Syllabus and Course Information

Course Name:	Computer Architecture
Course Number:	CPT 315-002
Course Structure:	2-2-3 (lecture hr/wk – lab hr/wk – course credits)
Prerequisites: N/A	
Core-Requisites: N/A	
Required, Elective, Y or Selected Elective:	

Course Materials:

- Assembly Language for x86 Processors By: Kip R. Irvine Edition: 8th Publisher: Pearson
- Print ISBN: 9780135381656, 0135381657
- e-text ISBN: 9780135381793, 0135381797
- (The Seventh, Sixth or Fifth Edition is also acceptable, but page numbers will not match the lectures) (International Edition is also acceptable)
- Copyright year: 2020
- The textbook is required

Software:

The latest version of Microsoft Macro Assembler (known as MASM) should be used with this book. MASM is included with Microsoft Visual Studio. Please check our website (asmirvine.com) for the latest details about using MASM in Visual Studio

The textbook has two companion websites with additional content:
AsmIrvine.comLinks to an external site. Links to an external site. - The author's website with additional content, library files, and tutorials for getting started.
Additional Online ResourcesLinks to an external site. Links to an external site. (PearsonHigherEd.com) - Additional web chapters, video notes, etc... (Code required)

Course Description:

Assembly Language for x86 Processors focuses on programming microprocessors compatible with Intel and AMD processors running under current versions of Microsoft Windows.

History of Computer Architecture:

Assembly language is the oldest programming language, and of all languages, bears the closest resemblance to native machine language. It provides direct access to computer hardware, requiring you to understand much about your computer's architecture and

operating system utilizing data representation, debugging, programming, and hardware manipulation
Course Outcomes:

Student Outcomes:

- Basic principles of computer architecture as applied to x86 processors
- Basic Boolean logic and how it applies to programming and computer hardware
- How x86 processors manage memory, using protected mode and virtual mode
- How high-level language compilers (such as C++) translate statements from their language into assembly language and native machine code
- How high-level languages implement arithmetic expressions, loops, and logical structures at the machine level
- Data representation, including signed and unsigned integers, real numbers, and character data
- How to debug programs at the machine level. The need for this skill is vital when you work in languages such as C and C++, which generate native machine code
- How application programs communicate with the computer's operating system via interrupt handlers and system calls
- How to interface assembly language code to C++ programs
- How to create assembly language application programs

Academic Integrity: Academic Integrity is the cornerstone of higher education and is central to the ideals of this course and the university. Cheating is strictly prohibited and devalues the degree that you are working on. As a member of the NJIT community, it is your responsibility to protect your educational investment by knowing and following the academic code of integrity policy that is found at: http://www5.njit.edu/policies/sites/policies/files/academic-integrity-code.pdf

Please note that it is my professional obligation and responsibility to report any academic misconduct to the Dean of Students Office. Any student found in violation of the code by cheating, plagiarizing or using any online software inappropriately will result in disciplinary action.

This may include a failing grade of F, and/or suspension or dismissal from the university. If you have any questions about the code of Academic Integrity, please contact the Dean of Students Office at dos@njit.edu

Modification to Course: The Course Outline may be modified at the discretion of the instructor or in the event of extenuating circumstances. Students will be notified in class of any changes to the Course Outline.

Instructor: **Jeffrey Reaves**

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Office Hours: **M-F in person, virtual, email, talk/text.**

Location: **GITC BUILDING 2nd floor**

Newark College of Engineering

Engineering Technology Department

University Heights

Newark, New Jersey 07201

Weekly Schedule

Days: Tuesday

Times: 6:00 PM to 10:00 PM

Location: PC Mall Room 39

WEEK 1	Basic Concepts	CHAPTER 1 READING DISCUSSION	QUIZ/LAB/DISCUSSION

WEEK 2	x86 Processor Architecture	CHAPTER 2 READING DISCUSSION	QUIZ/LAB/DISCUSSION
WEEK 3	Assembly Language Fundamentals	CHAPTER 3 READING DISCUSSION	QUIZ/LAB/DISCUSSION
WEEK 4	Data Transfers, Addressing, and Arithmetic	CHAPTER 4 READING DISCUSSION	QUIZ/LAB/DISCUSSION
WEEK 5	Procedures	CHAPTER 5 READING DISCUSSION	QUIZ/LAB/DISCUSSION
WEEK 6	Conditional Processing	CHAPTER 6 READING DISCUSSION	QUIZ/LAB/DISCUSSION
WEEK 7	Integer Arithmetic	CHAPTER 7 READING DISCUSSION	QUIZ/LAB/DISCUSSION
WEEK 8	Advanced Procedures	CHAPTER 8 READING DISCUSSION	QUIZ/LAB/DISCUSSION
MID-TERM	**TBA**		
WEEK 9	Strings and Arrays	CHAPTER 9 READING DISCUSSION	QUIZ/LAB/DISCUSSION

WEEK 10	Structures and Macros	CHAPTER 10 READING DISCUSSION	QUIZ/LAB/DISCUSSION
WEEK 11	MS-Windows Programming	CHAPTER 12 READING DISCUSSION	QUIZ/LAB/DISCUSSION
WEEK 12	Floating-Point Processing and Instruction Encoding	CHAPTER 13 READING DISCUSSION	QUIZ/LAB/DISCUSSION
WEEK 13	High-Level Language Interface	CHAPTER 13 READING DISCUSSION	QUIZ/LAB/DISCUSSION
WEEK 14	16-Bit MS-DOS Programming	CHAPTER 14 READING DISCUSSION	QUIZ/LAB/DISCUSSION
WEEK 15	Disk Fundamentals BIOS-Level Programming Expert MS-DOS Programming	CHAPTER 15 16 17 READING DISCUSSION	QUIZ/LAB/DISCUSSION
FINAL EXAM	**TBA**		
GRADE	**FINAL 30%** **LAB DEMOSTRATION**	**MID-TERM 25%** **CHAPTER 1-8.**	**QUIZ 10%** **LAB 10%** **DISCUSSION 25%**

Grading Policy

Your final grade will be determined according to the following scale:

Final Grade	Range
A	100% - 92%
B+	91% - 88%
B	87% - 82%
C+	81% - 77%
C	76% - 70%
D	69% - 60%
F	59% - 0%

Please note:

All weekly assignments due by Monday.