<table>
<thead>
<tr>
<th>Course Number</th>
<th>CS 320</th>
<th>Course Title</th>
<th>Computer Organization and Architecture</th>
</tr>
</thead>
<tbody>
<tr>
<td>Semester Hours</td>
<td>3</td>
<td>Course Coordinator</td>
<td>Xiaolan Huang</td>
</tr>
</tbody>
</table>

| Catalog Description | Overview of the basic logic circuits needed in constructing a computer. Fundamental computer operations: machine and assembly language instructions, stacks, procedures and macros. The translation process: assembly, linking and loading. Hardware elements for processing, transferring, and storing information. Data path and control unit for a simple processor. |

Textbook


References

Course Learning Outcomes

- To learn the basic concepts and elements of computer systems.
- To understand machine and assembly language programming.
- To extend this knowledge to the translation process and the systems programs that is part of the hardware/software interface.
- To learn the basic hardware for processing, storing, and moving information, and how they are organized within the internal architecture of a computer.
- To learn how to design a simple processor.

Assessment of the Contribution to Student Outcomes

<table>
<thead>
<tr>
<th>Outcome</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assessed</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>

Prerequisites by Topic

CS 220 with grade of C or better.
### Major Topics Covered in the Course

1. Overview of basic logic circuits {4 classes}
2. Computer operations: machine and assembly language instructions, stacks, procedures, macros {9 classes}
3. Assembly language programming {6 classes}
4. Translation: assemblers, linkers, loaders, stack management, recursion {8 classes}
5. Hardware elements for processing, transferring, and storing flip-flops, triggering of flip-flops, sequential and finite state machines, state assignment problems, design procedure, analysis procedure, races {6 classes}
6. Hardware Design and Control
7. Data path, control units, and design of a simple processor {4 classes}