EEE174 / CpE185 Course Syllabus

Instructor:
Dennis Dahlquist  dahlquist@ecs.csus.edu
Office  RVR3030 (916) 278-6185

Course Websites:
http://athena.ecs.csus.edu/~eee174
ECS WebClass (Moodle) https://moodle2.ecs.csus.edu/
SacCT (Blackboard) https://sacct.csus.edu/

COURSE PREREQUISITES:  Junior standing, CpE 64.

By Topics:
1. Binary number system.
2. Combinational and sequential logic.
3. Arithmetic Logic Units (ALUs)
4. Logic Gates: registers, memories and counters.
5. Programming in a high-level language, e.g. C, Java, HDL (Hardware Descriptive Language – Verilog, VHDL), FORTRAN (optional)

COURSE OBJECTIVES:
1. To apply the principles and techniques of Microprocessor/Microcontroller programming.
2. To analyze the organization of microprocessors and microcontrollers.
3. To evaluate Microcontrollers for real time data acquisition and control of input-output devices.
4. To synthesize and implement programs using various Integrated Design Environments.
5. To analyze programs using various Debuggers.
6. To aid in evaluating and synthesizing systems engineering projects; the course will familiarize engineering students with the basics of hardware architectures, machine language, assemble language, various programming languages, basic data types and elementary data structures, programming of peripheral chips, exception and interrupt handling, and timing.

COURSE DESCRIPTION:
Topics include: microcomputer systems, microprocessor architecture, machine and assembly language programming, timing operations, bus arbitration and exception processing logic, addressing modes, parallel and serial ports, memory, assemblers and development systems, parallel and serial input/output, timer modules, and interrupt structures; designing "C" language code, to exercise interface modules of parallel and serial input/output, and interrupts; assemblers, linkers, and loaders. Practical features of interfaces, handshaking techniques, displays, and keypads are also covered. The lab uses development systems and target systems in the Computer Engineering laboratory to assemble, link, test and debug and run various assignments. Lecture three hours; laboratory three hours.

LECTURES:
Exams: There will be two midterms and a final exam. The midterms and final exam will be open book. The lecture exams and homework assignments will account for 3/4 (75%) of the course grade.

LABORATORY:
The Laboratory is used to assemble, link, test and debug and run various programming assignments. Lab is used mainly for assignment assistance, and for demonstrating lab assignments. Lab assignments: To receive credit for a lab it must be demonstrated correctly to the lab instructor before the lab assignment is due.

Labs: There are up to 10 labs and a project. The total score of lab is 1/4 (25%) of the total course grade. Each lab will have a pre lab, lab demo, and lab report.
Programming:

Programming will require spending some time on using various Integrated Design Environments (IDE) for editing, loading, running, and debugging.

Grading: The final grade for EEE174 - CpE185 will be a merger of Lecture & Lab (75% for Lecture and 25% Lab).

Important – a student must pass both lecture and lab independently to pass this course.

Homework: Homework assignments will be made. It is to the student’s advantage to know how to do the assignments because many similar problems will appear in the lab and on the exams.

TEXTBOOKS:

Recommended:
Applying PIC 18 microcontrollers architecture, programming, and interfacing using C and Assembly, Barry B. Brey, Copyright 2009, ISBN 0-13-088546-0

The Intel Microprocessors, Architecture, Programming and Interfacing, 8th, Barry Brey, Copyright 2009, ISBN 0-13-502645-8


Optional:


Other Books for reference:
- Valvano, Jonathan W.; Embedded Microcomputer Systems: Real Time Interfacing; Copyright @ 2000 by Brooks/Cole – A division of Thomson Learning, ISBN: 0 534-36642-2
- Lewis, Daniel W.; Fundamentals of Embedded Software where C and assembly meet; Copyright @ 2002 by Prentice Hall, ISBN: 0-13-061589-7
ACADEMIC INTEGRITY:
Please refer to the University Policy Manual for Academic Honesty, Policy & Procedures: 
http://www.csus.edu/umanual/student/STU-0100.htm

Library’s Plagiarism Website (http://library.csus.edu/content2.asp?pageID=353)
The faculty of the Department of Electrical and Electronic Engineering expects all students to conduct their academic 
work with the high ethical standards of the engineering profession.

Each exam and programs must represent your own work. You may help other students by discussing assignments, 
but you must not copy anyone's solution. Violations of these standards of academic integrity will result in appropriate 
action.

Professionalism:
Employers frequently call faculty before hiring new graduates. The first question generally serves to verify that the 
student knows the ECS material. All the remaining questions cover the student's professionalism, integrity, 
punctuality, dependability, ability to work with others, and ability to follow instructions! The faculty at CSUS know 
many of the employers, and it is very important to us that our graduates meet the highest standards of professional 
responsibility. Thus you will absolutely be required to meet the lab deadlines in this class and they must be turned in 
at the time and date specified. Late assignments will not be accepted; all students must be present for all exams: do 
not schedule any travel prior to your exams. Failure to meet these standards will result in a grade of 0 for the lab 
assignment or exam missed. Allowances may be made for verified illness.

ABSOLUTELY NO CHEATING WILL BE TOLERATED! The penalties for cheating may include an F for the exam 
and/or for the course.

Students with Disabilities: If you are a student with a disability, I encourage you to contact services to 
Students with Disabilities: by telephone 916-278-6955, or 916-278-7239 (TTY); by email sswd@csus.edu; or on the Web at http://www.csus.edu/sswd

Sac State Library:
As a Sac State student you have access to the various resources offered by the library such as book checkout, study 
areas, computer labs, online tutorials, research databases, etc. To learn more about available resources visit the Sac 
State Library website (http://library.csus.edu/).

Student Computing Labs:
Students can use any of the IRT managed student computer labs on campus. Visit the University Labs website (http://library.csus.edu/irt/Labs/) for information about locations, hours, and resources available.

SacCT (WebCT - Blackboard):
SacCT is the course management system used on the Sac State campus for online courses or for courses that have some component online. To access a course on SacCT, you must login from the SacCT Login Page (https://sacct.csus.edu/).

To learn more about SacCT visit the Student Resources webpage (http://www.csus.edu/sacct/student/index.stm) where you can view online Tutorials, FAQ's and other help resources.

Writing Center:
For free, one-on-one help with writing in any class, visit the University Writing Center in Calaveras 128. The University Writing Center can help you at any stage in your reading and writing processes: coming up with a topic, developing and organizing a draft, understanding difficult texts, or developing strategies to become a better editor. To make an appointment or a series of appointments, visit the Writing Center in CLV 128 or call 278-6356. For current Writing Center hours and more information, visit the Web site at www.csus.edu/writingcenter

The descriptions and due dates are subject to change.