Catalog Description
Introduction to computer organization. Signed and unsigned number representation, character representation, ASCII codes. Assembly language programming, instruction format and types, memory and I/O instructions, dataflow, arithmetic, and flow control instructions, addressing modes, stack operations, and interrupts. Datapath and control unit design. RTL, microprogramming, and hardwired control. Practice of assembly language programming.
Prerequisite: COE 200 and ICS 201

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Office Hours SUMTW 11:00-12:00 (or by appointment)

Course Learning Outcomes
1. Knowledge of basic computer organization, information representation, and basic assembly language concepts.
2. Ability to analyze, design, implement, and test assembly language programs.
3. Ability to use tools and skills in analyzing and debugging assembly language programs.
4. Ability to design the datapath and control unit of a simple CPU.
5. Ability to demonstrate self-learning capability.
6. Ability to work in a team.

Text Books & References
- Online material: [http://assembly](http://assembly)
Grading Policy

Programming Assignments  15%
Quizzes                   10%
Exam I                    15%  (Thursday, Oct. 20, 1:00 PM)
Exam II                   20%  (Thursday, Dec. 22, 1:00 PM)
Laboratory                20%
Final                     20%

- Late assignments will be accepted (upto 3 days) but you will be penalized 10% per each late day.
- A student caught cheating in any of the assignments will get 0 out of 15%.
- No makeup will be made for missing Quizzes or Exams.

Course Topics

1. **Introduction and Information Representation.**  [6 lectures]

2. **Assembly Language Concepts.**  [6 lectures]

3. **8086 Assembly Language Programming.**  [20 lectures]

4. **CPU Design.**  [12 lectures]

5. **Instruction Set Formats.**  [1 lecture]
   Fixed vs. variable instruction format. Examples of instruction formats.