

Course Outline (Higher Education)

School:	School of Engineering, Information Technology and Physical Sciences
Course Title:	DATA SCIENCE CASE STUDIES
Course ID:	ITECH7003
Credit Points:	15.00
Prerequisite(s):	ITECH5007
Co-requisite(s):	Nil
Exclusion(s):	Nil
ASCED:	020199

Description of the Course:

DATA SCIENCE CASE STUDIES will focus on the application of data science techniques/tools to various domains (real-world data). It uses analytical and data science methods to solve real-world application questions and to implement the solution using tools. We will work through case studies in a variety of contexts including, e.g., business, science, healthcare, industry, education and society to investigate how knowledge and value are extracted from data. Through examining the wide-ranging applications of data science, we will further understand the underlying learning algorithms, models, codes and data. Topics will include experimental and project design, business predictive analytics, data processing, model training and evaluation, algorithm and code analysis, application cases analytics, software tools, visualisation and project management.

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

Placement Component: No

Supplementary Assessment: Yes

Where supplementary assessment is available a student must have failed overall in the course but gained a final mark of 45 per cent or above and submitted all major assessment tasks.

Program Level:

Level of course in Program	AQF Level of Program					
	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 checked="" type="checkbox"/>	<input type="checkbox"/>

Level of course in Program	AQF Level of Program					
	5	6	7	8	9	10
Advanced	■	■	■	■	■	■

Learning Outcomes:

Knowledge:

- K1.** Demonstrate an understanding questions of data science applications in various domains.
- K2.** Demonstrate sound knowledge of the basic principles that underpin data science, experimental design, algorithms and learning models.
- K3.** Show ability to integrate the knowledge of data science and associated tools to develop data science project.
- K4.** Analyse, evaluate and synthesise findings from data science investigations in a form suitable for specialist and non-specialist audiences.

Skills:

- S1.** Critically evaluate the keys to successful data science projects implementation.
- S2.** Apply data science skills, knowledge and techniques to solve problems in a particular area.
- S3.** Design data science project based on business requirements.

Application of knowledge and skills:

- A1.** Utilise modelling and analysis techniques/tools for data science projects.
- A2.** Employ a range of data science skills, and emulate real-world practice of data science applications.

Course Content:

Topics may include:

- experimental and project design
- data design
- predictive analytics
- data processing
- model training and evaluation
- algorithm and code analysis
- application cases analytics
- visualisation projects
- software tools
- project management

Graduate Attributes

The Federation University FedUni graduate attributes (GA) are entrenched in the [Higher Education Graduate Attributes Policy](#) (LT1228). FedUni graduates develop these graduate attributes through their engagement in explicit learning and teaching and assessment tasks that are embedded in all FedUni programs. Graduate attribute attainment typically follows an incremental development process mapped through program progression. **One or more graduate attributes must be evident in the specified learning outcomes and assessment for each FedUni course, and all attributes must be directly assessed in each program**

Graduate attribute and descriptor		Development and acquisition of GAs in the course	
		Learning Outcomes (KSA)	Assessment task (AT#)
GA 1 Thinkers	Our graduates are curious, reflective and critical. Able to analyse the world in a way that generates valued insights, they are change makers seeking and creating new solutions.	K1, K2, K3, K4, S1, S2, S3	AT1 & AT2
GA 2 Innovators	Our graduates have ideas and are able to realise their dreams. They think and act creatively to achieve and inspire positive change.	A1, S2, K2, K3	AT1 & AT2
GA 3 Citizens	Our graduates engage in socially and culturally appropriate ways to advance individual, community and global well-being. They are socially and environmentally aware, acting ethically, equitably and compassionately.	A2, S2, K1	AT1
GA 4 Communicators	Our graduates create, exchange, impart and convey information, ideas, and concepts effectively. They are respectful, inclusive and empathetic towards their audience, and express thoughts, feelings and information in ways that help others to understand.	S1, S3, K4	AT1 & AT2
GA 5 Leaders	Our graduates display and promote positive behaviours, and aspire to make a difference. They act with integrity, are receptive to alternatives and foster sustainable and resilient practices.	A2, S1, S3	AT1

Learning Task and Assessment:

Learning Outcomes Assessed	Learning Tasks	Assessment Type	Weighting
K1-4, S1-3, A1	Develop skills in the analysis and practical application of data science techniques/tools.	Tutorials, assignments, and/or exercises	40%-60%
K1-4, S1-3, A1-A2	Students will provide theoretical answers and provide practical solutions to a range of questions and problems drawn from case studies.	Test(s)	40%-60%

Adopted Reference Style:

APA

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

Fed Cite - [referencing tool](#)