



Course Outline (Higher Education)

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

Description of the Course :

DATA SCIENCE FOR ALL is an introductory course to data science, a fast-growing and exciting field. This course will provide an overview of a number of topics that play fundamental roles across various subjects in data science. The course features an emphasis on foundations and practical knowledge of data science, as well as computational thinking and real-world relevance. Topics to be covered include data types, data representation, data preparation, data processing and mining, data management, data exploration and visualisation. Hands-on experience working with real-world data, techniques, and tools will prepare students for advanced courses and enable students to start careers as data scientists.

Grade Scheme: Graded (HD, D, C, etc.)

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 checked="" 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 type="checkbox"/>	<input type="checkbox"/>

Learning Outcomes:**Knowledge:**

- K1.** Demonstrate an understanding of the principles of modern data science as well as data science lifecycle.
- K2.** Explain and exemplify the most common forms of data types and representations.
- K3.** Describe and apply a core collection of elementary techniques for data preparation, processing, management, exploration, and visualisation.
- K4.** Identify and describe a core collection of methods and algorithms for data analysis and mining.

Skills:

- S1.** Demonstrate competent skills in using data science technology for solving problems at an appropriate level of difficulty.
- S2.** Use data science software and tools.
- S3.** Implement any chosen data science solution and communicate the results effectively.

Application of knowledge and skills:

- A1.** Employ appropriate techniques and tools to process and analyse data.
- A2.** Integrate data science principles, methods, techniques and tools covered in this course to plan and execute a data science project.

Course Content:**Topics may include:**

- introduction to data and data science
- data types and representation
- foundations of algorithms and programming
- data collection, cleaning, and wrangling
- data management
- fundamentals of data mining
- application case analytics
- data visualisation
- software tools and practice

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
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		Learning Outcomes (KSA)	Code A. Direct B. Indirect N/A Not addressed	Assessment task (AT#)	Code A. Certain B. Likely C. Possible N/A Not likely
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, A2	A	AT1, AT2, AT4	A
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, A2, S1, S2, K4	A	AT1, AT2, AT4	B
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.	K1, S3	B	AT1, AT4	B
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.	K3, S3, A1	A	AT1, AT2, AT3	A
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	B	AT3	C

Learning Task and Assessment:

Learning Outcomes Assessed	Learning Tasks	Assessment Type	Weighting
S1-3, A1, A2	Students will apply data science principles, methods, techniques and tools to design, implement and document solutions to simple problems.	Assignments and exercises	40%-50%
K1-4, S1-3, A1	Students will provide theoretical answers and provide practical solutions to a range of questions and problems drawn from theory and examples used during the course.	Test(s)	50%-60%

Adopted Reference Style:

APA