

**San Diego Community College District**  
**ELDT 224 Microprocessor Design Course Syllabus**

**Instructor:** Bob Pruitt

**Semester/Session:** Fall 2008

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**Office Hours:** Room A107E on Mondays and Wednesdays from 11 AM to 12 PM, and Tuesdays and Thursdays from 4 to 5 PM. Other times may be arranged by request.

**Course Title:** Microprocessor Design

**Subject Area and Course Number:** Electronic Systems (ELDT) 224

**Course CRN:** 41323

**Class Meets:** Monday and Wednesday from 5:20 to 6:45 PM

**Course Description:** This course is an applied study of digital circuits in microcomputer systems. Throughout the course, students examine the overall architecture of microcomputer systems, the interfacing of memory and input/output (I/O) devices, and machine language programming for microprocessors.

**Student Learning Outcomes:**

Upon successful completion of the course the student will be able to:

1. Describe the basic elements of the stored program computer and explain the implementation of the three-bus architecture in hardware.
2. Recognize the Central Processing Unit (CPU) module, programming model and flag registers for a microprocessor.
3. Compare and contrast Digital Command Language (DCL), UNIX, MS-DOS and CP/M operating systems.
4. Define the four basic number systems from human to machine and calculate binary to base 10, binary to hexadecimal, hexadecimal to decimal conversions.
5. Distinguish between 8 bit and 16 bit hexadecimal numbers and use 2's complement to make negative numbers.
6. Identify and describe the instruction types, addressing modes and load instructions for a microprocessor.
7. Use arithmetic functions, flags, and branch and logic instructions to solve microprocessor-programming problems.
8. Recognize the inputs and outputs involved in mapping, identify the truth table for multiplexed inputs, construct a table of inputs and outputs, identify the known enables and disables, apply multiplexed values and evaluate the results.
9. Create a clean subroutine and identify the addressing map for a given circuit.

**Evaluation:**

Homework & Quizzes	100 points
4 Exams worth 100 points each	400 points
Drop the lowest test score	-100 points
Comprehensive Final	200 points (Dec 17 <sup>th</sup> )
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**Total Term Points**

**600 points**

**Please Note:**

- The lowest quiz grade will be dropped.
- The lowest test score will be dropped.
- Homework is due at the beginning of class on the due date.

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- Late homework will not be accepted.
- No homework grade will be dropped.
- Term homework score is based on the highest class total homework score which will be curved to 100% for the term.
- Quizzes are 15 minutes and will be over material covered in the homework and reading assignments.
- The Comprehensive final will be given Wednesday December 17<sup>th</sup>.

**Course Grading Standards:**

A final letter grade is to be awarded to each enrolled student in accordance with the 4.00 grading system shown below:

<b>Letter Grade</b>	<b>Percent of Total Points</b>	<b>Grade Points</b>
A	90 – 100%	4.00
B	80 – 89%	3.00
C	70 – 79%	2.00
D	60 – 69%	1.00
F	Below 60%	0.00

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**2. Method of Instruction:**

Methods of instruction may include, but are not limited to, the following:

- \* Computer Assisted Instruction
- \* Audio-Visual
- \* Collaborative Learning
- \* Other (Specify)
- \* Lecture

**Text and Supplies Required:**

**TEXTBOOKS:** Programming and Customizing the AVR Microcontroller, by Dhananjay V. Gadre, 2001, McGraw Hill, ISBN 0-07-134666-X.

**Additional Required Documents:** ELDT 224 Class Notes available at the City College Bookstore.  
ATMEL ATmega16 AVR RISC Microcontroller data sheet available online at [www.atmel.com](http://www.atmel.com).  
ATMEL Assembler User's Guide also available at [www.atmel.com](http://www.atmel.com)

**SOFTWARE (optional):** Pony Programmer

**SUPPLIES: (Optional):** Parts to build a Pony Programmer

**Handouts:**

The instructor will provide occasional handouts discussing additional course material. The student is responsible for material contained in the instructor's handouts.

**Computer Skills Advisory:** Enter level of computer skills expected or types of assignments requiring computer skills. (In most college courses students are expected to have a basic familiarity with computer terms and use: word processing, document manipulation, spreadsheets, email, and online services. These skills can be learned at any of the colleges or Continuing Education.)

**Attendance Requirements:**

It is the student's responsibility to drop all classes in which he/she is no longer attending, and please do so officially by the withdrawal deadline, or else a grade of a "W" cannot be given, and you will receive a letter grade of "D", or "F".

Attendance will be checked in each class. The professor will determine if an absence is excused. Acceptable evidence of excused absences include jury duty slips, doctors permissions, tow bills, etc.

It is the instructor's discretion to withdraw a student after the add/drop deadline of October 31, 2008 due to excessive absences.

You are reminded that if you do miss a class, it is your responsibility to learn all the material covered in class (some material may not be in the text).

Additionally you are responsible for all announcements made.

Students with disabilities who may need academic accommodations should discuss options with their professors during the first two weeks of class.

**Cell phones are to be turned off in class.**

**The test schedule is as follows:**

- Test 1 Monday September 22<sup>nd</sup>.
- Test 2 Wednesday October 15<sup>th</sup>.
- Test 3 Monday November 10<sup>th</sup>.
- Test 4 Wednesday December 10<sup>th</sup>.
- Final Exam Wednesday December 17<sup>th</sup>.

The instructor reserves the right to change the above schedule with prior notice.