Unit Outline (Higher Education)

Institute / School:	Institute of Innovation, Science & Sustainability
Unit Title:	Big Data Management
Unit ID:	ITECH2302
Credit Points:	15.00
Prerequisite(s):	(ITECH1103)
Co-requisite(s):	Nil
Exclusion(s):	Nil
ASCED:	020303

Description of the Unit:

This unit introduces students to the core concepts, theories and technologies involved in managing big data. Focusing on computing models, architectures, approaches and software to manage big data, students will develop their understanding of practical applications and challenges by managing and analysing big data in a distributed and/or parallel fashion. Students will be introduced to the use of big data management framework Hadoop, big data storage techniques, distributed and parallel computing, Map-Reduce and big data management and analytic approaches. Students will have the opportunity to engage in areas of study including big data stream processing, big data management with data mining and visual analysis for managing big data.

Grade Scheme: Graded (HD, D, C, P, MF, F, XF)

Work Experience:

No work experience: Student is not undertaking work experience in industry.

Placement Component: No

Supplementary Assessment: Yes

Where supplementary assessment is available a student must have failed overall in the Unit but gained a final mark of 45 per cent or above, has completed all major assessment tasks (including all sub-components where a task has multiple parts) as specified in the Unit Description and is not eligible for any other form of supplementary assessment

Course Level:

Level of Unit in Course	AQF Level of Course					
	5	**6**	**7**	**8**	**9**	**10**
Introductory	☐	☐	☐	☐	☐	☐
Intermediate	☐	☐	✔	☐	☐	☐
Advanced	☐	☐	☐	☐	☐	☐

Learning Outcomes:

Knowledge:

K1. Describe defining characteristics, categories, examples and challenges of big data.

K2. Illustrate key storage data, data types and documents for big data management.

K3. Explain basic theories and techniques that underpin big data management such as management issues, strategies, interface models, infrastructures and related frameworks.

Skills:

S1. Demonstrate skills in managing data using related analytical tools.

S2. Manage data using analytical tools.

S3. Analyse and compare programming interface models for managing big data, such as Hadoop and MapReduce.

Application of knowledge and skills:

A1. Plan effective big data storage and processing for specific business applications.

A2. Use appropriate tools to analyse, process and visualize data for big data management and analytics.

A3. Present big data management scenarios using oral and written communication skills and include ethical considerations.

Unit Content:

This unit will cover big data management framework, Hadoop, big data storage techniques, distributed and parallel computing, Map-Reduce and big data management and analytic approaches.

Topics may include:
- Instruction to big data management and applications.
- Data representation & abstraction for big data management.
- Business Intelligence: OLAP, Data Warehouse
- Big data storage management.
- Big data analysis techniques.
- Distributed and parallel computing using Map-Reduce.
- Hadoop ecosystem.
- Big data stream processing
- Visual analysis for managing big data
- Case study.

FEDTASKS

Federation University Federation recognises that students require key transferable employability skills to prepare them for their future workplace and society. FEDTASKS (**T**ransferable **A**ttributes **S**kills and **K**nowledge) provide a targeted focus on five key transferable Attributes, Skills, and Knowledge that are be embedded within

curriculum, developed gradually towards successful measures and interlinked with cross-discipline and Co-operative Learning opportunities. *One or more FEDTASK, transferable Attributes, Skills or Knowledge must be evident in the specified learning outcomes and assessment for each FedUni Unit, and all must be directly assessed in each Course.*

FEDTASK attribute and descriptor		Development and acquisition of FEDTASKS in the Unit	
		Learning Outcomes (KSA)	Assessment task (AT#)
FEDTASK 1 Interpersonal	Students will demonstrate the ability to effectively communicate, inter-act and work with others both individually and in groups. Students will be required to display skills in-person and/or online in: • Using effective verbal and non-verbal communication • Listening for meaning and influencing via active listening • Showing empathy for others • Negotiating and demonstrating conflict resolution skills • Working respectfully in cross-cultural and diverse teams.	K1, K2, S1	AT1
FEDTASK 2 Leadership	Students will demonstrate the ability to apply professional skills and behaviours in leading others. Students will be required to display skills in: • Creating a collegial environment • Showing self -awareness and the ability to self-reflect • Inspiring and convincing others • Making informed decisions • Displaying initiative	S1, S2, S3, A3	AT2
FEDTASK 3 Critical Thinking and Creativity	Students will demonstrate an ability to work in complexity and ambiguity using the imagination to create new ideas. Students will be required to display skills in: • Reflecting critically • Evaluating ideas, concepts and information • Considering alternative perspectives to refine ideas • Challenging conventional thinking to clarify concepts • Forming creative solutions in problem solving.	K3, A1	AT3

FEDTASK attribute and descriptor		Development and acquisition of FEDTASKS in the Unit	
		Learning Outcomes (KSA)	Assessment task (AT#)
FEDTASK 4 Digital Literacy	Students will demonstrate the ability to work fluently across a range of tools, platforms and applications to achieve a range of tasks. Students will be required to display skills in: • Finding, evaluating, managing, curating, organising and sharing digital information • Collating, managing, accessing and using digital data securely • Receiving and responding to messages in a range of digital media • Contributing actively to digital teams and working groups • Participating in and benefiting from digital learning opportunities.	S1,S2, S3, A3	AT1, AT2
FEDTASK 5 Sustainable and Ethical Mindset	Students will demonstrate the ability to consider and assess the consequences and impact of ideas and actions in enacting ethical and sustainable decisions. Students will be required to display skills in: • Making informed judgments that consider the impact of devising solutions in global economic environmental and societal contexts • Committing to social responsibility as a professional and a citizen • Evaluating ethical, socially responsible and/or sustainable challenges and generating and articulating responses • Embracing lifelong, life-wide and life-deep learning to be open to diverse others • Implementing required actions to foster sustainability in their professional and personal life.	K3, A1	AT3

Learning Task and Assessment:

This unit introduces students to the core concept, theory and technologies involved in managing big data. Students will have the opportunity to engage in the unit study through lectures, lab projects and other learning activities. Students are encouraged to understand the unit description, including the requirement of assessment tasks before taking the unit.

Learning Outcomes Assessed	Assessment Tasks	Assessment Type	Weighting
S1, K1, K2	Install software, build a working environment of big data management and explain related basic concept.	Assignment(s)	10%-20%
S1, S2, S3, A3	Students implement lab projects by using related software tools and report their lab work.	Assignment(s)	20%-30%

Learning Outcomes Assessed	Assessment Tasks	Assessment Type	Weighting
K3, A1, A4	Students will demonstrate a range of skills in a simulated workplace project, including managing big data, oral and written presentations and ethical considerations.	Presentation and Reflection	20 - 30%
K1, K2,K3, S2, S3, A1	Examinations/test will cover topics taught in the unit.	Examination/test	30%-40%

Adopted Reference Style:

APA

Refer to the library website for more information

Fed Cite - referencing tool