# Computer Organization and Architecture I
## CS 2290

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# Course Content

This course is intended to serve as an introduction to computer organization in general as well as assembly programming on IBM PC compatible architecture. The hardware and software of the *Intel 80X86* series of processors will be covered in some detail.

# Lecture Topics:

### Introduction to Computer Architecture:
- Microprocessor and computer architecture
- Operations and operands of computer hardware
- Representing instructions

### Number systems and Arithmetic
- Signed and Unsigned Numbers
- Addition and Subtraction
- Logical Operations
- Constructing an Arithmetic Logic Unit
- Multiplication and Division
- Floating Point numbers

### 80x86 Assembly
- Overview of 80x86 assembler (segments, registers and organization)
- Program structure
- I/O operations
- Data movement instructions
- Conditionals and Branching instructions
- Arrays
- Macros and Procedures
- Interrupts
- String processing
- Video operations (text and graphics)
- Parameter passing and stack operations

**The Processor and Datapath**
- Registers, ALU, and multiplexer
- PC and memory
- Simple datapath
- Control unit

**Exceptions and Interrupts**
- Exceptions and Exception handling
- Interrupts and Interrupt handling

**Interfacing Processors and Peripherals**
- I/O interfacing
- Polled I/O
- Interrupt-driven I/O (enabling, disabling, priority)

# Laboratories
Scheduled Lab facilities, the J wing computer labs  (J101).


**Text**          **Assembly Language Programming** for the IBM PC Family,
                  By William B. Jones

                  **Turbo Assembler (Software/Manuals)**

**Marking**       Lab Assignments,
                  Homework Assignments     :     30%
                  Midterm                  :     25%
                  Class Quizzes            :     10%
                  Final Exam               :     35%


# Special Notes
You will be eligible for a passing grade in this course, **only if** you obtain 35 out of 70 marks in the **Theory/Concepts** portion of the course  (exams and quizzes).