Unit Outline (Higher Education)

Institute / School: Institute of Innovation, Science & Sustainability

Unit Title: Data Analytics

Unit ID: ITECH2303

Credit Points: 15.00

Prerequisite(s): (ITECH1503)

Co-requisite(s): Nil

Exclusion(s): Nil

ASCED: 020303

Description of the Unit:

This unit will provide students with an understanding of the major components of the data analytics process, the various methods for data analytics, knowledge of the applications and technical aspects of data analytics, and skills to apply data analytics in real-world problems.

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			✔			

Level of Unit in Course	AQF Level of Course					
	5	6	7	8	9	10
Advanced						

Learning Outcomes:

Knowledge:

K1. Describe the components of the data analytics process.

K2. Explain different methods for evaluating data analytics models.

Skills:

S1. Create data analytics models.

S2. Apply various data preparation and preprocessing methods to data.

Application of knowledge and skills:

A1. Choose and/or implement an appropriate data analytic solution for a specific problem.

Unit Content:

Topics may include:
1. The need for data analytics.
2. The characteristics of major components of the data analytics process.
3. Different types of data
4. The principles of different methods for data analytics.
5. Python programming for data manipulation (pandas library)
6. Descriptive statistics
7. Data visualisation
8. Exploratory Data Analysis
9. Model building and model representation.
10. Model evaluation, overfitting, underfitting
11. Key and emerging application areas.
12. Data Science

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 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.	A1	AT1
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, A1	AT1
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, S2	Students will employ various exploratory techniques on a problem of their own choice from a selection of online repositories.	Projects / Assignments	10%-15%
K1, S2, A1	Students will choose and/or implement an appropriate data analytic solution for a chosen specific problem, focussing on the data preparation, preprocessing, stages. The assessment also includes theoretical questions to provide context and opportunities for reflection on the analytical tasks undertaken, including description of the components of the data analytics process.	Projects / Assignments	30%-50%
K1, K2, S1, S2, A1	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. The assessment also involves application of different methods for evaluating data analytics models.	Projects / Assignments	30%-50%
K1, K2, A1	Students will provide theoretical answers and work out solutions to a range of questions and problems designed to test their understanding on data analytic concepts, principles and applications.	Test(s)	0%-30%

Adopted Reference Style:

APA

Refer to the library website for more information

Fed Cite - referencing tool