

# MTH358 Applied Regression Analysis II

**Level:** 3

**Credit Units:** 5 Credit Units

**Language:** ENGLISH

**Presentation Pattern:** EVERY JULY

## **Synopsis:**

MTH358 will be a continuation to MTH357 and provide students with an understanding of more advanced regression models and techniques used in analytics and artificial intelligence. The course gives a comprehensive introduction to more advanced topics such as nonlinear regression, logistic regression and generalized linear models. Additionally, the course covers how the algorithms are implemented using the software R. MTH358 will be paired with MTH357 so that students upon the completion of both courses will have a better understanding of the contents in the field of regression analysis.

## **Topics:**

- Model-Building
- Variable Selection
- Validation Techniques
- Nonlinear Regression Models
- Transformation to a Linear Model
- Statistical Inference in Nonlinear Regression
- Logistic Regression Models
- Generalized Linear Models
- Regression Analysis of Time Series Data
- Robust Regression
- Bootstrapping in Regression
- Neural Networks

## **Textbooks:**

Douglas C. Montgomery, Elizabeth A. Peck, G. Geoffrey Vining: Introduction to Linear Regression Analysis 6 John Wiley  
ISBN-13: 9781119578758

**Learning Outcome:**

- Apply nonlinear regression models and generalized linear models.
- Interpret regression model parameters from data.
- Implement regression diagnostics to validate regression models.
- Use resampling algorithms for estimation of the regression model predictive accuracy.
- Analyze data with regression models.
- Assess the fit of a regression model to data.

**Assessment Strategies (Evening Class):**

<b>Components</b>	<b>Description</b>	<b>Weightage Allocation (%)</b>
Overall Continuous Assessment	COMPUTER MARKED ASSIGNMENT 1	10
	TUTOR-MARKED ASSIGNMENT 1	20
Overall Examinable Components	Written Exam	70
<b>Total</b>		<b>100</b>