### 1. Course Code
F21BD

### 2. Course Title
Big Data Management

### 3. SCQF Level
11

### 4. Credits
15

### 5. School
Mathematical and Computer Sciences

### 6. Course Co-ordinator
Albert Burger

### 7. Delivery:

<table>
<thead>
<tr>
<th>Location &amp; Semester</th>
<th>Collaborative Partner</th>
<th>Approved Learning Partner</th>
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<td>Sem....</td>
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### 8. Pre-requisites
Academic knowledge of fundamentals of databases and logic.

### 9. Linked Courses (specify if synoptic)
None

### 10. Excluded Courses
None

### 11. Replacement Courses

<table>
<thead>
<tr>
<th>Code:</th>
<th>Date Of Replacement:</th>
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### 12. Degrees for which this is a core course
MSc Data Science
Optional course for MEng/MSc Software Engineering, MSc IT(business), MSc Business Information Management, MSc Computer Systems Management

### 13. The course may be delivered to:

<table>
<thead>
<tr>
<th>UG only</th>
<th>PG only</th>
<th>UG &amp; PG</th>
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</table>

### 14. Available as an Elective?
Yes ✗ No ☒

### 15. Aims
- Review principle abstractions, methods and techniques for the management of large and complex data sets (“Big Data”).
- Develop an understanding of the foundations and tools of the Semantic Web.
- Enable students to appreciate critically a range of data integration solutions.

### 16. Syllabus

Complex data sets:
- RDF, triple stores, SPARQL, Big Data vs Smart Data vs Broad Data, NoSQL, indexing data.

Semantic Web Foundations:
- RDFS, OWL, Ontologies, Reasoning, Protégé.

Data Integration:
- Linked Data, Mash-ups, Ontology mapping, Data Provenance.
17. Learning Outcomes (HWU Core Skills: Employability and Professional Career Readiness)

Subject Mastery

**Understanding, Knowledge and Cognitive Skills**
- A detailed and integrated knowledge and understanding of a range of data representation and data management techniques for big data sets.
- Critical understanding of the role of semantic web technologies in the context of big data management.
- Extensive knowledge of the mechanisms that underlie data integration techniques.
- To be able to demonstrate a critical understanding of appropriateness and effectiveness of different techniques.

**Scholarship, Enquiry and Research (Research-Informed Learning)**

Personal Abilities

**Industrial, Commercial & Professional Practice**
- Conceptualize and define new abstract problems within the context of complex data sets.
- Deal with complex issues and make informed judgements about the applicability of semantic web solutions to big data questions.
- Exercise substantial autonomy, initiative and creativity in the application of data integration techniques.
- Demonstrate critical reflection. (PDP)

**Autonomy, Accountability & Working with Others**
- Communicate with professional level peers, senior colleagues and specialists. (PDP)

**Communication, Numeracy & ICT**

18. Assessment Methods

<table>
<thead>
<tr>
<th>Method</th>
<th>Duration of Exam (if applicable)</th>
<th>Weighting (%)</th>
<th>Synoptic courses?</th>
<th>Method</th>
<th>Duration of Exam (if applicable)</th>
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<tr>
<td>Exam</td>
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<td>Coursework (MSc only)</td>
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19. Re-assessment Methods

- Coursework (MSc only)

20. Date and Version

<table>
<thead>
<tr>
<th>Date of Proposal</th>
<th>Date of Approval by School Committee</th>
<th>Date of Implementation</th>
<th>September 2014</th>
<th>Version Number</th>
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