SOUTHEAST MISSOURI STATE UNIVERSITY

DEPARTMENT OF Computer Science COURSE NO. CS120

TITLE OF COURSE Introduction to Computer Science REVISION January, 2000

I. CATALOG DESCRIPTION AND CREDIT HOURS OF COURSE: Broad overview of the field of Computer Science, including algorithms, computer logic and architecture, systems software, high level programming languages, applications, history of computing, and social issues. Laboratory experience with simulators and applications. Two hours lecture, two hours lab per week (3)

II. PREREQUISITE: MA095/096 with a C or better or placement in MA134 or higher.

III. COURSE OBJECTIVES: The objectives of the course are that the student will be able to

A. Define and discuss the field of Computer Science and its history.

B. Design and analyze algorithms.

C. Read and design simple circuit diagrams.

D. Understand the Von Neumann Architecture, and trace machine language programs in a simple example machine.

E. Implement algorithms in assembly language, a high level language, and a spreadsheet; and understand the levels of abstraction represented by these.

F. Explain the functions of systems software, particularly language translators (assemblers and compilers)

G. Discuss ethical, legal, and social issues related to computers.

H. Use a Web browser for obtaining information about computer topics and about this course.

IV. EXPECTATIONS OF STUDENTS: Students are expected to:

A. attend and participate in classroom discussions and laboratory activities.

B. complete reading, homework, lab assignments, and exams within a given time frame.

C. demonstrate a working knowledge of course concepts through satisfactory performance on exams, quizzes, and lab assignments.

V. COURSE OUTLINE:

Lecture		**Lab**	
Hours	Topics	Hours	Topics
1	Introduction to Computer Science	1	Introduction to Lab Manual and the Internet
5	Algorithms represented in pseudocode (Sequential, conditional, iterative)		
1	Social and Legal Issues - Privacy - Computer Crime - Constitutional/Civil Liberties Issues - Encryption & Wiretapping	2	Reports on internet articles: one for each topic
2	Boolean Logic and Gates	1	Introduction to gates in circuit simulator
2	Circuits	4	Exercises in circuit simulator
1	Introduction to Von Neumann Architecture; decoder circuit & 1-dimensional memory		
1	Multiplexor circuit and ALU	2	Trace machine language in simulator (load, store, add, subtract, in, out, halt, increment, decrement, clear)
1	Control Unit; PC & IR registers	3	Trace machine language compare & jump for conditional and for iterative algorithms
4	Assembly Language Programming - Sequential algorithms - Conditional algorithms - Iterative algorithms	6	Write assembly language programs and run them in simulator
6	High Level Language Programming - Sequential algorithms - Conditional algorithms - Iterative algorithms	8	Write high level language programs and run them in simulator
1	Applications - Spreadsheets - Database management systems	2	Spreadsheet exercises
		1	Algorithms revisited -- timing searches and sorts
2	Summary & Historical Overview of Computing		

3 Exams

Lecture – 30 total hours **Lab – 30 total hours**

VI TEXTBOOK(S) AND/OR OTHER REQUIRED MATERIALS OR EQUIPMENT:

A. Student textbook: Schneider, G. Michael & Gersting, Judith L., *An Invitation to Computer Science*, Brooks/Cole Publishing Co., 2nd ed., 1999.

B. Laboratory text: Lambert, Kenneth & Whaley, Thomas, *An Invitation to Computer Science, Laboratory Manual*, 2nd ed., Brooks/Cole Publishing Co., 1999.

C. Software:
1. Simulators accompanying Laboratory Manual.
2. Spreadsheet software, internet browser

D. Equipment:
1 IBM PC's or PC-compatibles.
2. Internet access

VII. BASIS FOR STUDENT EVALUATION:

A. 3 hourly exams (45%)

B. Quizzes (15%)

C. Participation (classroom and in-class labs) (10%)

D. Lab assignments (outside of class) (15%)

E. Final exam (15%)