Copilot

CSCI250 - Data Structures and Algorithms Project

University: Tech Valley University

Course Duration: Full Year (Fall and Winter)

Instructor: Dr. Mark Johnson

Contact Information: mark.johnson@tvu.edu

Office Hours: Tuesdays and Thursdays, 3:00 PM - 5:00 PM

Course Description

In this second-year course, students develop software projects that require the implementation of advanced data structures and algorithms. Projects may include developing a search engine, a sorting algorithm, or a data visualization tool. The course emphasizes hands-on experience with data structures, algorithm design, and software development.

Learning Outcomes

By the end of this course, students will be able to:

1. Implement and analyze various data structures.
2. Design and evaluate algorithms for efficiency and effectiveness.
3. Develop software applications that utilize advanced data structures and algorithms.
4. Test and debug software projects.
5. Document and present their design and implementation process.

Course Timeline and Deliverables

Fall Semester:

Date	Deliverable	Description	Weight
September 15, 2020	Team Formation and Project Proposal	Teams form and submit a proposal outlining the project scope and objectives.	10%
October 20, 2020	Data Structures Implementation Assignment	Implementation of basic data structures such as linked lists, stacks, and queues.	15%
November 25, 2020	Algorithm Design Assignment	Design and implementation of algorithms for specific tasks.	15%
December 10, 2020	Midterm Progress Report	Report on progress, challenges, and next steps.	10%

Winter Semester:

Date	Deliverable	Description	Weight
February 15, 2021	Advanced Data Structures and Algorithms	Implementation of advanced data structures and algorithms.	15%
March 20, 2021	Prototype Development and Testing Report	Report on prototype development and testing results.	20%
April 10, 2021	Final Presentation and Demonstration	Final presentation and demonstration of the software project.	15%

Grading Breakdown

- Team Formation and Project Proposal: 10%
- Data Structures Implementation Assignment: 15%
- Algorithm Design Assignment: 15%
- Midterm Progress Report: 10%
- Advanced Data Structures and Algorithms: 15%
- Prototype Development and Testing Report: 20%
- Final Presentation and Demonstration: 15%

Total: 100%

Course Policies

- **Attendance:** Regular attendance is required. More than three unexcused absences may result in a lower grade.
- **Late Submissions:** Assignments submitted late will incur a penalty of 5% per day, up to a maximum of 25%.
- **Academic Integrity:** All students are expected to adhere to the university's academic integrity policy. Plagiarism or cheating will result in disciplinary action.

Required Materials

- Textbook: "Introduction to Algorithms" by Thomas H. Cormen, Charles E. Leiserson, Ronald L. Rivest, and Clifford Stein
- Access to a programming environment (e.g., Eclipse, IntelliJ IDEA)
- Prototyping materials (to be specified based on project requirements)

Additional Resources

- University Library
- Computer Science Lab
- Online tutorials and workshops

This syllabus provides a comprehensive overview of the CSCI250 course, including key elements such as learning outcomes, a detailed timeline with deliverables, and their respective weights. If you need any further details or adjustments, feel free to ask!