

Dept Number	CS 320		Course Title	Computer Organization and Architecture						
Semester Hours	3		Course Coordinator SP15	Bill Cheng						
Catalog Description	Overview of the basic logic circuits needed in constructing a computer. Fundamental computer operations: machine and assembly language instructions, stacks, procedures and macros. The translation process: assembly, linking and loading. Hardware elements for processing, transferring, and storing information. Data path and control unit for a simple processor.									
Textbooks										
SP17										
<u>Computer Organization And Design: Patterson & Hennessy, 4th Edition, Morgan Kaufmann Publications, ISBN-9780123747501</u>										
References										
<u>Computer Architecture Single & Parallel Systems, Zargham, Mehdi. www.ourebook.org.</u>										
Course Learning Outcomes										
<ul style="list-style-type: none"> • To learn the basic concepts and elements of computer systems. • To understand machine and assembly language programming. • To extend this knowledge to the translation process and the systems programs that is part of the hardware/software interface. • To learn the basic hardware for processing, storing, and moving information, and how they are organized within the internal architecture of a computer. • To learn how to design a simple processor. 										
Assessment of the Contribution to Student Outcomes										
SP 17										
Outcome →	1	2	3	4	5	6	7	8	9	10
Assessed →			X		X	X				X
Prerequisites by Topic										
CS 220 with grade of C or better.										

Major Topics Covered in the Course

1. Overview of basic logic circuits {4 classes}
2. Computer operations: machine and assembly language instructions, stacks, procedures, macros {9 classes}
3. Assembly language programming {6 classes}
4. Translation: assemblers, linkers, loaders, stack management, recursion {8 classes}
5. Hardware elements for processing, transferring, and storing flip-flops, triggering of flip-flops, sequential and finite state machines, state assignment problems, design procedure, analysis procedure, races {6 classes}
6. Hardware Design and Control
7. Data path, control units, and design of a simple processor {4 classes}