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MODULE DESCRIPTOR

Module Title

Big Data Analytics and Visualisation

Reference	CMM534	Version	6
Created	April 2021	SCQF Level	SCQF 11
Approved	April 2015	SCQF Points	15
Amended	June 2021	ECTS Points	7.5

Aims of Module

To introduce students to the use of state-of-the-art Big Data analytics and visualisation techniques and tools, and modern parallel computation methodologies.

Learning Outcomes for Module

On completion of this module, students are expected to be able to:

- 1 Critically compare and evaluate methodologies and software frameworks for big data analysis tasks.
- 2 Explore, visualise and evaluate big data, using a parallel computation framework.
- 3 Extract and interpret actionable knowledge from big data, using the parallel computation framework.
- 4 Compare and contrast data visualisation techniques.

Indicative Module Content

Modern parallel data processing techniques, e.g. MapReduce/Hadoop, Spark. Machine learning libraries applicable to big data e.g. MLlib, Mahout. Case studies on using parallel data processing for analysis and mining of Big Data. Data visualisation techniques.

Module Delivery

This is a lecture based module, supplemented with practical sessions, where a number of Big Data technologies will be used to teach students how to store, analyse and visualise Big Data. Online materials and online sessions will be used to support DL students.

Indicative Student Workload

	Full Time	Part Time
Contact Hours	33	33
Non-Contact Hours	117	117
Placement/Work-Based Learning Experience [Notional] Hours	N/A	N/A
TOTAL	150	150
<i>Actual Placement hours for professional, statutory or regulatory body</i>		

ASSESSMENT PLAN

If a major/minor model is used and box is ticked, % weightings below are indicative only.

Component 1

Type: Practical Exam Weighting: 50% Outcomes Assessed: 1, 4
 Description: This is a closed book examination.

Component 2

Type: Practical Exam Weighting: 50% Outcomes Assessed: 2, 3
 Description: This is a practical exam where students will be using big data technologies.

MODULE PERFORMANCE DESCRIPTOR**Explanatory Text**

The calculation of the overall grade for this module is based on equal weighting of C1 and C2 components. An overall minimum grade D is required to pass the module.

		Examination:						NS
		A	B	C	D	E	F	
Practical Exam:	A	A	A	B	B	C	E	
	B	A	B	B	C	C	E	
	C	B	B	C	C	D	E	
	D	B	C	C	D	D	E	
	E	C	C	D	D	E	E	
	F	E	E	E	E	E	F	
NS		Non-submission of work by published deadline or non-attendance for examination						

Module Requirements

Prerequisites for Module	None.
Corequisites for module	None.
Precluded Modules	None.

INDICATIVE BIBLIOGRAPHY

- 1 GULLER, M., 2015. Big data analytics with Spark : a practitioner's guide to using Spark for large-scale data processing, machine learning, and graph analytics, and high-velocity data stream processing. Apress.
- 2 LESKOVEC, J., ANAND, R. and ULLMAN, J.D., 2019. Mining of massive datasets. (3rd Edition) Cambridge University Press.
- 3 ZIKOPOULOS, P. and EATON, C., 2011. Understanding big data: Analytics for enterprise class hadoop and streaming data. McGraw-Hill Osborne Media.
- 4 CHIVUKULA, A.S. et al, 2019. Big Data Analytics. Springer