

UNIVERSITY OF THE INCARNATE WORD
Extended Academic Programs
PMBA 6330
Applied Data Analytics
Syllabus

Catalog description:

Data analytics introduces students to methods of data collection, storage, organization, and analysis. The course begins with an overview of descriptive statistics, graphical methods, probability, hypothesis testing, and modeling using linear regression analysis. Exploratory and confirmatory data analysis will be used to examine model specification issues such as dealing with measurement error, handling omitted variable bias, and determining the correct functional form. Students will then learn how to solve problems associated with the violation of the assumptions of linear regression including heteroskedasticity, multicollinearity, and autocorrelation. Finally, an introduction to maximum likelihood estimation for nonlinear, categorical, and limited dependent variable models will be provided. A portion of every class will be dedicated to learning how to use SAS in a lab-like setting to write programs to structure, estimate, and interpret statistical models.

Context:

Prerequisite: DATA 63XX Quantitative Methods and Research

Course overview:

Topics to be included / Teaching strategies / Technological skills development

1. Topics include data collection procedures, data mining, data organization, exploratory data analysis, confirmatory data analysis, least squares regression analysis, functional form, dummy variables, interaction terms, omitted variables, irrelevant variables, endogenous variables, two-state least squares, heteroskedasticity, multicollinearity, autocorrelation, and maximum likelihood estimation.
2. In addition to the supplementing the text with lectures, student-centered, problem-based learning techniques including case studies, in-class activities, and student presentations and/or facilitation of materials will be utilized.
3. Students will develop tech-oriented data analytical skills using SAS, Stata, and SQL for data collection, storage, report generation, and analysis.

Course outcomes:

Upon completion of the course, students will be able to

Assessment:

The objectives will be assessed

Use the appropriate technologies to collect, store, and analyze data.

By In class lectures, problem sets, examinations, and student-centered learning activities

Estimate statistical models using ordinary least squares and maximum likelihood estimation procedures.

By In class lectures, problem sets, examinations, and student-centered learning activities

Support model construction decisions using exploratory and confirmatory data analysis and model diagnostics.

By In class lectures, problem sets, examinations, student-centered learning activities, and final project

Construct robust statistical models that do not violate the assumptions of linear regression analysis.

By In class lectures, problem sets, examinations, student-centered learning activities

Disability Statement

The university is committed to providing a supportive and challenging environment for all students. In accordance with Section 504 of the American Disabilities Act (ADA), the university ensures accessibility to its programs, services as activities for qualified students with documented disabilities. For more information contact Student Disability Support Services: Phone (210) 829-3997

Academic Honesty Statement

The highest standards of academic honesty are expected in the course. Forms of academic dishonesty include, but are not limited to cheating, plagiarism, counterfeit work, falsification of academic record, unauthorized reuse of work, theft, collusion. See the EAP Student Handbook for definitions and procedures for investigation of claims of academic dishonesty.

Approval date: *Month, year* (*TEMPLATE, italics are included as examples to be replaced for your course.*)