

Department of Electrical and Computer Engineering
University of California, Santa Barbara

ECE 15B COMPUTER ORGANIZATION

Course Syllabus

Description	Basic memory and processor organization, instruction set architecture, assembly language programming, number systems, arithmetic, data transfer and control flow instructions, procedures, memory management and program execution.	
Instructor	Dr. Rahul Singh (rst@ece.ucsb.edu) Room 210, Building 406	
Lectures	Tuesdays, Thursdays 5:00 – 6:15 pm in 3515 Phelps Hall	
Office Hours	Tuesdays 6:30 - 7:30 pm, Thursdays 1:00 – 2:00 pm or by appointment	
Course Website	http://www.ece.ucsb.edu/courses/ECE015/15B_S09Singh/	
Teaching Assistants	<p>Brendon Bolin (bbolin@gmail.com) <i>Discussion</i> Mondays 6:00 – 6:50 pm, Phelps 1448 <i>Office Hour:</i> Tuesdays 3:00 – 4:00 pm Phelps 1435</p> <p>Vivek Nandakumar (vsn@umail.ucsb.edu) <i>Discussion:</i> Fridays 9:00 – 9:50 am, Phelps 1448 <i>Office Hour</i> Wednesdays 2:00 – 3:00 pm Phelps 1435</p>	
Textbooks	<p><i>Computer Organization and Design: The Hardware/Software Interface, 4th Ed.</i> by David A. Patterson and John L. Hennessy ("P+H") <i>MIPS Assembly Language Programming</i> by Robert L. Britton</p>	
References	<p><i>The Art of Assembly Language Programming</i> by Randall Hyde ("AoA") http://webster.cs.ucr.edu/AoA/Linux/index.html <i>Essential C-Stanford CS Education Library</i>, ("EC") http://cslibrary.stanford.edu/101/</p>	
Homework & Projects	<p>Homework and projects will be due at 5:00 pm on Fridays. Projects to be submitted electronically and homework to be handed in homework box on 3rd floor of HFH. Late homework or projects will not be accepted.</p> <p>Guidelines for homework: (1) A completed cover sheet must accompany all homework assignments; (2) All homework must be stapled; (3) Use only clean-edged paper; (4) All work must be legible and clearly organized; (5) No credit will be given for problems without necessary work; (6) 10 points will be deducted for each above guideline not observed.</p>	
Grading	Homework	15%
	Projects	20%
	Quizzes	30% (Quiz 1: 15%, Quiz 2: 15%)
	Final	35%
Exam Dates	Quiz 1	Thursday, April 23 (in class)
	Quiz 2	Thursday, May 21 (in class)
	Final Exam	Wednesday, June 10 7:30-10:30pm, 3515 Phelps Hall

Tentative Course Calendar

Week	Lecture	Date	Topic	Homework / Projects Assigned Due		Reading
1	1	3/31	<i>Introduction</i>	HW #0	-	Gordon Moore Article
	2	4/2	<i>Overview of Computer Organization</i>	HW #1	HW #0	
2	3	4/7	<i>Arithmetic Instructions</i>	-	-	P+H 2.1-2.3
	4	4/9	<i>Data Transfer Instructions</i>	HW #2	HW #1	P+H 2.3
3	5	4/14	<i>Control Flow Instructions</i>	-	-	P+H 2.6, 2.9
	6	4/16	<i>Logic and Shift Instructions, Bytes and Overflow</i>	Project #1	HW#2	P+H 2.5
4	7	4/21	<i>Procedures</i>	-	-	P+H 2.7, A.6
	-	4/23	Quiz 1	-	-	
5	8	4/28	<i>Procedures</i>	-	-	
	9	4/30	<i>Instruction Representation</i>	-	Project #1	P+H 2.4, 2.9
6	10	5/5	<i>Floating Point</i>	HW#3	-	P+H 3.2, 3.3, 3.6
	11	5/7	<i>Pointers</i>	Project #2	-	EC Pointers and Memory Section 1
7	12	5/12	<i>Arrays</i>	-	-	EC Section 3 & 6 (pg 33-36)
	13	5/14	<i>Strings, Lists and Stacks</i>	-	HW #3	EC Linked List Problems Section 1
8	14	5/19	<i>Memory Management</i>	Project #3	-	P+H A.5, EC Section 6 (pg 38-40)
	-	5/21	Quiz 2	-	-	
9	15	5/26	<i>Memory Management</i>	HW #4	-	EC Pointers and Memory Section 4
	16	5/28	<i>Executing Programs: Compiling, Assembling, Linking and Loading</i>	-	Project #2	P+H 2.10, A.1 - A.4
10	17	6/2	<i>History of the Computing World: Part I</i>	-	HW #4	
	-	6/4	<i>Final Review</i>	-	Project #3	
11	-	6/10	Final Exam			