

SAN JOSE STATE UNIVERSITY
Department of Aviation and Technology
Tech 160 – Microprocessor Theory and Applications

fall 2017 Manizheh Zand

Lecture: Mon 3:00 pm – 4:45 pm IS 117

Lab: Wed 3:00 pm – 5:45 pm IS 117

Office Hours: Mon 4:45 pm - 5:45 pm IS 117

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408-924-3204

Course Description

Microprocessor concepts and applications applied to testing and data management. Assembly language and high-level language programming and techniques, including assembling, compiling, and debugging. Current trends and issues in microprocessors. Prereq: Tech 63; CS 49 or CompE 46

Course Objectives

Upon successful completion of this course, you will be able to:

- A) Understand the architecture and programming of Intel processor;
- B) Write, assemble, link, and debug assembly language application programs on a PC;
- C) Use assembly language to create both system-level software tools and application programs;
- D) Perform interaction between assembly language programs, the operating system, and other application programs; and
- E) Interface with high-level language

Textbook

Irvine, Kip R. (2011). Assembly Language for X86 Processors. (7th ed.). Upper Saddle River, NJ: Prentice-Hall.

Grading Criteria

The total points earned on all the midterms, quizzes, assignments, lab experiments, and final exam will be divided by the total possible points and the resulting percentage will determine the course grade

| | |
|-------------------------|-----|
| Midterms(2) | 30% |
| Quizzes | 10% |
| Homework Assignments | 10% |
| Programming Assignments | 30% |
| Final exam | 20% |

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

| | | | | | | | |
|----|----------|----|----------|----|----------|----|----------|
| A+ | 97 -100% | B+ | 87 - 89% | C+ | 77 - 79% | D+ | 66 - 69% |
| A | 93 - 96% | B | 83 - 86% | C | 73 - 76% | D | 60 - 65% |
| A- | 90 - 92% | B- | 80 - 82% | C- | 70 - 72% | F | 0 - 59% |

I. **Midterms & Quizzes**

There will be 2 midterms given during the semester **No makeup will be allowed.**

There will also be several quizzes given during the semester. **No makeup will be allowed.**

II. **Homework Assignments**

Do odd numbers of all Section Review questions in the chapters covered to reinforce the concepts covered during lectures.

III. **Programming Assignments**

You are expected to complete 4 assigned programming assignments from the programming exercises in the textbook beginning with Chapter 4. It is your responsibility to do a conscientious work in a professional manner.

You are required to write, assemble, link, and debug the programs. Each program should include proper documentation. **Each student is required to turn in a source file and an output file showing the result for each program. Each late assignment will be deducted 20% for whatever the excuses.**

IV. **Final Exam**

Friday Dec 15th 14:45 -17:00

Academic Integrity:

Your own commitment to learning, as evidenced by your enrollment at San Jose State University, and the university's Academic Integrity Policy requires you to be honest in all your academic course work. Faculty members are required to report all infractions to the Office of Student Conduct and Ethical Development. The policy on academic integrity can be found at http://sa.sjsu.edu/student_conduct.

Americans with Disabilities Act:

If you need course adaptations or accommodations because of a disability, or if you

need special arrangements in case the building must be evacuated, please make an appointment with me as soon as possible, or see me during office hours. Presidential Directive 97-03 requires that students with disabilities requesting accommodations must register with DRC to establish a record of their disability.

Course Outline

| <u>Days</u> | | <u>Lecture</u> | <u>Topics</u> |
|-------------|--|-------------------|---|
| Week 0 | W Aug 23 rd | | Orientation |
| Week 1 | M Aug 28 th W Aug 30 th | Ch 1 Ch 2 | Basic Concepts Processor Architecture |
| Week 2 | M Sept 4th W Sept 6 th | No Class Ch 3 | Assembly Language Fundamentals |
| Week 3 | M Sept 11 th W Sept 13 th | Ch 4 | Data Transfers, Addressing, and Arithmetic |
| Week 4 | M Sept 18 th W Sept 20 th | Ch 4 | Data Transfers, Addressing, and Arithmetic Program #1A (4-6) Fibonacci Numbers |
| Week 5 | M Sept 25 th W Sept 27 th | Ch 4 | Data Transfers, Addressing, and Arithmetic |
| Week 6 | M Oct 2 nd W Oct 4 th | Ch 5 | Procedures Program #1B (4-6) Fibonacci Numbers |
| Week 7 | M Oct 9 th W Oct 11 th | Ch 1-4 | Review Midterm#1 Midterm #1 |
| Week 8 | M Oct 16 th W Oct 18 th | Ch 5 | Procedures |
| Week 9 | M Oct 23 th W Oct 25 th | Ch 6 | Conditional Processing Program #1C Fibonacci Numbers |
| Week 10 | M Oct 30 th W Nov 1 st | Ch 6 | Conditional Processing |
| Week 11 | M Nov 6 th W Nov 8 th | Review Ch 5-6 | Program #2A Color Matrix Midterm #2 |
| Week 12 | M Nov 13 th W Nov 15 th | Ch 7 | Integer Arithmetic Program #2B Color Matrix |
| Week 13 | M Nov 20 th W Nov 22th | Ch 14 No Class | Function calls |
| Week 14 | M Nov 27 th W Nov 29 th | Ch 10 | Structures and Macros Program #3A College Registration |
| Week 15 | M Dec 4 th W Dec 6 th | Ch 9 | String and Arrays Program #4 Prime Number |
| Week 16 | M Dec 11th | | Review |
| | <u>F Dec 15th</u> | | <u>Final</u> |