Module specification

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Module Code	COM746
Module Title	Big Data Challenges and Opportunities
Level	7
Credit value	20
Faculty	FAST
HECoS Code	100755
Cost Code	GACP

Programmes in which module to be offered

Programme title	Is the module core or option for this programme
MSc Data Science and Big Data Analytics	Core
MBA Big Data Analytics	Core

Pre-requisites

None

Breakdown of module hours

Learning and teaching hours	21 hrs
Placement tutor support	0 hrs
Supervised learning e.g. practical classes, workshops	27 hrs
Project supervision (level 6 projects and dissertation modules only)	0 hrs
Total active learning and teaching hours	**48** hrs
Placement / work based learning	0 hrs
Guided independent study	152 hrs
Module duration (total hours)	200 hrs

For office use only	
Initial approval date	22/07/2020
With effect from date	01/09/2020
Date and details of revision	July 2022 – addition of MBA Big Data Analytics in programme titles
Version number	2

Module aims

This module aims to explore the principles of Big Data analytics, how the data is gathered, processed, analysed and converted into knowledge, various computational platforms supporting Big Data Applications, the challenges in Big Data Computing and ways to overcome them. Students will explore big data applications and will learn how to responsibly design, build and maintain complex Big Data resources. Students will develop a critical awareness of the legal, ethical and environmental impact of current and emerging big data technologies and applications.

Module Learning Outcomes - at the end of this module, students will be able to:

1	Synthesise the fundamentals of Data Science and Big Data Analytics.
2	Appreciate and assess various Big Data technology infrastructures, platforms and applications.
3	Critically evaluate the challenges in Big Data application design, data organization, retrieval, and data modelling.
4	Make informed judgement by critically evaluating security, legal, ethical and privacy issues in current and future Big Data application environment

Assessment

Indicative Assessment Tasks:

The assessment will be in the form of a portfolio where the students will be completing a series of tasks that students complete at various stages of the module delivery looking into the current and future Big Data applications, architecture, design, analysis and challenges.

Assessment number	Learning Outcomes to be met	Type of assessment	Weighting (%)
1	1,2,3,4	Portfolio	100%

Derogations

None

Learning and Teaching Strategies

The overall learning and teaching strategy will include a series of lectures and practical lab sessions. There will be a mix of supporting notes/along with directed study for students to complete as they work through the material and undertake the assessment tasks. The use of a range digital tool via the virtual learning environment together with additional sources of reading will also be utilised to accommodate learning styles.

Indicative Syllabus Outline

1. Overview of Big Data and Data Science
2. Fundamentals of Big Data Analytics
3. Big Data Infrastructures and Platforms
4. Big Data Applications
5. Legal, Ethical, Security, Privacy and Environmental Issues of current and emerging Big Data applications

Indicative Bibliography:

Essential Reads

Berman, J.J. (2018), *Principles and Practice of Big Data: Preparing, Sharing, and Analyzing Complex Information. 2nd* ed. Academic Press

Other indicative reading

Isson, J.P. (2018), *Unstructured Data Analytics - How to Improve Customer Acquisition, Customer Retention, and Fraud Detection and Prevention*. CENGAGE Learning

Journals (available electronically through the library) ACM Digital Library
IEEE Xplore

Employability skills – the Glyndŵr Graduate

Each module and programme is designed to cover core Glyndŵr Graduate Attributes with the aim that each Graduate will leave Glyndŵr having achieved key employability skills as part of their study. The following attributes will be covered within this module either through the content or as part of the assessment. The programme is designed to cover all attributes and each module may cover different areas.

Core Attributes
Engaged
Enterprising
Ethical

Key Attitudes
Commitment
Curiosity
Confidence

Practical Skillsets
Digital Fluency
Organisation
Leadership and Team working
Critical Thinking
Communication