SAGRADO
Universidad del Sagrado Corazón

Syllabus

Title: Data Analysis Tools

Code: BAN 201

Prerrequisite: BAN 102, INF 120

CREDITS: 4 credits | 45 contact hours | 15 lab hours

Description

This course is an introduction to data analysis and its role in organizational decision-making. It introduces tools for searching for and obtaining data, as well as statistical techniques for analyzing and interpreting data. Ethical considerations in the application of methods for data collection, analysis, and visualization are discussed. The teaching methodology includes concept discussions, presentations focused on data visualization, and lab experiences. The data lab provides opportunities to interact with data and explore the use of code/programming tools. The course introduces students to the fundamental data science cycle: formulating a question, obtaining and processing data to answer it, generating a report using various tools, and communicating the results to address the original question. Excel and Tableau are examples of instructional tools that may be used in this course. This course is intended for students majoring in Business Analytics and Business Administration in general, and aims to introduce students to data analysis in organizations and businesses to support decision-making.

Justification

As companies collect more data than ever before, it is essential that teams be able to read and analyze that data efficiently. Data literacy is an essential skill for all roles within a company, not just for executives or researchers. This course offers an introduction to the fundamental tools and techniques for analyzing data. Students will learn to use specialized software to manipulate, visualize, and analyze datasets, as well as to interpret the results obtained. Emphasis will be placed on the practical application of data analysis tools in various contexts.

COMPETENCIES

The course develops the following competencies in students:

- Critical Thinking
- Research and Exploration
- Ethical Reflection

OBJECTIVES

Upon completion of the course, students will be able to:

1. Become familiar with the main data analysis tools available.
2. Acquire skills for manipulating and cleaning datasets.
3. Learn data visualization techniques to communicate results effectively.
4. Develop skills to perform exploratory data analysis.
5. Apply data analysis tools to practical projects.

Content

I. Introduction
   A. Definition of Data Analysis
   B. The Importance of Data Analysis in Business Administration
   C. Introduction to data analysis tools and software

II. Basic Concepts
   A. Descriptive Statistics
   B. Probability
   C. Variables and Data Types
   D. Qualitative and Quantitative Data
   E. Databases and Sampling

III. Data Manipulation
   A. Introduction to Data Manipulation Tools
   B. Data Manipulation Using Libraries
   C. Data cleaning and preprocessing

IV. Data Analysis
   A. Introduction to Data Analysis Tools
   B. Data Manipulation and Visualization
   C. Introduction to statistical modeling

D. Descriptive Statistics

V. Data Analysis Project
   A. Project Definition
   B. Initial Exploration of the Dataset
   C. Planning the Analysis
   D. Implementation of the Analysis

VI. Project Presentations
   A. Student Project Presentations
   B. Feedback from peers and the instructor

METHODOLOGIES

The following active learning strategies are recommended:

- Lectures by the instructor
- Case study analysis
- Problem-based learning
- Project

ASSESSMENT

Midterm assignments	20%
Exams	20%
Class Participation	15%
Project	25%
Lab	20%
Total	**100%**

Student Learning Assessment

The institutional assessment rubric is applied to the core activity of the course.

BIBLIOGRAPHY

Textbook

1. Anderson, D. R., Sweeney, D. J., & Williams, T. A. (2020). Essentials of statistics for business and economics. Cengage Learning.

Other Resources

2. Anderson, D. R., Williams, T. A., & Cochran, J. J. (2020). Statistics for Business & Economics. Cengage Learning.
3. Békés, G., & Kézdi, G. (2021). Data Analysis for Business, Economics, and Policy. Cambridge University Press.
4. Black, K. (2023). Business Statistics: For Contemporary Decision Making. John Wiley & Sons.
5. Evans, G. W., Biles, W. E., & Bae, K. H. G. (Eds.). (2019). Analytics, Operations, and Strategic Decision Making in the Public Sector. IGI Global.
6. Ghauri, P., Grønhaug, K., & Strange, R. (2020). Research Methods in Business Studies. Cambridge University Press.
7. Groebner, D. F., Shannon, P. W., & Fry, P. C. (2018). Business Statistics: A Decision-Making Approach. Pearson.
8. Grolemund, G., & Wickham, H. (2016). R for Data Science. O'Reilly Media.
9. Hair Jr, J., Page, M., & Brunsveld, N. (2019). Essentials of Business Research Methods. Routledge.
10. Levine, D., & Stephan, D. (2014). Even You Can Learn Statistics and Analytics: An Easy-to-Understand Guide to Statistics and Analytics. 3rd ed. Pearson FT Press.
11. Lind, D. A., Marchal, W. G., & Wathen, S. A. (2019). Basic Statistics for Business & Economics. McGraw-Hill.
12. Schniederjans, M.J., Schniederjans, D.G., & Starkey, C.M. (2014). Business Analytics: Principles, Concepts, and Applications—What, Why, and How. Pearson Education.
13. Szasz, B. (2024). Data Analytics Essentials You Always Wanted to Know (Self-Learning Management Series). Vibrant Publishers.
14. Wickham, H., & Wickham, H. (2016). Data Analysis. Springer International Publishing.

Reasonable Accomodation

For detailed information on the process and required documentation, please visit the appropriate office. To ensure a level playing field, in compliance with the ADA (1990) and the Rehabilitation Act (1973), as amended, any student who requires Reasonable Accomodation or special assistance must complete the process established by the Vice-Presidency for Academic Affairs.

ACADEMIC INTEGRITY

This policy applies to all students enrolled at the Universidad del Sagrado Corazón to take courses with or without academic credit. A breach of academic integrity is any act or omission that fails to demonstrate the honesty, transparency, and responsibility that must characterize all academic activity. Any student who violates the policy on honesty, fraud, and plagiarism is subject to the following sanctions: a grade of zero on the assessment and/or having to redo the seminar assignment; a grade of F(*) in the seminar; or suspension or expulsion, as established in the Academic Integrity Policy document effective November 2022.

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