

PELLISSIPPI STATE TECHNICAL COMMUNITY COLLEGE
MASTER SYLLABUS

COMPUTER ORGANIZATION
CSIT 1600 (formerly CST 1600)

Class Hours: 3.0

Credit Hours: 4.0

Laboratory Hours: 3.0

Revised: Fall 2005

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.

Prerequisite:

CSIT 1020 or department approval

Textbook(s) and Other Course Materials:

Computer Organization. Carl Hamacher et al. McGraw Hill. Fifth edition

I. Week/Unit/Topic Basis:

Week	Topic
1	Introduction. Character codes and Number Conversion – Appendix E
2	Fundamentals of Digital Logic – Appendix A
3	Fundamentals of Digital Logic
4	Basic Structure of Computers, Chapter 1
5	Arithmetic, Chapter 6
6	Test 1, Machine Instructions, Chapter 2
7	Machine Instructions, Chapters 2, 3
8	ARM, Motorola, Intel Instruction Sets, Chapter 3
9	Test 2, I/O Chapter 4
10	I/O and Memory, Chapters 4, 5
11	Test 3, Basic Processing Unit, Chapter 7
12	The CPU and Pipelining, Chapters 7, 8

- 13 Pipelining and Embedded Systems, Chapters 8, 9
- 14 Parallel Processing, Chapter 12
- 15 Test 4, Final Exam Period

II. Course Objectives*:

- A. Demonstrate familiarity with the hardware components of a digital computer. I,III,IV,VI,IX,XI
- B. Demonstrate knowledge of principles and underlying concepts of Boolean algebra, logic gates, and functional units such as registers, CPU, ALU, and memory. I,II,III,IV,VI,IX,XI
- C. Demonstrate the ability to logically manipulate computer's hardware through assembly language programming. I,II,III,IV,V,VI,XI

*Roman numerals after course objectives reference goals of the CSIT program.

III. Instructional Processes*:

Students will:

- 1. Design, implement, and test the hardware for a system using a digital circuit simulator. *Communication Outcome, Technological Literacy, Mathematics Outcome, Personal Development, Transitional Strategy, Active Learning*
- 2. Design, implement, and test assembly language programs. *Communication Outcome, Technological Literacy, Information Literacy, Transitional Strategy, Active Learning*
- 3. Calculate unsigned, signed and floating-point binary number values. *Technological Literacy, Mathematics Outcome*
- 4. Use professionally accepted methods and materials in their approach to completion of applications. *Technological Literacy, Transitional Strategy, Active Learning.*
- 5. Practice elements of the work ethic such as punctuality, professionalism dependability, cooperation, and contribution. *Communication Outcome, Transitional Strategy, Active Learning Strategy*

*Strategies and outcomes listed after instructional processes reference TBR's goals for strengthening general education knowledge and skills, connecting coursework to experiences beyond the classroom, and encouraging students to take active and responsible roles in the educational process.

IV. Expectations for Student Performance*:

Upon successful completion of this course, the student should be able to:

- 1. Design and implement moderately complex digital systems. A, B
- 2. Write simple to moderately complex assembler programs. B
- 3. Relate assembler instructions to hardware performance. B, C
- 4. Describe the pipelining of instructions and state hazards associated with its implementation. A,B

5. Convert numerical data between internal (binary) and external forms. B, C
6. Relate various types of computer memory to hardware implementation and system performance. A, B
7. Describe the operation of various I/O subsystems. A, B, C

*Letters after performance expectations reference the course objectives listed above.

V. Evaluation:

A. Testing Procedures:

At least 3 exams will be given. Exams may only be made up for excused absences. An excused absence is one that can be verified by supporting documentation. Failure to make a passing test average will result in a grade of F for the course.

B. Laboratory Expectations:

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:

N/A

E. Grading Scale:

A 93 - 100
B+ 88 - 92
B 83 - 87
C+ 78 - 82
C 73 - 77
D 65 - 72
F Below 65

VI. Policies:

A. Attendance Policy:

Pellissippi State Technical Community College 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 and Student Affairs, may have requirements that are more stringent. In very specific circumstances, an appeal of the policy can be addressed to the head of the department in which the course was taken. If further action is warranted, the appeal can be addressed to the vice president of Academic and Student Affairs (Pellissippi State Catalog)

B. Academic Dishonesty:

Plagiarism, cheating, and other forms of academic dishonesty are prohibited. Students guilty of

academic misconduct, either directly or indirectly through participation or assistance, are immediately responsible to the instructor of the class. In addition to other possible disciplinary sanctions which may be imposed through the regular Pellissippi State procedures as a result of academic misconduct, the instructor has the authority to assign an F or a zero for the exercise or examination or to assign an F in the course. (*Pellissippi State Catalog*)

C. Accommodations for disabilities:

If you need accommodations because of a disability, if you have emergency medical information to share, or if you need special arrangements in case the building must be evacuated, please inform the instructor immediately. Please see the instructor privately after class or in his/her 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 or 131 or by phone: 694-6751(Voice/TTY) or 539-7153.

D. Other Policies:

Computer Usage Guidelines:

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. (*Pellissippi State Catalog*)