

EECE 344L Microprocessors

Course Catalog Description: Computers and Microprocessors: architecture, assembly language programming, input/output, and applications.

Prerequisites: C- or better in 238L and 206L. Pre- or co-requisite 321.

Textbook: Set of PDF files comprising data sheet information, PowerPC specifications, and Xilinx IP descriptions.

Class Goals: This course provides students with experience in understanding a processor at the instruction set level. Students must develop an ability to do work by breaking complex tasks into elemental (instruction level) units, then organizing those units to accomplish the desired work. Students must understand operand placement and access, information representation methods, addressing modes, subroutine linkage mechanisms, access to I/O devices, system and user modes of operation, and interrupt handling.

Course Coordinator: Prof. Howard Pollard

Table 1: Objectives, Implementation, and Assessment

Objectives-Sub objectives		Implementation	Assessment	A	B	C	D	E	F	G	H	I	J	K
O ₁	Understand basic computer architecture and role of microprocessor as logic engine	1.5 hour – week 1	Lab #1 Exam #1	✓						✓	✓		✓	✓
O ₂	Understand information representation – integer and floating point – and process of representing problems with numbers	3.5 hours – weeks 1-3	Lab #1 Exam #1	✓	✓	✓	✓	✓						
O ₃	Understand memory model and placement of instructions and data in memory	2 hours – weeks 2&3	Lab #2 Exam #1		✓	✓								
O ₄	Understand fetch-decode-execute cycle for instruction execution	2 hours – weeks 3&4	Lab #2 Exam #1		✓	✓								
O ₅	Determine instruction types for work, movement, program control, and system control	3 hours – weeks 4&5	Lab #3 Exam #1	✓	✓									
O ₆	Identify mechanisms for representation of instructions and programs	4.5 hours – weeks 5-7	Lab #3 Exam #1	✓	✓	✓		✓					✓	
O ₇	Develop ability to create and utilize loops	3 hours – weeks 6-8	Lab #3 Exam #1		✓	✓	✓							✓
O ₈	Develop ability to utilize conditional execution modes for decision making	4 hours – weeks 7-9	Lab #4 Exam #2	✓	✓	✓	✓		✓					✓
O ₉	Create programs for performing I/O operations and interfacing with external devices	9 hours – weeks 9-12	Lab #4 Exam #2		✓	✓	✓	✓	✓					
O ₁₀	Understand subroutine call and return linkage and passing parameters to/from subroutines	6 hours – weeks 10-13	Labs #4,5 Exam #2		✓	✓			✓					
O ₁₁	Understand and utilize interrupt mechanisms for real time activities	6 hours – weeks 11-15	Labs #4-6 Exam #2		✓	✓		✓	✓					✓

