

ISOM2600 – Introduction to Business Analytics

Spring 2020

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Prerequisites

ISOM2500 Business Statistics

Class Size

Maximum: 100

Minimum: 60

Course Description

This course presents classical approaches for analyzing complex data from business domain, including multiple regression, data transformation, classification methods, and clustering analysis. All of these approaches will be analyzed in the context of Marketing, Finance and other important business domains. Python is the programming tool for computation.

Course Objectives

On successful completion of the course, students will be able to:

- Use the concepts underlying the quantitative tools which deal with complex data from business domain, and put those tools together with data to draw meaningful conclusions.
- Use Python in a more effective way for analyzing data

Syllabus

1. Introduction to Multiple Regression
 - Multiple regression
 - Inference, Prediction, and Model checking
2. Fitting Nonlinear Pattern
 - Log-transformation

- Quadratic regression
 - Use Indicator and Interaction variables in regression
3. Model Selection
 - Best subset, Forward selection, Backward elimination, and Stepwise selection
 - Model evaluation: Adjusted R-squares, C_p , AIC, BIC
 - Training set and Validation set, Cross-Validation
 4. Classification I
 - Evaluation Criterion for Classification
 - Accuracy Score, Kolmogorov-Smirnov test, and Area Under the Curve (AUC)
 5. Classification II
 - K-Nearest Neighbors Classifier, Naïve Bayes Classifier
 - Logistic Regression
 6. Clustering Analysis
 - K-means Clustering
 - Hierarchical Clustering

Course Materials

Reference Books: Jack Vanderplas (2016), Python Data Science Handbook, 1st Edition, O'Reilly Media.

Evaluation

Assignment 1 (3 students/group)	10%
Assignment 2 (3 students/group)	10%
Assignment 3 (3 students/group)	10%
Assignment 4 (3 students/group)	10%
Project (3 students/group)	50%
Class Participation	10%

Final Grade

Your final grade will be given based on the distribution of the students' total scores in ISOM2600.