

Pellissippi State Community College  
Master Syllabus

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**ASSEMBLY & COMPUTER ORGANIZATION**  
**CISP 2410**

Class Hours: 3.0  
Laboratory Hours: 3.0  
Credit Hours: 4.0  
Revised: May 17, 2012

Instructor:  
Office:  
Phone:  
Email:

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**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.

**Entry-Level Standards:**

The student must have math, writing, verbal, and English language skills at the college level.

**Pre-requisites:** CISP 1010 or department approval.

**Textbooks and Other Supplies:**

The Essentials of Computer Organization and Architecture, Linda Null and Julia Lobur, Jones and Bartlett, third edition, ISBN-13: 9781449600068

**I. WEEK/TOPIC:**

<b>Week</b>	<b>Topic</b>
1	Chapter 1 - Introduction
2	Chapter 2 - Data Representation
3	Chapter 3 - Boolean Algebra and Digital Logic
4	Chapter 3
5	<b>Test 1: Chapters 1, 2 and 3</b> , Chapter 4 - A Simple Computer
6	Chapter 4, Chapter 5 - Instruction Set Architecture
7	Chapter 5, 80x86 Assembly
8	80x86 Assembly
9	Chapter 6, Memory
10	<b>Test 2 - chapters 4, 5 6, 80x86 assembly</b>
11	Chapter 7 - I/O and Storage
12	Chapter 8 - System Software (through 8.4)
13	Chapter 9 (through 9.4) - Alternative Architectures
14	<b>Test 3 - chapters 7, 8, 9, and 80x86 assembly</b>
15	<b>Optional, Comprehensive Final Exam</b> <b>Chapters 1, 2, 3, 4, 5, 6, 7, 8, 9, 80x86 assembly</b>

## **II. 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

\*Roman numerals after course objectives reference goals of the CSIT program (Career Program Goals and General Education Goals are listed [http://www.pstcc.edu/departments/curriculum\\_and\\_instruction/syllabi/](http://www.pstcc.edu/departments/curriculum_and_instruction/syllabi/) )

## **III. Expected Student Learning Outcomes\*:** Student will be able to:

- 1. Calculate unsigned, signed 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)
- 10. Describe direct memory access, the difference between polling and the difference between character and block I/O. (C)
- 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. (C)
- 14. Describe the compilation, assembly and linking processes. (C)
- 15. Explain the difference between RISC and CISC. (C)
- 16. Describe different parallel processing techniques. (C)
- 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

## **IV. EVALUATION:**

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

- B. Laboratory Expectations: at least 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: N/A
- D. Other Evaluation Methods: Quizzes and homework as indicated by the instructor in a supplement to the syllabus. The remaining 20% of the grade at the discretion of the instructor.
- E. Grading scale:  
  
A: 93 – 100, B+: 88 – 92, B: 83 – 87, C+: 78 – 82, C: 73 – 77, D: 65 – 72, F: Below 65

## V. **POLICIES:**

### A. Attendance Policy: from the PSCC catalog

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 the Learning Division, 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 the Learning Division.

Maintaining continuous attendance in your classes is very important. If you are considering dropping or withdrawing from a course, please check with the Financial Aid Office before doing so. Dropping or withdrawing from a class can adversely affect your financial aid and/or lottery eligibility.

### B. Academic Dishonesty: from the PSCC catalog

The College policy that prohibits plagiarism, cheating and other forms of academic misconduct: <http://www.pstcc.edu/ppm/pdf/04-02-00.pdf>.

A student guilty of academic misconduct, either directly or indirectly, through participation or assistance, may be assigned an F or a zero for the exercise or examination or an F in the course, at the discretion of the instructor.

### C. Accommodations for disabilities:

Students who 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 Services for Students with Disabilities (SSWD) in order to receive accommodations in this course. Services for Students with Disabilities may be contacted by going to Goins 127, 132, 134, 135, 131 or by phone: 539-7153 or TTY 694-6429. More information is available at [www.pstcc.edu/departments/swd/](http://www.pstcc.edu/departments/swd/).

#### D. Other Policies:

College-owned or –operated computing resources are provided for use by students of Pellissippi State. All students are responsible for the usage of Pellissippi State's computing resources in an effective, efficient, ethical and lawful manner.

Students are expected to promptly attend all lecture and lab classes as assigned. If a class is missed, student must make up all work and get notes and/or handouts