Pellissippi State Community College  
Master Syllabus

ASSEMBLY AND COMPUTER ORGANIZATION  
CISP 2410

Class Hours: 3.0  
Laboratory Hours: 3.0

Credit Hours: 4.0

Revised: Fall 2017

Catalog Course Description

Number systems, Boolean algebra, combinational and sequential circuits, processor functional units and control, pipelining, memory and caching, stored program computing, memory management, computer system organization, assembly language programming are components of the course.

Prerequisite(s)

CISP 1010 or CSIT 1510

Co-requisite(s)

None

Textbooks(s) and Other Course Materials


Week/Unit/Topic Basis

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<th>Topic</th>
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<td>Data Representation</td>
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<td>2</td>
<td>Boolean Algebra and Digital Logic</td>
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<td>4</td>
<td>Introduction to computer organization</td>
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<td>A Simple Computer example</td>
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<td>6</td>
<td>Instruction Set Architecture</td>
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<td>Memory</td>
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<td>I/O and Storage</td>
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<td>Review and Exam 2</td>
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<td>Final Exam Period</td>
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Course Goals*

The course will

A. Teach students knowledge of principles and underlying concepts of binary numbers, Boolean algebra and logic gates. I,II,III,IV,VI,IX,XI
B. Enable the students to logically manipulate binary data and some of a computer's hardware through digital circuit design and assembly language programming. I,II,III,IV,V,VI,XI
C. Teach students about the functionality of basic hardware components of a digital computer such as registers, CPU, ALU, memory and I/O devices. I,II,III,IV,VI,IX,XI
D. Teach students basic operating system concepts such as memory and process management. I,II,III,IV,VI,IX,XI

*Roman numerals after course objectives reference goals of the (enter program here) program.

Expected Student Learning Outcomes*

Students will

1. Calculate unsigned, signed and integer and floating-point binary number values. (A)
2. Design, implement, and test the hardware for a system using a digital circuit simulator. (A, B)
3. Design, implement, and test assembly language programs. (A, B)
4. Describe and use basic ISA-level concepts such as registers and stacks, memory addressing modes and ISA-level instruction types and formats. (A, B)
5. Detect/correct errors using error detection/correction codes. (A, C)
6. Explain the fetch-decode-execute cycle. (C)
7. Describe pipelining, parallel processing and calculate speedup. (C)
8. Calculate cache miss and hit rates, map main memory addresses to cache blocks. (C)
9. Describe the difference between physical and virtual memory addresses and calculate physical addresses. (A, B, C, D)
10. Describe direct memory access, the difference between polling and the difference between character and block I/O. (C, D)
11. Describe disk sectors, error correction codes and calculate disk latency. (C)
12. Explain cache replacement and write policies. (C)
13. Describe basic issues of process management. (D)
14. Describe the compilation, assembly and linking processes. (C)
15. Explain the difference between RISC and CISC. (C)
16. Describe different parallel processing techniques. (D)
17. Use professionally accepted methods and materials in their approach to completion of applications. (A, B, C)
18. Practice elements of the work ethic such as punctuality, professionalism dependability, cooperation, and contribution. (A, B, C)

*Capital letters after Expected Student Learning Outcomes reference the course goals listed above.
Evaluation

A. Testing Procedures: 40% of grade
   At least two exams will be given. Failure to make a passing test average will result in a grade of F for the course.

B. Laboratory Expectations: 40% of grade
   At least 4 digital and 4 assembly language labs will be given. Failure to make a passing lab average will result in a grade of F for the course.

C. Field Work: 0% of grade

D. Other Evaluation Methods: 20% of grade
   The remaining 20% of the grade is at the discretion of the instructor as indicated by the instructor’s syllabus supplement.

E. Grading Scale
   A   93-100
   B+  88-92
   B   83-87
   C+  78-82
   C   73-77
   D   65-73
   F   0-64

Policies

Attendance Policy

Pellissippi State expects students to attend all scheduled instructional activities. As a minimum, students in all courses (excluding distance learning courses) must be present for at least 75 percent of their scheduled class and laboratory meetings in order to receive credit for the course. Individual departments/programs/disciplines, with the approval of the vice president of Academic Affairs, may have requirements that are more stringent. In very specific circumstances, an appeal of the policy may be addressed to the head of the department in which the course was taken. If further action is warranted, the appeal may be addressed to the vice president of Academic Affairs.

Academic Dishonesty

Academic misconduct committed either directly or indirectly by an individual or group is subject to disciplinary action. Prohibited activities include but are not limited to the following practices:

• Cheating, including but not limited to unauthorized assistance from material, people, or devices when taking a test, quiz, or examination; writing papers or reports; solving problems; or completing academic assignments.
• Plagiarism, including but not limited to paraphrasing, summarizing, or directly quoting published or unpublished work of another person, including online or computerized services, without proper documentation of the original source.
• Purchasing or otherwise obtaining prewritten essays, research papers, or materials prepared by another person or agency that sells term papers or other academic materials to be presented as one’s own work.
• Taking an exam for another student.
• Providing others with information and/or answers regarding exams, quizzes, homework or other classroom assignments unless explicitly authorized by the instructor.
• Any of the above occurring within the Web or distance learning environment.

Please see the Pellissippi State Policies and Procedures Manual, Policy 04:02:00 Academic/Classroom Conduct and Disciplinary Sanctions for the complete policy.

Accommodations for Disabilities

Students that need accommodations because of a disability, have emergency medical information to share, or need special arrangements in case the building must be evacuated should inform the instructor immediately, privately after class or in her or his office. Students must present a current accommodation plan from a staff member in Disability Services (DS) in order to receive accommodations in this course. Disability Services (http://www.pstcc.edu/sswd/) may be contacted via Disability Services email or by visiting Alexander 130.