CSC 225 Introduction to Computer Organization

1. CSC 225: Introduction to Computer Organization

2. credit units 4  contact hours 6

3. Course Coordinator: Julie Workman

4. Textbook:(and/or other required material) Introduction to Computing Systems – from bits & gates to C & beyond or similar material

5. a. Course Description: Introduction to computer systems. Simple instruction set architecture and the computer hardware needed to implement that architecture. Machine and assembly language programming. 3 lectures, 1 laboratory. Crosslisted as CPE/CSC 225.

b. Prerequisite: CSC/CPE 102

c. Required/Elective/Selective Elective for CPE, CSC, EE, SE

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6. a. Course Goals/Outcomes
After completing the course, students will be able to:

- Explain how computers work from the gates to the basic instructions used to run the programs.
- Explain how high-level programs look to the computer and the ability to design programs at the assembly level.
- Translate a high-level instruction into assembly language
- Design and implement a 200-line program in assembly language
- Translate an assembly language instruction into its machine language equivalent

b. How Student Outcomes addressed
(“B” = Basic level, “I” = Intermediate level, “A” = Advanced level)

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7. Major Topics Covered: (number of lecture hours each)
- Von Neumann computation model – 2 hours
- LC-3 ISA and hardware – 4 hours
- Assembly programming and mnemonics – 3 hours
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• I/O, interrupts, and exceptions – 3 hours
• The stack – 3 hours
• Control structures in C / mapping to assembly – 3 hours.
• Traps and subroutines – 2 hours
• Pointers and arrays in C and assembly – 3 hours
• Functions in C, calling convention in assembly – 3 hours
• Data structures in C and assembly – 3 hours