### Dept Number
CS 401

### Course Title
Computer Architecture

#### Semester Hours
3

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<tr>
<th>Course Coordinator</th>
<th>Wen-Chi Hou</th>
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#### Catalog Description

#### Textbooks


#### References

#### Course Learning Outcomes

- To understand the concepts in computer organization and architecture.
- To learn to design processor, control, memory, and I/O sections.
- To learn the basic concept and design of multiprocessor systems.

#### Assessment of the Contribution to Student Outcomes

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#### Prerequisites by Topic

CS 320 with a grade of C or better.
## Major Topics Covered in the Course

1. Evolution and taxonomies of Computer Architecture, review of I/O interface {4 classes}
2. Processor design, microprogramming, instruction formats, number representations, design of advance and high speed arithmetic circuits, addition and subtraction, multiplication, division, pipelined arithmetic {10 classes}
3. Memory organization: semiconductor memories, associative memories, cache memories, parallel memories {4 classes}
4. Pipelines: instruction, arithmetic, static and dynamic pipeline designs, structural, data, and control hazards {12 classes}
5. CISC/RISC features {4 classes}
6. Interconnection networks: non-blocking, blocking, rearrangeable networks {6 classes}
7. Parallel computers: multiprocessors and multicomputers, cache coherence {6 classes}