

COURSE DESCRIPTION

Department and Course Number: CSCI 111 (non-CIS-majors sections)

Course Title: Computer Science I

Current Catalog Description: Introduction to computer science with emphasis on problem solving and algorithm development. Using a high-level, block-structured programming language, students design, implement, debug, test and document computer programs for various applications.

Total Credits: 3 hours

Coordinator: Cynthia Brown Zickos, Instructor of Computer and Information Science

Textbook: Lambert, Kenneth A., and Martin Osborne. *Java Complete Course in Programming and Problem Solving*. Brooks/Cole Thomson Publishing, Inc., 2000.

Other required materials: Two IBM formatted diskettes

References: <http://www.olemiss.edu/~cbzickos/cs111/>

Course Goals: This course is designed to provide students with an introduction to computer programming in a high-level language. The student will learn skills relevant to problem solving techniques and design methodologies, and skills relevant to generation, testing, and debugging of programs written in Java.

Prerequisites by Topic: None

Corequisite: MATH 123 or MATH 125

Major Topics Covered in the Course: 45 contact hours.

1. Basic computer architecture (2 hours)
2. Program development cycle (2 hours)
3. Problem solving methodology (5 hours)
4. Basic Java syntax and semantics (3 hours)
5. Primitive data types and casting. (3 hours)
6. Keywords and identifiers (1 hour)
7. Variables and constants (1 hour)
8. Expressions (2 hours)
9. Statements (2 hours)
10. Control structures (6 hours)
 - a. Sequential
 - b. Selection to include if, if-else and switch statements
 - c. Iteration to include while, for and do-while statements
 - d. Nested structures.
11. Programming style (1 hour)
12. Debugging techniques (1 hour)
13. Reference types
 - a. Strings (1 hour)
 - b. Arrays (3 hours)
 - c. Programmer-defined (2 hours)
14. Scope and duration (2 hours)

15. Classes

- a. Basic structure of (1 hour)
 - b. Methods (3 hours)
 - c. Parameter passing (2 hours)
16. Patterns of logic (2 hours)

Laboratory projects: The student completes no more than ten programming assignments each semester. Each program is typically due 7 to 10 days after it is assigned. The focus of each assignment is as follows:

- 1. Introductory web exercise.
- 2. Introductory program entry and compilation
- 3. Simple arithmetic computations with input/output
- 4. Simple and complex if statements
- 5. Iteration.
- 6. Methods and parameter passing.
- 7. Arrays
- 8. User defined data types

Estimate of ABET/CAC Category Content:

	CORE	ADVANCED		CORE	ADVANCED
Data Structures	_____	_____	Computer Organization and Architecture	_____	_____
Algorithms	<u> 1 </u>	_____	Concepts of Programming Languages	<u> 1 </u>	_____
Software Design	<u> 1 </u>	_____		_____	_____

Oral and Written Communications:

Not a significant focus of the course.

Social and Ethical Issues:

We discuss the ethical sharing of information about programming assignments, as well as, acceptable limits of collaboration. However, this is not a significant focus area of the course.

Theoretical Content (Foundations):

Not a significant focus of the course.

Problem Analysis and Solution Design:

With every example assignment and programming assignment, we discuss effective problem solving methodologies. The primary focus is on the standard program development cycle: Identify inputs/outputs; Design the interface; Develop the pseudocode; Implement the pseudocode; Test the program.