



Unit Outline (Higher Education)

Institute / School:	Institute of Innovation, Science & Sustainability
Unit Title:	QUANTITATIVE FOUNDATIONS AND NUMERICAL ANALYSIS
Unit ID:	BUHON4005
Credit Points:	15.00
Prerequisite(s):	Nil
Co-requisite(s):	Nil
Exclusion(s):	Nil
ASCED:	080300

Description of the Unit:

Students are introduced firstly to data measurement, data models, probability distributions and forms of data presentation. Sampling, sample distributions and statistical inference including hypothesis testing are then described. The unit concludes with descriptions of correlation-based methods including ANOVA, regression and factoring, time series techniques, categorical data analysis and nonparametric statistics. Applied statistical methods or analytical techniques for econometric modelling, structural equation modelling, discriminant analysis, cluster analysis or others may be described according to student research requirements

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: Yes

Where supplementary assessment is available a student must have failed overall in the Unit but gained a final mark of 45 per cent or above, has completed all major assessment tasks (including all sub-components where a task has multiple parts) as specified in the Unit Description and is not eligible for any other form of supplementary assessment

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"/>

Level of Unit in Course	AQF Level of Course					
	5	6	7	8	9	10
Intermediate	■	■	■	■	■	■
Advanced	■	■	■	✓	■	■

Learning Outcomes:

Knowledge:

- K1.** Describe fundamental concepts in numerical data analysis including data forms, sampling and hypothesis testing
- K2.** Explain basis statistical approaches to analysing data to answer various research questions
- K3.** Compare and contrast statistical methods with respect to assumptions, limitations and interpretation of results

Skills:

- S1.** Construct summary models appropriate for the data and research purpose
- S2.** Identify numerical sampling techniques for inferential statistical analysis and hypothesis testing
- S3.** Determine suitable statistical methods and techniques to answer research questions for a range of data contexts

Application of knowledge and skills:

- A1.** Report and present data models summarising numerical distributions
- A2.** Devise and implement a sampling framework designed to answer a specified research question
- A3.** Apply analytical techniques to a data set with results reported in the context of key assumptions, findings, and limitations

Unit Content:

- Basic numerical analysis including probability distributions and suitable forms of data presentation
- Sampling from populations, statistical inference and hypothesis testing
- Quantitative methods and techniques including correlational analysis plus advanced techniques

Learning Task and Assessment:

Learning Outcomes Assessed	Assessment Tasks	Assessment Type	Weighting
K1, K3, S1, S3	Self-paced online quiz	Short Answer	10 - 20%
K3, S2, S3, A3	Quantitative method application and interpretation	Written Report and Coding Files	40 - 60%
K1, K2, S1, S2, A1, A2	Sampling plan and data analysis	Report and Presentation	30 - 50%

Adopted Reference Style:

APA

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

Fed Cite - [referencing tool](#)