UNIVERSITY of BRADFORD

Faculty of Engineering and Informatics Programme

Specification

Programme title: MSc Big Data Science and Technology

Academic Year:	2019/20
Degree Awarding Body:	University of Bradford
Partner(s), delivery organisation or support provider (if appropriate):	
Final and interim award(s):	[Framework for Higher Education Qualifications (FHEQ) level 7] MSc Postgraduate Diploma Postgraduate Certificate
Programme accredited by (if appropriate):	
Programme duration:	1 Year Full-time, 2 Years part-time
QAA Subject benchmark statement(s):	
Date last confirmed and/or minor modification approved by Faculty Board	March 2019

Please note: This programme specification has been published in advance of the academic year to which it applies. Every effort has been made to ensure that the information is accurate at the time of publication, but changes may occur given the interval between publishing and commencement of teaching. Any change which impacts the terms and conditions of an applicant's offer will be communicated to them. Upon commencement of the programme, students will receive further detail about their course and any minor changes will be discussed and/or communicated at this point.

Introduction

MSc Big Data Science and Technology provides students with the knowledge of cutting-edge methodologies, approaches and skills in the emerging field of data science and big data applications, including advanced software development, systems for big data analytics, statistical data analysis data mining, distributed systems, data privacy and security, and data visualization and exploration. The programme of study culminates in a dissertation, enabling students to bring what they have learnt together in a significant piece of project work. In summary, the MSc Big Data Science and Technology offers students the opportunity to build their own path of study—from the advanced computing modules, the extended list of optional modules available, as well as the dissertation—so as to match their specific career aspirations in the area of big data and data science.

Today's information technology market is increasingly demanding employees with an advanced knowledge and skills on big data

management, data analytics, and data mining. To fulfil the University's mission "Making knowledge work", this programme aims to enable students to develop important knowledge and understanding, practical discipline skills in the area of big data and data science. This programme will offer an opportunity for students to gain a range of transferable skills that will enhance their personal and professional development.

The MSc Big Data Science and Technology is located in the School of Engineering and Informatics.

Programme Aims

The programme is intended to:

- Equip graduates with the cutting-edge knowledge and skills to work in the industry as a Data Scientist, Big Data Architect, or Big Data Analyst.
- Provide industry with graduates able to develop solutions to address challenges for big data analytics and developing big data systems.

Programme Learning Outcomes

To be eligible for the award of Postgraduate Certificate at FHEQ level 7, students will be able to:

LO1 Demonstrate a systematic understanding and critical awareness of discipline knowledge in big data analytics and big data system development.

LO2 Demonstrate an understanding of advanced techniques applicable to their research and development projects on big data applications.

LO3 Demonstrate originality in the application of principle and knowledge on big data analytics and big data systems, together with a practical understanding of applying big data analytics to generate new knowledge in the discipline.

LO4 Demonstrate ability of evaluating existing methodologies in the literature and proposing new methodologies for addressing challenges of big data.

LO5 Communicate the results and conclusion on big data clearly to specialist and non-specialist audiences.

LO6 Demonstrate the transferable skills for decision-making in complex and unpredictable situations in big data project.

LO7 Demonstrate the independent learning ability required for continuing professional development.

To be eligible for the award of Postgraduate Diploma at FHEQ level 7, students will be able to do as above and including:

LO8 Deal with complexity in big data projects for design, development, and data analytics.

To be eligible for the award of Degree of Master at FHEQ level 7, students will be able to do as above and including:

LO9 Demonstrate skills to select, design, plan and manage a self-directed and managed research-informed original project, demonstrating a

critical analysis and evaluation of relevant material and the ability to apply relevant skills and research methodologies in the production of an advanced report.

Curriculum

Postgraduate Certificate

FHEQ Level	Module Title	Type (Core/ Option)	Credits	Semester	Module Code
7	Software Development	C	20	1	COS7009-B
7	Big Data Systems and Analytics	C	20	1	COS7006-B
7	Big Data Visualisation	C	20	1	COS7046-B

Students will be eligible to exit with the award of Postgraduate Certificate if they have successfully completed 60 credits and achieved the award learning outcomes.

Postgraduate Diploma

FHEQ Level	Module Title	Type (Core/ Option)	Credits	Semester	Module Code
7	Statistical Data Analysis	C	20	2	COS7005-B
7	Advanced Machine Learning	C	20	2	COS7045-B
7	Cloud Computing	C	20	2	COS7044-B

Students will be eligible to exit with the award of Postgraduate Diploma if they have successfully completed at least 120 credits to include the 80 core credits at Level 7, and achieved the award learning outcomes.

Degree of Master

FHEQ Level	Module Title	Type Core/Option	Credits	Semester	Module Code
7	Dissertation	C	60	3	COS7004-E

Students will be eligible for the award of Degree of Master if they have successfully completed 180 credits and achieved the award learning outcomes.

The curriculum may change, subject to the University's programme approval, monitoring

and review procedures.

Learning and Teaching Strategy

This programme will involve a range of teaching and assessment approaches. The teaching, learning and assessment strategy takes into consideration the learning outcomes for the programme, the nature of topic studied and the need for students to demonstrate greater autonomy in their learning as they progress through the programme.

Students will experience a range of teaching and learning environments. Concepts, principles and theories are generally explored in formal lectures, demonstrated in laboratory classes, and practised in associated tutorials and seminars. Practical skills are developed in laboratories. Professional and personal skills are developed through discussion, presentations and small-scale project work which involve problem solving and design exercises, often tackled by working in small groups. A particular strength of this programme is the contribution made to the teaching programme by successful research active members of staff. This new programme will also involve invited external speakers from various industry sectors. This will provide students with opportunities to learn from industry, such as the BBC, Microsoft and Sky and other SMEs. Students will also have opportunities to learn from each other in the specifically organized study clubs with fellow students.

Each 20-credit module on the programme requires 200 hours of study. Some of these hours will be formally timetabled lectures, laboratories, seminars, tutorials and workshops, while others will involve carrying out private study by students.

Formal lectures will facilitate the acquisition of knowledge and understanding, discipline specific skills (LOs 1-7), and make knowledge work (LOs 8,9). Laboratory sessions run in conjunction with the theoretical components will give students the opportunity to enhance their understanding of particular topics. These will also help to develop discipline specific skills and personal transferable skills. Tutorials, Seminar/workshops will develop knowledge and understanding, discipline specific skills and personal transferable skills. Directed study, involving directed reading of appropriate texts and the preparation of assessed work, is used to develop the majority of learning outcomes.

Assessment Strategy

The assessment strategy is designed to allow students to demonstrate achievement of the learning outcomes of an individual module appropriate to their level of study and the learning outcomes of the programme. These learning outcomes are consistent with the Framework for Higher Education Qualifications. Students will have the opportunity to demonstrate skills of analysis, synthesis and criticism through a wide variety of assessment strategies, including written and oral examinations, coursework assignments, report writing, group work, oral presentations, and a dissertation. The final project/dissertation provides a major opportunity for students to demonstrate their capability and skill in big data analytics and system development.

Assessment Regulations

This Programme conforms to the standard University Regulations which are

available at the following link:

http://www.bradford.ac.uk/aqpo/ordinances-and-regulations/

Admission Requirements

The University welcomes applications from all potential students and most important in the decision to offer a place is our assessment of a candidate's potential to benefit from their studies and of their ability to succeed on this particular programme. Consideration of applications will be based on a combination of formal academic qualifications and other relevant experience.

The standard entry requirements for the programme are as follows:

Applicants are expected to possess a good Honours degree (normally 2:2 or above) in computer science, computer engineering, informatics or other computer-related subjects from an approved degree-awarding body.

In addition, a test of written and spoken English normally needs to have been passed at grade 6.0 for IELTS or 550 for TOEFL (or 250 for the computer-based test) or above.

Applications are welcome from students with non-standard qualifications or mature students (those over 21 years of age on entry) with significant relevant experience.

Recognition of Prior Learning

If applicants have prior certificated learning or professional experience which may be equivalent to parts of this programme, the University has procedures to evaluate and recognise this learning in order to provide applicants with exemptions from specified modules or parts of the programme.

Minor Modification Schedule

Version Number	Brief Description of Modification	Date of Approval (Faculty Board)
5	Modifications following Academic Portfolio Review	April 2016
6	Revised curriculum structure	March 2019