New Jersey Institute of Technology
University Heights
Newark, NJ 07102-1982

Department of Engineering Technology
GITC Building Suite 2100
Phone: 973.596.3228
Fax: 973.624.4184
Email: EngineeringTechnology@njit.edu

NEWARK COLLEGE OF ENGINEERING

SYLLABUS AND COURSE INFORMATION

Course Name:	Computer Architecture
Course Number:	ECET 211
Course Structure:	1-3-2 (lecture hr/wk – lab hr/wk – course credits)
Course Description:	This course covers the fundamentals of computer architecture and organization including processor organization, registers, ALU, memory, and IO. The architecture and design of each element is studied and reinforced during lab. Lab projects may include the design a simple RISC microcomputer using HDL or the use of RISC microcontroller systems to perform basic IO and control functions. HDL and assembly languages are studied.
Prerequisites:	ECET 215 and (CS 100 or CS 106 or CS 113 or CS 114 or CS 115 or CS 116)
Corequisites:	None
Required, Elective, or Selected Elective:	Required
Required Materials:	Electronic course materials provided by the instructor.

Course Outcomes: By the end of the course students are able to:
1. Identify and describe the major elements of a computing system.
2. Write HDL implementations of computer system elements such as memory, ALU, and IO controllers.
3. Understand the composition of a microcomputer program at the instruction level.
4. Explain the relationship between hardware and software and how they work together to accomplish a task.
5. Use an Integrated Development Environment and an Evaluation Board to build and test hardware written in a HDL.
6. Analyze and develop flow charts and hardware schematics.
7. Write simple assembly programs for a RISC microcontroller.
8. Work in teams of two or three students, maintain a lab notebook, and produce professional lab reports.

Class Topics:

Computer Architecture	Hardware Description Language
Memory Organization	Integrated Development Environment
Processor Instructions	Flow Charts
Arithmetic Logic Unit	Simulation
IO	Hardware Schematics
Assembly Language	RISC

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Student Outcomes:	The Course Learning Outcomes support the achievement of the following ECET Student Outcomes and TAC of ABET Criterion 3 requirements.
	Student Outcome a: 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:** 1, 3, and 4
	Student Outcome b: An ability to design systems, components, or processes meeting specified needs for broadly defined engineering problems appropriate to the discipline. **Related Course Outcomes:** 2, 5, and 7
Academic Integrity:	NJIT has a zero-tolerance policy regarding cheating of any kind and student behavior that is disruptive to a learning environment. Any incidents will be immediately reported to the Dean of Students. Please visit the Dean of Students website at http://www.njit.edu/doss for a list of student policies relating to academic integrity and student conduct.
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:	26 January 2022