Course Number  | CSE 230  
---|---
Course Title  | Computer Organization and Assembly Language  
Semester Hours  | 3  
Meeting  | Lecture 2/week at 75 minutes

**Catalog Description:**
Fundamentals of computer operation, instruction set architecture, assembly language programming, computer organization, pipelining, memory hierarchy, storage and I/O. Discuss trends in computer design.

**Prerequisites:**
CSE 120, or EEE 120: Digital Design Fundamentals  
CSE 100 or CSE 110: Principles of Programming

**Textbook(s) and other materials:**

**Course learning outcomes:**
Students who complete this course will be able to  
1. Understand assembly language, and write assembly language programs for simple problems, including function calls.  
2. Understand the data representation (2’s complement, floating point) inside the processor, and perform arithmetic operations on them.  
3. Understand the working of a single-cycle, and pipelined processor, including basic schemes of hazard detection and avoidance.  
4. Understand the rationale behind the memory organization, and know how caches operate.  
5. Basic understanding of storage and I/O  
6. Trends in computer organization and design.

**Course assessment plan:**
Quizzes and/or Assignments: 30%  
Programming Projects: 30%  
Midterms and Finals: 40%

**Major topics and time covered:**
- Assembly Language & Programming – 4 weeks  
- Computer Arithmetic – 1-2 week  
- Single Cycle Implementation – 2-3 week  
- Pipelined Implementation – 3 week  
- Memory Hierarchy – 3 week  
- Storage and I/O – 1 week  
- Discuss the trends in computer organization -- throughout the semester

**Relationship to program outcomes:**  
(x indicates course content supports program outcome)

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<th>Program</th>
<th>Required?</th>
<th>a</th>
<th>b</th>
<th>c</th>
<th>d</th>
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**Contribution of course to program:**
This course supports both the Computer Science and Computer Systems Engineering program by providing the fundamental concepts and trade-offs in a computer design (CS j; CSE e, k). In addition students learn assembly language programming and start relating software to the hardware inside the computer (CS a, b, c; CSE a, c, e).

**How course data is used to assess program outcomes**

Course data not used in program assessment

**Estimated curriculum content (credit hours)**

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<tr>
<th></th>
<th>core</th>
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<td>Software design</td>
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<td>Programming languages</td>
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**Course contribution to ABET Criterion (credit hours):**

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<th>Engineering topics</th>
<th>General education</th>
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**Document History:**

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<th>TAC approval date</th>
<th>UPC/GPC approval date</th>
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<tr>
<td>Aviral Shrivastava</td>
<td>04/08/2009</td>
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