems Approved 2022.01 - 20 credit points	
[MODULE] 5123COMP Statistical Modelling Approved 2022.01 - 20 credit points	
[MODULE] 5124COMP Data Science and Analytics Approved 2022.01 - 20 credit points	
[MODULE] 5125COMP Data Visualisation Approved 2022.01 - 20 credit points	
[MODULE] 5126COMP Data Warehousing and Mining Approved 2022.01 - 20 credit points	
Optional placement - 120 credit points	OPTIONAL
Placement Year - 120 credit points	OPTIONAL
[MODULE] 5107COMSCI Sandwich Year - Data Science Approved 2022.01 - 120 credit points	
OR Study Abroad - 120 credit points	OPTIONAL
[MODULE] 5117COMSCI Study Year Abroad - Data Science Approved 2022.01 - 120 credit points	
Level 6 - 120 credit points	
Level 6 Core - 120 credit points	CORE
[MODULE] 6100COMP Project Approved 2022.01 - 40 credit points	
[MODULE] 6112COMP Website and E-Commerce Management Approved 2022.01 - 20 credit points	
[MODULE] 6123COMP Advanced and Distributed Databases Approved 2022.01 - 20 credit points	
[MODULE] 6124COMP Big Data, Tools and Analysis Approved 2022.02 - 20 credit points	
[MODULE] 6126COMP Advanced Analytics Approved 2022.01 - 20 credit points	

Module specifications may be accessed at https://proformas.ljmu.ac.uk/Default.aspx

Teaching, Learning and Assessment

These include lectures, tutorials, laboratory work, coursework (both individual and group coursework),projects, seminars and guided independent study. Students are given feedback on all assessed work produced. Students are motivated by being given a specific task with an achievable outcome, ranging from completion of a small tutorial exercise to a full-scale individual project at Level 6. Knowledge and understanding is assessed via formal examination, individual and team coursework, demonstration of practical work, and a full-scale individual project at Level 6. Assessment methods for each module are specified in the module specifications. Each module is assessed by examination and/or coursework. Skill 1 is developed through tutorial group discussion, team work, coursework, projects and presentations. Skills 2, 3 and 4 are developed through laboratory work, coursework and projects. Skills 4 is developed though coursework, projects and guided independent study. These skills are assessed by coursework (1-4) laboratory work (2-4),and formal exams (1, 2, 3 and 4),as well as project work, reports and presentations (3-4). Practical skills are developed throughout the programme. The many laboratory or workshop based modules reinforce the learning of practical skills. Coursework and projects are designed to provide practical opportunities for students to work independently and in groups. The various programming and computer based modules provide important exposure to industrial standards. Skills 1, 2, 3, and 4 are developed through laboratory work, coursework and project work. Skill 5 is developed through individual and group coursework, laboratory work and project work. Practical skills are assessed via laboratory sessions, workshops, submission of reports, demonstration of systems, industrial placement and individual projects. Personal Development opportunities are inherent within the programme. The placement year is assessed, by portfolio, on a pass / fail basis. Key skills are developed throughout the programme in a variety of forms. Specifically through a combination of research related coursework, guided independent study and projects, examinations, group work and presentations. Skill 1 is developed through a combination of research-related coursework, guided independent study, and projects. Skill 2 is developed through study of technical methods, examinations, coursework, and projects. Skill 3 is developed through report writing for coursework and projects, written examinations, teamwork, presentations, and group discussion. Skill 4 is developed via the management of learning tasks and deadlines for coursework and projects. Key skills are assessed as part of coursework (1-4),projects (1-4),written examinations (2,3) and presentations (3).

Opportunities for work related learning

Level 4: 4103COMP Personal and Professional Development - this module provides students with an opportunity to consider their future role as a computing professional and develop a plan to enable them to progress in their chosen career. Level 5: 5101COMP Professional Issues – this module provides further insight into developing the role of the student becoming a computing professional. Students will be encouraged to become student members of appropriate professional bodies for the computing industry (e.g. ACM, IEEE or BCS) as part of their development. 5107COMSCI Sandwich Year Data Science - The aim is to provide students with an extended period of work experience at an approved partner that will complement their programme of study at LJMU. This will give students the opportunity to develop professional skills relevant to their programme of study as well as the attitude and behaviours necessary for employment in a diverse and changing environment.

Entry Requirements

Type	Description
Alternative qualifications considered	Qualifications deemed equivalent to the above upon completion of appropriate assessment will be considered acceptable. Applicants should have five GCSE (or equivalent) passes of at least grade C including Mathematics and English (or IELTS 6.0). BSc Data Science to MCOMP Data Science transfer is allowed with the permission of the Programme Leader and the maintenance of good academic performance, normally with averages above 60% at levels 4 and 5. Such requests for transfer must be made before the end of level 5 of the programme.
International Baccalaureate	Applicants should have or expect to obtain a total of 112 UCAS points overall.

BTECs	BTEC Extended Diploma To the value of 112 UCAS points. BTEC Diploma / 90 Credit Diploma / Subsidiary Diploma /Certificate To the value of 112 UCAS points when combined with other qualifications.
Other international requirements	Applicants offering other awards will be considered on an individual basis in line with the agreed entry criteria. All applicants should have achieved IELTS 6 or equivalent.
A levels	Applicants should have or expect to obtain a total of 112 UCAS points with a maximum of 20 points from AS level qualifications.

Extra Entry Requirements