



## MODULE SPECIFICATION

| Part 1: Information       |  |                    |  |
|---------------------------|--|--------------------|--|
| Module Title              | Big Data Analytics                       |                    |  |
| Module Code               | UFCFJP-15-3                              | Level              | Level 6                                    |
| For implementation from   | 2019-20                                  |                    |  |
| UWE Credit Rating         | 15                                       | ECTS Credit Rating | 7.5  |
| Faculty                   | Faculty of Environment & Technology      | Field              | Computer Science and Creative Technologies |
| Department                | FET Dept of Computer Sci & Creative Tech |                    |  |
| Module type:              | Standard                                 |                    |  |
| Pre-requisites            | None                                     |                    |  |
| Excluded Combinations     | None                                     |                    |  |
| Co- requisites            | None                                     |                    |  |
| Module Entry requirements | None                                     |                    |  |

| Part 2: Description   |
|---|
| <p><b>Overview:</b> This module will provide you with an insight into concepts, theories and developments associated with data analytics and big data. You will be introduced to knowledge discovery, analysis and assessment of data extracted from structured and unstructured big data sets, visualisation and communication of results. You will develop practical skills through using tools and techniques from the forefront of the emerging field of data analytics and big data.</p> <p><b>Educational Aims:</b> See Learning Outcomes</p> <p><b>Outline Syllabus:</b> Indicative content:</p> <p>Introduction to Big Data:</p> <p>Defining Big Data</p> <p>Big Data and Data Warehousing</p> <p>Storing Big Data:</p> <p>Analysing Data Characteristics</p> |

## STUDENT AND ACADEMIC SERVICES

Overview of Big Data Stores

Selecting Big Data Store

Processing Big Data:

Integrating Disparate Data Stores

Employing Hadoop MapReduce

Tools and Techniques to Analyse Big Data:

Creating business value from extracted data

Recognizing Patterns and Trends with queries

Creating business value from extracted data

Ethical, privacy and security issues with respect to big data

**Teaching and Learning Methods:** The module is delivered through weekly lectures and lab sessions. Each lecture will direct the course and introduce the new ideas and skills required. Then small group lab sessions will enable each student to carry out the practical exercises described in the associated worksheet under the guidance of a Lab Tutor.

Scheduled learning includes lectures, tutorials and practical lab classes.

Independent learning includes time engaged with essential reading and assignment preparation and completion.

### Part 3: Assessment

Module assessment will be divided into:-

Component A – 2 hour exam that is summative and assesses students' understanding of concepts of big data and data analytics, the security, privacy and ethical implications of using big data technologies as well as comparing the different frameworks available to implement big data solutions.

Component B – An individual project involving the investigation of a problem area and the development of a potential solution. Contextual evidence and/or sample datasets will be provided as guidance. The deliverables will consist of (i) a report (which will detail the research into their given topics, the techniques used to develop the proposed solution and an analysis of the results obtained) and (ii) the artefact developed to demonstrate the proposed solution.

There will be opportunities for formative assessment in the form of regular in-class presentations of research/implementation completed as part of tutorial work completed and subsequent group discussions.

| First Sit Components      | Final Assessment | Element weighting | Description   |
|---------------------------|------------------|-------------------|---|
| Portfolio - Component B   |                  | 75 %              | Individual assignment: report (1500 words) and artefact |
| Examination - Component A | ✓                | 25 %              | Written Exam  |

STUDENT AND ACADEMIC SERVICES

| Resit Components          | Final Assessment | Element weighting | Description   |
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| Examination - Component A | ✓                | 25 %              | Written Exam  |

| Part 4: Teaching and Learning Methods   |  |                          |           |  |     |   |            |   |     |   |     |  |           |                              |            |                        |            |
|---|--|--------------------------|-----------|--|-----|---|------------|---|-----|---|-----|--|-----------|------------------------------|------------|------------------------|------------|
| Learning Outcomes   | <p>On successful completion of this module students will achieve the following learning outcomes:</p> <table border="1"> <thead> <tr> <th>Module Learning Outcomes</th> <th>Reference</th> </tr> </thead> <tbody> <tr> <td>Define what Big Data is in general outline and explain those aspects that are important in any Big Data Solution</td> <td>MO1</td> </tr> <tr> <td>Compare and contrast the different frameworks that provide tools for performing Big Data tasks and be able to determine the best solution for a given business scenario</td> <td>MO2</td> </tr> <tr> <td>Demonstrate the ability to define a set of requirements for an ideal Big Data Solution given real-world business scenario</td> <td>MO3</td> </tr> <tr> <td>Construct a design, implement and evaluate a working Big Data Solution based on a given set of requirements</td> <td>MO4</td> </tr> <tr> <td>Describe security and privacy issues and other ethical considerations with respect to Big Data</td> <td>MO5</td> </tr> </tbody> </table> | Module Learning Outcomes | Reference | Define what Big Data is in general outline and explain those aspects that are important in any Big Data Solution | MO1 | Compare and contrast the different frameworks that provide tools for performing Big Data tasks and be able to determine the best solution for a given business scenario | MO2        | Demonstrate the ability to define a set of requirements for an ideal Big Data Solution given real-world business scenario | MO3 | Construct a design, implement and evaluate a working Big Data Solution based on a given set of requirements | MO4 | Describe security and privacy issues and other ethical considerations with respect to Big Data | MO5       |                              |            |                        |            |
| Module Learning Outcomes  | Reference  |                          |           |  |     |   |            |   |     |   |     |  |           |                              |            |                        |            |
| Define what Big Data is in general outline and explain those aspects that are important in any Big Data Solution  | MO1  |                          |           |  |     |   |            |   |     |   |     |  |           |                              |            |                        |            |
| Compare and contrast the different frameworks that provide tools for performing Big Data tasks and be able to determine the best solution for a given business scenario | MO2  |                          |           |  |     |   |            |   |     |   |     |  |           |                              |            |                        |            |
| Demonstrate the ability to define a set of requirements for an ideal Big Data Solution given real-world business scenario   | MO3  |                          |           |  |     |   |            |   |     |   |     |  |           |                              |            |                        |            |
| Construct a design, implement and evaluate a working Big Data Solution based on a given set of requirements   | MO4  |                          |           |  |     |   |            |   |     |   |     |  |           |                              |            |                        |            |
| Describe security and privacy issues and other ethical considerations with respect to Big Data  | MO5  |                          |           |  |     |   |            |   |     |   |     |  |           |                              |            |                        |            |
| Contact Hours   | <table border="1"> <thead> <tr> <th colspan="2">Independent Study Hours:</th> </tr> </thead> <tbody> <tr> <td>Independent study/self-guided study</td> <td>114</td> </tr> <tr> <td><b>Total Independent Study Hours:</b></td> <td><b>114</b></td> </tr> <tr> <th colspan="2">Scheduled Learning and Teaching Hours:</th> </tr> <tr> <td>Face-to-face learning</td> <td>36</td> </tr> <tr> <td><b>Total Scheduled Learning and Teaching Hours:</b></td> <td><b>36</b></td> </tr> <tr> <td><b>Hours to be allocated</b></td> <td><b>150</b></td> </tr> <tr> <td><b>Allocated Hours</b></td> <td><b>150</b></td> </tr> </tbody> </table>  | Independent Study Hours: |           | Independent study/self-guided study  | 114 | <b>Total Independent Study Hours:</b>   | <b>114</b> | Scheduled Learning and Teaching Hours:  |     | Face-to-face learning   | 36  | <b>Total Scheduled Learning and Teaching Hours:</b>  | <b>36</b> | <b>Hours to be allocated</b> | <b>150</b> | <b>Allocated Hours</b> | <b>150</b> |
| Independent Study Hours:  |  |                          |           |  |     |   |            |   |     |   |     |  |           |                              |            |                        |            |
| Independent study/self-guided study   | 114  |                          |           |  |     |   |            |   |     |   |     |  |           |                              |            |                        |            |
| <b>Total Independent Study Hours:</b>   | <b>114</b>   |                          |           |  |     |   |            |   |     |   |     |  |           |                              |            |                        |            |
| Scheduled Learning and Teaching Hours:  |  |                          |           |  |     |   |            |   |     |   |     |  |           |                              |            |                        |            |
| Face-to-face learning   | 36   |                          |           |  |     |   |            |   |     |   |     |  |           |                              |            |                        |            |
| <b>Total Scheduled Learning and Teaching Hours:</b>   | <b>36</b>  |                          |           |  |     |   |            |   |     |   |     |  |           |                              |            |                        |            |
| <b>Hours to be allocated</b>  | <b>150</b>   |                          |           |  |     |   |            |   |     |   |     |  |           |                              |            |                        |            |
| <b>Allocated Hours</b>  | <b>150</b>   |                          |           |  |     |   |            |   |     |   |     |  |           |                              |            |                        |            |
| Reading List  | <p>The reading list for this module can be accessed via the following link:</p> <p><a href="https://uwe.rl.talis.com/modules/ufcfjp-15-3.html">https://uwe.rl.talis.com/modules/ufcfjp-15-3.html</a></p>   |                          |           |  |     |   |            |   |     |   |     |  |           |                              |            |                        |            |

| <b>Part 5: Contributes Towards</b>                                 |
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| This module contributes towards the following programmes of study: |