

PELLISSIPPI STATE TECHNICAL COMMUNITY COLLEGE
MASTER SYLLABUS

MACHINE ORGANIZATION
CSIT 1410

Class Hours: 3.0

Credit Hours: 4.0

Laboratory Hours: 3.0

Revised: Fall 06

NOTE: This course is not designed for transfer credit.

Catalog Course Description:

A study of assembly language and computer organization. Topics include organization, architecture, number systems, storage concepts, I/O, memory management and process management.

Entry Level Standards:

Students must have English, math, and reading skills at the college level.

Prerequisite:

CSIT 1110

Textbook(s) and Other Course Materials:

Detmer, Richard C. *80x86 Assembly Language and Computer Architecture*, Jones and Bartlett, 2001.

I. Week/Unit/Topic Basis:

Week	Topic
1	Representing Data
2	Representing Data, Parts of a Computer
3	Elements of Assembly Language
4	Basic Instructions
5	Basic Instructions, Test 1
6	Branching and Looping—Jump Statements
7	Branching and Looping—Selection Statements
8	Branching and Looping, Repetition Statements
9	Procedures—The Stack
10	Procedures, Test 2
11	String Operations
12	Bit Manipulation

- 13 Circuits
- 14 Circuits, Test 3
- 15 Optional, comprehensive final exam

II. Course Objectives*:

- A. Demonstrate familiarity with the architecture and operation of the IBM PC family of computers. I, II, III, IV, V, VI
- B. Demonstrate an understanding of basic assembly language techniques by writing short, modular programs in IBM assembler and using these modular programs to enhance understanding of high-level languages. IV, V, VI, VIII, IX
- C. Use binary, decimal, and hexadecimal codes to demonstrate an understanding of how programs and data are stored. III, IV
- D. Apply Boolean algebra to design and implement algorithms and digital logic to design and implement simple hardware components of a computer. III, V, VI
- E. Use program development facilities and utilities to create executable programs. IV
- F. Demonstrate an understanding of a hierarchical directory structure and manipulate files within this structure. IV

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

III. Instructional Processes*:

Students will:

- 1. Create several short modular programs using 80 x 86 assembler which implement several common algorithms and data structures. *Communication Outcome, Technological Literacy Outcome, Transitional Strategy, Active Learning Strategy*
- 2. Examine and implement algorithms that are efficient and reliable. *Technological Literacy Outcome, Transitional Strategy Outcome, Active Learning Strategy*
- 3. Use professional tools to produce software components and documentation. *Technological Literacy Outcome, Transitional Strategy, Active Learning Strategy*
- 4. Use professionally accepted methods and materials in their approach to completion of applications. *Technological Literacy 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. Identify and use the major addressing modes of PC assembler. A,B

2. Write programs in PC assembler making use of the processor status word for conditional branching. A,B,D
3. Be able to implement a stack using PC assembler and make use of the user stack. A,B
4. Write functions and procedures in PC assembler. A,B
5. Write programs in PC assembler which call functions and procedures and pass arguments. A,B
6. Define, invoke and expand macros in PC assembler programs. A,B,D
7. Use the PC bit instructions to implement the laws of logic and Boolean algebra. A,B,D
8. Write PC assembler programs which call system macros and procedures. A,B
9. Create modular programs using PC assembler. B
10. Produce list files produced from PC assembler source files, relating the machine code produced to the PC assembler statements which produced it. B,C
11. Know the different internal formats of integers, real numbers and character data and be able to convert between the forms whenever possible. C,D
12. Use Debug in debugging programs. A,B,C,D
13. Write high-level language modules which call PC assembler modules or vice-versa.
14. Pass arguments by value, reference. A,B
15. Use the major assembler directives for memory reservation and initialization. A,B,C
16. Explain the operation of 2-pass assembler, such as the PC assembler. B,C
17. Use the linker and answer questions concerning the linking process. B
18. Create and use a macro library using PC assembly language. B
19. Create, edit, delete, rename, copy and display the contents of files. A,E,F
20. Use PC compilers, assembler, linker and symbolic debuggers to develop programs. A

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

V. Evaluation:

A. Testing Procedures:

A minimum of three tests is recommended. Tests will cover material presented in class. Tests are not to be missed without a valid excuse.

B. Laboratory Expectations:

Lab attendance is required. Assignments will be given and must be completed and handed in on the designated date. The student is expected to turn in all required documentation for each

lab.

C. Field Work:

N/A

D. Other Evaluation Methods:

Class participation, quizzes and homework will also comprise the final grade for the course.

E. Grading Scale:

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

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 must be present for at least 75 percent of their scheduled class and laboratory meetings in order to receive credit for the course. [NOTE: No differentiation is noted for excused/unexcused absences. These will be treated as an absence.] (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:

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.

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.)