



Unit Outline (Higher Education)

Institute / School: Institute of Innovation, Science & Sustainability

Unit Title: Statistics for Prediction

Unit ID: STATS2101

Credit Points: 15.00

Prerequisite(s): (MS501 or STATS1000)

Co-requisite(s): Nil

Exclusion(s): (MS602)

ASCED: 010103

Description of the Unit:

This unit introduces the two main themes of predictive statistical analysis - regression and time series methods. 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, 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"/>
Intermediate	<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.** Describe relationship between dependent and independent variables using appropriate linear regression models.
- K2.** Describe relationships using time series regression models.
- K3.** List regression assumptions, and evaluate model appropriateness from these assumptions.
- K4.** Recognise importance of regression models for predictions.

Skills:

- S1.** Apply available software such as SPSS and MINITAB to develop regression models.
- S2.** Build regression models using iterative model selection procedure such as stepwise regression and backward elimination.
- S3.** Perform appropriate diagnostics for detecting outlying and influential observations prior to model development.
- S4.** Perform appropriate hypothesis tests to determine the significance of independent variables in a regression model.
- S5.** Build appropriate time series regression models.
- S6.** Use linear regression and time series models for predictions.
- S7.** Present clear, orderly and informative statistical summaries and technical reports.

Application of knowledge and skills:

- A1.** Build regression models for real life applications.
- A2.** Apply regression models to predict future events and conditions.

Unit Content:

This unit introduces the two main themes of predictive statistical analysis - regression and time series methods. 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.

Topics may include:

- Simple and multiple regression: model selection and evaluation, transformations, residuals and influence.
- Time series analysis and forecasting: classical decomposition, exponential smoothing, regression methods, sinusoidal models.

Learning Task and Assessment:

Learning Outcomes Assessed	Assessment Tasks	Assessment Type	Weighting
K1-K4, S1-S7, A1-A2	Read research and apply various aspects of regression and time series.	Assignments	50 - 60%
K1-K4, S2-S6, A1-A2	Summarise theoretical aspects of the unit	Examination	40-50%

Adopted Reference Style:

APA

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

Fed Cite - [referencing tool](#)