Course Outline (Higher Education)

School: School of Engineering, Information Technology and Physical Sciences

Course Title: STATISTICAL METHODS

Course ID: STATS1000

Credit Points: 15.00

Prerequisite(s): Nil

Co-requisite(s): Nil

Exclusion(s): Nil

ASCED: 010103

Description of the Course :
This course introduces students to the full range of descriptive statistical techniques, and also introduces the key concepts underlying statistical inference. A wide range of basic inferential techniques are introduced. Data from various disciplinary contexts is utilised, and there is a strong emphasis on computing skills, interpretation of computer output and communication of statistical results and conclusions.

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

Work Experience:

No work experience: Student is not undertaking work experience in industry.

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			✔			
Intermediate						
Advanced						

Learning Outcomes:

Knowledge:

K1. Describe a set of data using appropriate statistical measures, language and symbols.
K2. Describe quantitative data using probability distributions.
K3. Recognise the role of hypothesis tests in statistics.
K4. Describe relationship between two variables using linear regression equations.

Skills:

S1. Use standard statistical computer packages to perform routine data management tasks and statistical analyses.
S2. Present data in a clear and informative way in both tabular and graphical form.
S3. Perform appropriate hypothesis tests using standard statistical computer packages.
S4. Obtain a linear regression equation and interpret the coefficients and associated statistics.
S5. Perform one and two way analyses of variance.
S6. Communicate results from statistical analyses using appropriate statistical conventions.

Application of knowledge and skills:

A1. Interpret computer output in terms that relate to the particular problem situation.
A2. Select and perform appropriate statistical tests for given data sets and problem situations.

Course Content:

Topics may include:

- Data presentation and basic descriptive statistics.
- Discrete and continuous probability distributions.
- Estimation and hypothesis testing (t-tests for single sample, paired and independent).
- Non-parametric alternatives.
- Chi-square tests.
- Correlation and regression.
- Introduction to 1-way and 2-way analysis of variance.

Values:

V1. Appreciate the role of the central limit theorem and normal ditributions in statistical inference.
V2. Appreciate the role of statistics in their particular disciplines.

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)	**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 - K4; S1 - S6; A1 - A2	A	1, 2, 3	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.	K1 - K4; S1 - S6; A1 - A2	A	2	A
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.	K3; S6; A2	B	2	P
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.	K1; K2; K4; S2; S6; A1	A	1, 2, 3	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.	K3; S6; A2	B	2	C

Learning Task and Assessment:

Learning Outcomes Assessed	Learning Tasks	Assessment Type	Weighting
K1-K4, S1-S6, A1-A2	Practical use of appropriate statistical packages and interpretation of output.	Weekly laboratory classes and tutorial exercises	10 - 20 %
K1-K4, S1-S6, A1-A2	Appropriate statistical analysis and presentation of data based on a given context.	Assignment	20 - 40 %
K1-K4, S1-S6, A1-A2	Attend lectures, read and summarise all aspects of the unit.	Tests and Examination(s)	50 - 70 %

Adopted Reference Style:

APA