Unit Outline (Higher Education)

Institute / School: Institute of Innovation, Science & Sustainability

Unit Title: ADVANCED DATA SCIENCE PROJECT 1

Unit ID: DATSC5001

Credit Points: 30.00

Prerequisite(s): (ITECH5500 or equivalent)

Co-requisite(s): Nil

Exclusion(s): Nil

ASCED: 010199

Description of the Unit:

This unit is intended to be taken in sequence with DATSC5002 and will equip you with the knowledge and skills to undertake an extensive data science research project. During the unit, you will be employing a combination of theoretical, analytical and computing skills relevant to your field of advanced study. In particular, you will critically review relevant literature and present your findings in front of a peer based audience.

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: No

Supplementary assessment is not available to students who gain a fail in this Unit.

Course Level:

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

Learning Outcomes:

On successful completion of the unit, you will be able to

Knowledge:

K1. Analyse the concepts underlying research in data science.

K2. Justify how to approach and undertake a research project.

K3. Apply critical thinking to research design and investigation.

Skills:

S1. Apply mathematics, statistics and predictive modelling techniues to gain insights, predict behaviours and generate value from data.

S2. Communicate the outcomes of your research to peers through written and verbal means.

S3. Critically review and synthesize research literature.

S4. Construct appropriate research methodologies and evaluate their limitations.

Application of knowledge and skills:

A1. Assess and synthesize information from statistical data analysis.

A2. Produce a major piece of written work through a thesis (and other formats), commensurate with the discipline and field of research.

A3. Critique existing regression and multivariate methods in literature and recomend improvements, where appropriate, to create new knowledge.

Unit Content:

This unit is designed to foster problem-based self learning and research. There will be minimal formal lectures.

Topics may include:

- Research ethics and principles
- Types of scientific research
- Research questions and hypotheses
- Literature review
- Data analysis methods and rationale
- Communicating scientific results
- Preparing scientific publications and thesis

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 at this level will demonstrate an advanced ability in a range of contexts to effectively communicate, interact and work with others both individually and in groups. Students will be required to display high level skills in-person and/or online in: • Using and demonstrating a high level of verbal and non-verbal communication • Demonstrating a mastery of listening for meaning and influencing via active listening • Demonstrating and showing empathy for others • High order skills in negotiating and conflict resolution skills • Demonstrating mastery of working respectfully in cross-cultural and diverse teams.	K1-K3, S1-S4, A1-A2	AT1, AT2, AT3
FEDTASK 2 Leadership	Students at this level will demonstrate a mastery in professional skills and behaviours in leading others. • Creating and sustaining a collegial environment • Demonstrating a high level of self -awareness and the ability to self-reflect and justify decisions • Inspiring and initiating opportunities to lead others • Making informed professional decisions • Demonstrating initiative in new professional situations	K1-K3, S1-S4, A1-A2	AT1, AT2, AT3
FEDTASK 3 Critical Thinking and Creativity	Students at this level will demonstrate high level skills in working in complexity and ambiguity using the imagination to create new ideas. Students will be required to display skills in: • Reflecting critically to generate and consider complex ideas and concepts at an abstract level • Analysing complex and abstract ideas, concepts and information • Communicate alternative perspectives to justify complex ideas • Demonstrate a mastery of challenging conventional thinking to clarify complex concepts • Forming creative solutions in problem solving to new situations for further learning	K1-K3, S1-S4, A1-A2	AT1, AT2, AT3
FEDTASK 4 Digital Literacy	Students at this level will demonstrate the ability to work competently across a wide range of tools, platforms and applications to achieve a range of tasks. Students will be required to display skills in: • Mastering, exploring, evaluating, managing, curating, organising and sharing digital information professionally • Collating, managing complex data, accessing and using digital data securely • Receiving and responding professionally to messages in a range of professional digital media • Contributing competently and professionally to digital teams and working groups • Participating at a high level in digital learning opportunities	K2, K3, S1, S2, A1, A2	AT1, AT2, AT3

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 at this level will demonstrate a mastery of considering and assessing the consequences and impact of ideas and actions in enacting professional ethical and sustainable decisions. Students will be required to display skills in: • Demonstrate informed judgment making that considers the impact of devising complex solutions in ambiguous global economic environmental and societal contexts • Professionally committing to the promulgation of social responsibility • Demonstrate the ability to evaluate ethical, socially responsible and/or sustainable challenges and generating and articulating responses • Communicating lifelong, life-wide and life-deep learning to be open to the diverse professional others • Generating, leading and implementing required actions to foster sustainability in their professional and personal life.	K1, S2, A1, A2	AT4

Learning Task and Assessment:

Learning Outcomes Assessed	Assessment Tasks	Assessment Type	Weighting
K1-K3, S3, A1, A3	Project proposal: A short concise project proposal (approx. 3 pages) clearly outlining the research plan to be undertaken as part of DATSC5001 and DATSC5002 units.	Report	5 - 15%
K1-K3, S1-S3, A1	Mid-term progress presentation: Presentation demonstrating ongoing progress in your project tasks, particularly with reference to literature review, research gaps and methodology outlining clear descriptions of data analysis techniques.	Presentation	10 - 20%
K1-K3, S2, S4, A1-A3	Final Report: A complete draft of a dissertation, technical report or an academic paper. This must include complete sections on literature review, data source and methodology and preliminary results.	Report	70-80%

Adopted Reference Style:

APA

Refer to the library website for more information

Fed Cite - referencing tool