Unit Outline (Higher Education)

Institute / School:	Institute of Innovation, Science & Sustainability
Unit Title:	Big Data and Analytics
Unit ID:	ITECH1103
Credit Points:	15.00
Prerequisite(s):	Nil
Co-requisite(s):	Nil
Exclusion(s):	(GPSIT1103 and ITECH5103)
ASCED:	020303

Description of the Unit:

This unit provides fundamental concepts related to big data and analytics. This unit will explore the theory and applications of big data and demonstrate the process from data to decisions. Students will learn big data in various formats, data processing platforms and data analytics tools to transform, visualise, model, and communicate the insights hidden in the data, providing end users with timely knowledge to support decision making. The unit will explain the challenges organisations are facing with managing big data.

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

Work Experience:

No work experience

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 the different types of data (e.g. structured, semi-structured, unstructured) and their sources (e.g. sensors, medical, business, social data)

K2. Discuss the stages of the big data analytics lifecycle.

K3. Outline the main tools and techniques in this area.

K4. Explain the importance of big data governance.

Skills:

S1. Create and deliver reports using an analytical tool(s) on a real-world or simulated dataset.

S2. Explore and explain the current range of big data and analytics solutions and emerging trends and future issues.

S3. Explain contemporary IT industry practices/presentations relevant to Big Data and Analytics, and relate them to professional standards and your own career aspirations

Application of knowledge and skills:

A1. Communicate the stages and outcomes of the data analytics process.

A2. Apply big data analytics technology to a real-world or simulated dataset.

Unit Content:

Topics may include:

1. Big data concepts, applications and tools;

2. Structured data processing such as RDBMS, SQL

3. Non-structured data processing

4. Data analytics technologies

5. Stream mining, real time analytics

6. Predictive analytics

7. Big data applications.

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.	Not applicable	Not applicable
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	Not applicable	Not applicable
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.	Not applicable	Not applicable
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.	Not applicable	Not applicable

FEDTASK attribute and descriptor		Development and acquisition of FEDTASKS in the Unit	
		Learning Outcomes (KSA)	Assessment task (AT#)
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.	Not applicable	Not applicable

Learning Task and Assessment:

Learning Outcomes Assessed	Assessment Tasks	Assessment Type	Weighting
S1, A1	Students will create data analytics models such as ERD's and apply various data preparation and preprocessing methods to data, implemented as an SQL database.	Lab work and/or Assignment(s)	10%
K1, S1, A1, A2	Students will choose and/or implement an appropriate data analytic solution for a chosen specific problem and describe the components of the data analytics process. The assessment also includes theoretical questions to provide context and opportunities for reflection on the analytical tasks undertaken, including consideration of big data, the different types of data and their sources.	Lab work and/or Assignment(s)	30%-50%
K2, K3, K4, S1, S2, S3, A1, A2	Students will create data analytics models, apply various data preparation, preprocessing, analytic solutions for a specific problem. This will be written up as a report, which also includes theoretical questions to provide context and opportunities for reflection on the analytical tasks undertaken, including consideration of data governance.	Lab work and/or Assignment(s)	30%-50%
K1, K2, K3, K4, S2, A1	Tests and/or examinations covering a range of taught big data and analytics topics.	Oral / Written Test(s)	0% - 30%

Adopted Reference Style:

APA ()

Refer to the library website for more information

Fed Cite - referencing tool