CSIT 251
Data Visualization
3 Credits

Community College of Baltimore County
Common Course Outline

Description

CSIT 251 – Data Visualization: provides an introduction to the fundamentals of data visualization by examining best practices for data exploration, modeling, management, collection, and organization as well as various visualization tools and techniques. Topics include summarizing and presenting data using various tools, data cleansing, and working with diverse sources and types of data.

Pre-requisites: CSIT 210 and MATH 153 or permission of the program director

Overall Course Objectives

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

1. define concepts related to data and information visualization;
2. identify various data types and specific usage for data visualization;
3. summarize data and trends;
4. explain how data can be used in decision-making;
5. demonstrate extraction and collection of data from diverse sources;
6. design visuals for summarizing data using various techniques;
7. describe best practices for organizing and managing data;
8. design reports and visualizations;
9. discuss the roles of data visualization tools;
10. explain processes involved in data cleansing, preprocessing, and verification of data;
11. describe the importance of data modeling;
12. demonstrate the use of data dashboards;
13. demonstrate data analysis processes, functions, and transformation to data sets; and
14. recognize potential bias or errors in data.

Major Topics

I. Roles of data visualization and design
II. Summarizing and presenting data
III. Data-driven decision-making
IV. Explore data in various formats
V. Data types
VI. Data visualization techniques
VII. Organization and management of data
VIII. Collecting data from various sources
IX. Data cleansing and preprocessing
X. Processing missing data
XI. Exploratory data analysis and manipulation

XII. Data modeling
XIII. Design issues constructing data visualizations
XIV. Tools used for visualization and design
XV. Data dashboards
XVI. Handling errors, ethical considerations, and bias

Course Requirements

Grading will be determined by the individual faculty member, but shall include the following, at minimum:

- Six quizzes or assignments
- Six projects
- Two exams
- One comprehensive final exam and/or final project

Written assignments and research projects: Students are required to use appropriate academic resources in their research and cite sources according to the style selected by their professor.

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