New Jersey Institute of Technology
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NEWARK COLLEGE OF ENGINEERING

SYLLABUS AND COURSE INFORMATION

Course Name: Introduction to Digital Electronics

Course Number: ECET 215

Course Structure: 2-2-3 (lecture hr/wk – lab hr/wk – course credits)

Course Description: The first course in digital electronics develops the fundamentals of the binary system, circuit implementation from Boolean functions and map minimization. Course includes study of combinational logic, sequential logic circuits, flip-flops, counters, and shift register. Computer simulation and laboratory experiments are designed to support the theory and obtain measurement skills.

Prerequisites: None

Corequisites: None

Required, Elective, or Selected Elective: Required

Required Materials: **Text:** Name: Digital Electronics: A Practical Approach with VHDL
Author: William Kleitz
Year: 2011
ISBN: 978-0-13-254303-3

Course Outcomes: By the end of the course students are able to:

1. Derive, simplify, and solve Boolean algebra expressions
2. Analyze and design simple combinational logic circuits
3. Analyze and incorporate functional components such as decoders, encoders, multiplexers, demultipexers, adders, and subtractors into circuits
4. Describe the operation of basic latches and flip flops
5. Design and analyze simple design sequential logic circuits
6. Build, test, and troubleshoot simple digital and sequential logic circuits
7. Comprehend detailed lab descriptions, perform pre-lab analyses, construct circuits in a lab, take appropriate measurements, analyze results, and prepare summaries and conclusions
8. Practice and use teamwork to complete laboratory experiments in limited time allotted, requiring subdivision of lab work and cross-checking of results
9. Design and implement a digital logic project based on simple combinational and sequential circuits

Class Topics:

Boolean Algebra	Logic Gates
Combinational Logic	Sequential Logic
Flip-Flops	K-Maps

New Jersey's Science & Technology University

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Student Outcomes: The Course Learning Outcomes support achievement of the following Student Outcomes from the ETAC of ABET Criterion 3 requirements.

Student Outcome 1: An ability to apply knowledge, techniques, skills and modern tools of mathematics, science, engineering, and technology to solve broadly defined engineering problems appropriate to the discipline.
Related Course Outcome: 2 & 3

Student Outcome 3: An ability to apply written, oral, and graphical communication in broadly defined technical and non-technical environments; and an ability to identify and use appropriate technical literature.
Related Course Learning Outcomes: 8

Student Outcome e: An ability to function effectively as a member as well as a leader on technical teams.
Related Course Learning Outcomes: 8

Academic Integrity: Academic Integrity is the cornerstone of higher education and is central to the ideals of this course and the university. Cheating is strictly prohibited and devalues the degree that you are working on. As a member of the NJIT community, it is your responsibility to protect your educational investment by knowing and following the academic code of integrity policy that is found at: http://www5.njit.edu/policies/sites/policies/files/academic-integrity-code.pdf

Please note that it is my professional obligation and responsibility to report any academic misconduct to the Dean of Students Office. Any student found in violation of the code by cheating, plagiarizing or using any online software inappropriately will result in disciplinary action. This may include a failing grade of F, and/or suspension or dismissal from the university. If you have any questions about the code of Academic Integrity, please contact the Dean of Students Office at dos@njit.edu

Modification to Course: The Course Outline may be modified at the discretion of the instructor or in the event of extenuating circumstances. Students will be notified in class of any changes to the Course Outline.

Prepared By: Daniel Brateris

Course Coordinator: Daniel Brateris

Updated: 11 March 2023