ELEC220 - Digital Systems Design

University: Central Technical University

Course Duration: Full Year (Fall and Winter)

Instructor: Dr. Laura Thompson

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Office Hours: Mondays and Wednesdays, 3:00 PM - 5:00 PM

Course Description

This second-year course focuses on the design and implementation of digital systems. Students work on projects such as designing a digital clock, a simple computer, or an automated control system. The course emphasizes hands-on experience with digital logic, microcontroller programming, and system integration.

Learning Outcomes

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

1. Design and implement digital logic circuits.
2. Program microcontrollers for various applications.
3. Integrate digital components into a cohesive system.
4. Test and debug digital systems.
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	Digital Logic Design Assignment	Design and implementation of basic digital logic circuits.	15%
November 25, 2020	Microcontroller Programming Assignment	Programming a microcontroller to perform 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	System Integration and Testing Report	Report on the integration of digital components and initial testing results.	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 digital system project.	15%

Grading Breakdown

- Team Formation and Project Proposal: 10%
- Digital Logic Design Assignment: 15%
- Microcontroller Programming Assignment: 15%
- Midterm Progress Report: 10%
- System Integration and Testing Report: 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: "Digital Design and Computer Architecture" by David Harris and Sarah Harris
- Access to microcontroller development kits (e.g., Arduino, Raspberry Pi)
- Prototyping materials (to be specified based on project requirements)

Additional Resources

- University Library
- Digital Systems Lab
- Online tutorials and workshops

This syllabus provides a comprehensive overview of the ELEC220 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!