Data Science and Operations

USC Marshall School of Business

iom529

IOM 529
Advanced Regression Analysis (Section 16268 D)

Spring 2014
Monday and Wednesday
9:30 am – 10:50 am

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Why take the course?

- Students completing this course will have a detailed understanding of various Regression, Analysis of Variance, and other Data Aggregation methods.
- Numerous empirical examples from finance, marketing, economics, accounting, politics, sports, etc., are used to illustrate applications of the material covered. Emphasis will be placed on the analysis of actual datasets.
- Knowledge of regression methods is among the most demanded qualifications for business people working in either private or public sector of the economy. This course provides those skills and also opens possibilities for a business analyst/forecasting management position in business. **There is a shortage of well-trained MBA's for these positions.**
- This course is intended for students working in the field of accounting, economics, finance, business, marketing, production, operations research, international trade, etc., who want a non-technical introduction to applied financial econometrics.

Course objective

The course goals are for each student to understand regression methods and obtain **"hands on" experience** using, analyzing, and developing regression models for business applications. This is a data analysis course that shows how to use the **statistical package R** to help solve both simple and complex real-life data problems.

Key concepts

Regression analysis is performed in nearly every organization that works with quantifiable data. For example:

- **Marketing managers** use a sales forecast to establish promotional budgets.
- **Accountants** rely on forecasts of costs and revenue in tax planning.
- **Financial experts** must forecast cash flows to maintain solvency.
- The **personal department** depends on forecasts as it plans recruitment of new employees and other changes in the workforce.
- **Production managers** rely on forecasts to determine raw-material needs and the desired inventory of finished products.

Course description

This is a **data-driven applied statistics course** focusing on the analysis of data using regression models. Topics include simple and multiple linear regression, residual analysis and other regression diagnostics, multicollinearity and model selection, autoregression, heteroscedasticity, regression models using categorical predictors, and logistic regression.