

## **ANL321 Statistical Methods**

**Level:** 3

**Credit Units:** 5 Credit Units

**Language:** ENGLISH

**Presentation Pattern:** EVERY JULY

### **Synopsis:**

ANL321 Statistical Methods is an intermediate course in Statistics that will cover statistical theory in greater depth beyond those covered in BUS105 Statistics such as multiple comparisons in ANOVA and model adequacy checking in Regression models. It will cover foundational topics such as probability theory and random variables, concepts of summary statistics such as expectations, variances, covariances, large sample theory such as law of large numbers and central limit theorem. The course will pay attention least squares regression, the models of linear regression, the asymptotic properties of the least squares estimator, and other issues concerning the use of linear regression analysis. We will cover elements of nonparametric statistics and regression such as kernel density estimation and kernel regression, and the basics of maximum likelihood estimation. Specific software will be used intensively in the course to provide hands-on applications of the topics covered.

### **Topics:**

- Probability
- Random Variables
- Measures of Central Tendency and Dispersion
- Measures of Dependence
- Elements of Asymptotic Theory
- Confidence Intervals and Hypothesis Testing
- Least Squares Regression Analysis
- Least Squares Regression Models
- Large Sample Properties and Inference in Linear Regression
- Multicollinearity, Model (Mis)Specification, and Heteroskedasticity
- Kernel Density Estimation and Kernel Regression
- Introduction to Maximum Likelihood Estimation

### **Textbooks:**

DeGroot, M. & Schervish, M: Probability and Statistics 4 Pearson  
ISBN-13: 9781292037677-AA

DeGroot, M. & Schervish, M: Probability and Statistics 4 Pearson  
ISBN-13: 9781292037677

**Learning Outcome:**

- Explain relevant concepts used in the various statistical methods
- Describe the relevant data and assumptions to be used for the various statistical models
- Determine the relevant statistical methods to use for a given business problem and data structure
- Appraise the advantages and disadvantages of using various statistical methods
- Implement the various statistical methods using appropriate statistical software
- Interpret the results of using the various statistical methods
- Evaluate the results of using the various statistical methods

<b>Continuous Assessment Component</b>	<b>Weightage (%)</b>
PRE-COURSE QUIZ	2
PRE-CLASS QUIZ	2
PRE-CLASS QUIZ	2
PARTICIPATION	6
TUTOR-MARKED ASSIGNMENT	15
GROUP BASED ASSIGNMENT	23
<b>Sub-Total</b>	<b>50</b>

<b>Examinable Component</b>	<b>Weightage (%)</b>
Written Exam	50
<b>Sub-Total</b>	<b>50</b>

**Weightage Total** **100**