

ANL451 Advanced Statistical Methods

Level: 3

Credit Units: 5 Credit Units

Language: ENGLISH

Presentation Pattern: EVERY JAN

Synopsis:

ANL451 Advanced Statistical Methods is an advanced course in Statistics. It will cover topics on maximum likelihood estimation, nonlinear regression and quantile regression, and their asymptotic properties. It will cover more advanced topics in inference such as the Wald Test and the Likelihood Ratio Test. The course will focus also on statistical modelling with categorical and count variables. It will discuss models of binary outcome variables such as the Logit and Probit Models, models of multinomial outcome variables such as the Multinomial Logit Model, and models with data that are censored or truncated, and models of self-selection. Finally, it will cover models of count data such as Poisson regression and fundamentals of survival analysis such duration models.

Topics:

- Linear Regression
- Maximum Likelihood Estimation
- Nonlinear Models
- Quantile Regression
- Asymptotic Properties of Linear and Nonlinear Estimators
- Hypothesis Testing: Wald Test and Likelihood-Based Tests
- Bootstrapping
- Binary outcome Models
- Multinomial Models
- Censoring, Truncation and Self Selection
- Methods of Count Data - Poisson Regression
- Survival Analysis - Duration models

Textbooks:

Alan Agresti: Categorical Data Analysis, third Edition 3 John Wiley & Sons
ISBN-13: 9781118467756

Alan Agresti: Categorical Data Analysis, third Edition 3 John Wiley & Sons
ISBN-13: 9781118467756-AA

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

Assessment Strategies:

Continuous Assessment Component	Weightage (%)
PRE-COURSE QUIZ	2
PRE-CLASS QUIZ	4
PARTICIPATION	6
TUTOR-MARKED ASSIGNMENT	15
GROUP BASED ASSIGNMENT	23
Sub-Total	50

Examinable Component	Weightage (%)
Written Exam	50
Sub-Total	50

Weightage Total **100**