BUSI 4010 BUSINESS AND DATA ANALYTICS (3 credit hours)

Elmira College

SPRING 2025

Required Text:
Galit Shmueli, Peter C. Bruce, Mia L. Stephens, Nitin R. Patel, ***Data Mining for Business Analytics: Concepts, Techniques, and Applications with JMP Pro***, 2019, Wiley.
Supplemental readings might be included to illustrate or expand on textbook readings.

Pre-requisites: MGMT 3701 Operations Management

Course Description

The Business and Data Analytics course introduces students to the principles, methods, and tools for extracting insights from data to support business decision-making. Students will learn essential data analysis techniques such as classification, cluster analysis, decision trees, and logistic regression. The course also covers advanced topics, including text mining, web analytics, and cybersecurity. Emphasis is placed on hands-on programming skills and computational techniques required to solve real-world business analytics problems. By the end of the course, students will be proficient in leveraging data to drive strategic and operational decisions in a business environment.

Course Objectives and Goals

- Understand the role of data analytics in business decision-making processes.
- Apply statistical and machine learning methods to analyze business data.
- Utilize classification, clustering, and regression techniques to solve business problems.
- Perform text mining and web analytics to extract actionable insights.
- Develop programming and computational skills necessary for data processing and analysis.
- Understand and apply principles of cybersecurity in managing and analyzing business data.
- Formulate and present data-driven solutions to complex business challenges.

Evaluation of Performance

Your grade will be based upon your performance on exams, assignments, and participation.

4 Homework	10%
2 Quizzes	15%
4 Projects	40%
Midterm Exam	15%
Final Exam	20%
Total	100%

Grades will be assigned as follows:

A	93% and above	B-	80 - 82%	D+	67 - 69%
A-	90 - 92%	C+	77 - 79%	D	63 - 66%
B+	87 - 89%	C	73 - 76%	D-	60 - 62%
B	83 - 86%	C-	70 - 72%	F	59% or below

Withdrawal Policy: Please see Elmira College Bulletin for information on this policy.

Academic Honesty: Please read the section on Academic Honesty in the **Code of Conduct**. Briefly, academic dishonesty includes: cheating, fabrication, facilitating academic dishonesty, and plagiarism. Ask if you have any questions on whether something constitutes as academic dishonesty. All work must be original and new. Past assignments from current or other courses will not be accepted. Academic dishonesty will not be tolerated. It will result in zero on the assignment, and a report will be filed with the school. Continued practice will result in failure of the class. Institutional penalties may also apply with repeated acts of academic honesty.

Student Responsibility:

- It is your responsibility to keep track of assignments and due dates.
- You should ask questions concerning assignments and lectures, if you need any clarifications.
- If you are struggling in class, have concerns, and/or unsure about expectations, please stop by during office hours or make an appointment for another time.

Tentative Schedule of Topics

Topic	Materials	Tasks & Evaluations
Introduction	Chapter 1	
Overview of the Data Mining Process	Chapter 2	Homework 1
Data Exploration and Dimension Reduction	Chapter 3	
Data Visualization	Chapter 4	Quiz 1
Dimension Reduction	Chapter 5	
Correlation Analysis	Chapter 6	Project 1
Using Principal Components for Classification and Prediction	Chapter 7	
Dimension Reduction Using Regression Models	Chapter 8	Homework 2
Prediction and Classification Methods	Chapter 9	
Multiple Linear Regression	Chapter 10	Project 2
k-Nearest Neighbors (k-NN)	Chapter 11	
Classification and Regression Trees	Chapter 12	Midterm Exam
Cluster Analysis and Market Segmentation	Chapter 13	
Decision Trees for Business Decision-Making	Chapter 14	
Logistic Regression	Chapter 15	Homework 3
Neural Nets	Chapter 16	
Discriminant Analysis	Chapter 17	Quiz 2
Forecasting Time Series	Chapter 18	
Machine Learning in Business	Chapter 19	Project 3

Text Mining and Analysis	Chapter 20	
Web Analytics and Business Optimization	Chapter 21	Homework 4
Big Data Analytics and Tools	Chapter 22	
Computational and Programming Skills for Business Analytics (Python, R)	Chapter 23	Project 4
Data Security	Chapter 24	
Ethics and Privacy in Business Data Analytics	Chapter 25	Final Exam