COMP 5510 INFORMATION SYSTEMS DESIGN (4 credit hours)

Elmira College

SPRING 2025

Required Text:

Hector Garcia-Molina, Jeffrey D. Ullman, Jennifer Widom (2009), ***Database Systems: The Complete Book***, 2nd Edition, Pearson Education.

Roger S. Pressman (2010), ***Software Engineering: A Practitioner's Approach***, 7th Edition, McGraw-Hill Education.

Joseph Valacich, Joey George (2017), ***Information Systems Today: Managing in the Digital World***, 8th Edition, Pearson Education.

Pre-requisites:

COMP 2112 Data Structures and Algorithms
MATH 3520 Discrete Mathematics with Applications

Course Description

This course is designed to focus on the principles and applications of information systems. It integrates comprehensive knowledge and skills acquired throughout the students' academic journey, emphasizing practical application in solving complex computational problems. The course covers essential topics such as database design methods and tools, indexing and searching techniques, application development, testing, and evaluation. It also places significant emphasis on teamwork, fostering effective written and oral communication skills. Students will engage in hands-on projects that simulate real-world scenarios, requiring them to analyze requirements, design and implement solutions, and present their work to diverse audiences. The course aims to prepare students for professional environments by enhancing their project management capabilities, including scheduling, time management, and ethical considerations in computing projects. Additionally, students will explore the use of various computing tools and practices, and develop an engineering mindset that promotes curiosity, innovation, and value creation.

Course Objectives and Goals

- Integrate prior knowledge to design and implement solutions for open-ended computational problems.
- Develop and implement information systems projects, utilizing database design methods and tools.
- Apply standard software design and development practices, ensuring high-quality outcomes.
- Present work to diverse audiences through both written and oral communication, tailored to different purposes.
- Investigate and evaluate computing tools and practices for solving specific problems.

Evaluation of Performance

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

4 Assignments	20%
2 Quizzes	10%
2 Project and Reports	30%
6 Labs	15%
Midterm Exam	10%
Final Exam	15%
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 to Capstone Design	Chapter 1	
Information Systems	Chapter 2	Assignment 1
Database Fundamentals	Chapter 3	
Advanced Database Design	Chapter 4	Lab 1
Indexing and Searching Techniques	Chapter 5	Assignment 2
Web-Based Information Systems	Chapter 6	
Requirement Analysis	Chapter 7	Lab 2
Initial Design and Project Proposals	Chapter 8	Project and Report 1
Project Design Progress	Chapter 9	

User-Interfaces and Initial Demonstrations	Chapter 10	Quiz 1
Project Implementations	Chapter 11	Lab 3
Testing Strategies	Chapter 12	
Evaluation Methods	Chapter 13	Midterm Exam
Final Demonstrations	Chapter 14	
Project Management Basics	Chapter 15	Assignment 3
Teamwork and Communication Skills	Chapter 16	
Written Communication for Engineers	Chapter 17	Lab 4
Oral Communication for Engineers	Chapter 18	
Researching Computing Tools and Practices	Chapter 19	Assignment 4
Ethical, Legal, and Security Issues in Computing	Chapter 20	
Developing an Engineering Mindset	Chapter 21	Lab 5
Real-World Problem Solving	Chapter 22	
Multimedia Data Management	Chapter 23	Quiz 2
Scientific Data Management	Chapter 24	Lab 6
Advanced Web Development Techniques	Chapter 25	
Cloud Computing and Information Systems	Chapter 26	
Big Data and Analytics	Chapter 27	Project and Report 2
Course Review and Future Directions	Chapter 28	Final Exam