



Unit Outline (Higher Education)

Institute / School: Institute of Innovation, Science & Sustainability

Unit Title: ADVANCED DATA SCIENCE PROJECT 2

Unit ID: DATSC5002

Credit Points: 30.00

Prerequisite(s): (ITECH5500 or equivalent) (DATSC5001)

Co-requisite(s): Nil

Exclusion(s): Nil

ASCED: 010199

Description of the Unit:

This unit is intended to be taken in sequence with DATSC5001 and will build upon that unit. You will continue to develop the knowledge and skills needed to undertake a 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. You will produce a final written thesis (or other suitable form of written work) 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	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Intermediate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Advanced	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Learning Outcomes:

On successful completion of the course, you are expected to be able to:

Knowledge:

- K1.** Critically analyse the concepts underlying research in data science.
- K2.** Justify how to approach and undertake a research project at an advanced level.
- K3.** Systematically apply critical thinking to research design and investigation.

Skills:

- S1.** Apply advanced level mathematics, statistics and predictive modelling techniques to gain insights, predict behaviours and generate value from data.
- S2.** Communicate the outcomes of their research to peers through written and verbal means.
- S3.** Critically review and synthesize research literature.
- S4.** Construct appropriate research methodologies, evaluate their limitations and formulate recommendations for future research.

Application of knowledge and skills:

- A1.** Critically 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 recommend improvements, where appropriate, to create new knowledge.

Unit Content:

Topics may include:

- Analysis of results
- Creative and critical thinking
- Preparation of a research thesis
- Producing research paper out of a research 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**tttributes **S**kills and **K**nowledge) provide a targeted focus on five key transferable Attributes, Skills, and Knowledge that are 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#)

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		Learning Outcomes (KSA)	Assessment task (AT#)
FEDTASK 1 Interpersonal	<p>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:</p> <ul style="list-style-type: none"> 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, AT3, AT4
FEDTASK 2 Leadership	<p>Students at this level will demonstrate a mastery in professional skills and behaviours in leading others.</p> <ul style="list-style-type: none"> 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, AT3, AT4
FEDTASK 3 Critical Thinking and Creativity	<p>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:</p> <ul style="list-style-type: none"> 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, AT3, AT4
FEDTASK 4 Digital Literacy	<p>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:</p> <ul style="list-style-type: none"> 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, AT3, AT4
FEDTASK 5 sustainable and Ethical Mindset	<p>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:</p> <ul style="list-style-type: none"> 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	AT3

Learning Task and Assessment:

Learning Outcomes Assessed	Assessment Tasks	Assessment Type	Weighting
K1-K3, S2, S3, A1	A short presentation in the early weeks of the semester on the progress made thus far in the research project.	Presentation	5 - 15%
None	Submission of thesis draft to supervisor for initial comments.	Hurdle	0%
K1-K3, S1-S4, A1-A3	Final thesis to be submitted to the supervisor for examination. Note thesis will be examined by at least one independent reviewer.	Production of a dissertation	70 - 80%
K1-K3, S2-S4, A1, A3	Final presentation to assess your ability to orally communicate major technical concepts, important findings and potential future work/s underlying your project in a logical and clear manner.	Presentation	10 - 20%

Adopted Reference Style:

APA

Refer to the [library website](#) for more information

Fed Cite - [referencing tool](#)