

Course Outline (Higher Education)

School:	School of Science, Engineering and Information Technology
Course Title:	STATISTICS FOR PREDICTION
Course ID:	STATS2101
Credit Points:	15.00
Prerequisite(s):	(MS501 or STATS1000)
Co-requisite(s):	Nil
Exclusion(s):	(MS602)
ASCED Code:	010103

Description of the Course :

This course 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, etc.)

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:

AQF Level of Program						
	5	6	7	8	9	10
Level						
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:

Course Outline (Higher Education)

STATS2101 STATISTICS FOR PREDICTION

- 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.

Course 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.

Values and Graduate Attributes:

Values:

- V1.** Appreciate the role of time series and regression analyses in the real world.

Graduate Attributes:

Attribute	Brief Description	Focus
Continuous Learning	The two main attributes of this course are: (i) to help students develop an understanding of concepts and methodologies of regression analysis, and (ii) to help them develop the ability to apply these concepts and understandings to real-world problems in their disciplines.	Medium
Self Reliance	Self reliance will be demonstrated through utilisation of extra resources in the course such as reading reference notes, completion of laboratory and tutorials, and timely completion of assessment tasks.	Medium
Engaged Citizenship	Not applicable	
Social Responsibility	Students will be able to appreciate the role and appropriate use of regression analysis to solve the real-world problems.	Low

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STATS2101 STATISTICS FOR PREDICTION

Learning Task and Assessment:

Learning Outcomes Assessed	Learning Tasks	Assessment Type	Weighting
K1-K4, S1-S7, A1-A2	Read research and apply various aspects of regression and time series.	Assignments	40 - 50%
K1-K4, S1-S7, A1-A2	Attend lectures, read and summarise theoretical aspects of the unit.	Examination(s)	50 - 60%

Adopted Reference Style:

APA