CSC 120 Introduction to Programming Methodology

Fayetteville State University
College of Arts and Sciences
Department of Mathematics and Computer Science

I. LOCATOR INFORMATION
Semester: Fall 2004
Course No. & Name: CSC 120 Introduction to Programming Methodology
Credit hours: 3
Day/Time/Room class meets: 01 MWF 9—9:50 A.M SBE 117.
02 MW 4:00—5:15 P.M. SBE 221
Instructor: Dr. Daniel Okunbor
e-mail address: diokunbor@uncfsu.edu
Office location: SBE 313
Office telephone: 672-1666
Office hours: M W F 2:30—4:00 P.M.
Other office hours by appointment

II. COURSE DESCRIPTION
This course is the first course of a two-semester sequence that focuses on a disciplined approach to designing, coding, and testing of programs. Topics include data abstraction, data structures, and searching and sorting algorithms.

Prerequisite: Math 129 or Math 131 or higher.

III. TEXTBOOK

IV. SPECIFIC COURSE OBJECTIVES
The proposed instructional objectives are as follows:
Upon completion of the course the student shall be able to:
1. Develop computer programs in java, including java applications and java applets.
2. Demonstrate knowledge of a number of basic computing notions such as computer, computer system, hardware, software, steps involved in using a computer to solve a problem, and some basic modes of computer operation.
3. Demonstrate knowledge of the notion of an algorithm and the first constructs of an algorithmic language.
4. Demonstrate knowledge of functions and procedures, the correspondence of arguments and parameters, and the way in which functions and procedures are invoked and values are returned; and demonstrate knowledge of recursive functions.
5. Demonstrate knowledge of the representation of strings in a computer, some basic operations on strings and application in text formatting and lexical analysis.
6. Utilize basic skills in using Linux commands, utilities and tools to create and manage files and directories, to include the use of the vi editor to code and edit a program, a java compiler, and a line printer.
7. Use the basic elements of the java programming language to implement a computer program, to include: the syntax of the java language; assignment statements; the simple data types char, int, float, double; the compound data types string and array; various sequence (statement blocks), selection (if, if–else, and switch), and repetition (while, for) flow-of-control structures; and pre-defined and user-defined functions with corresponding arguments and parameters.
8. Create a computer program to solve a problem, to include a statement of purpose (functionality), an algorithm to solve the problem, a list of constants and variables needed, and a specification for the input and output data.

9. Create algorithms to implement a variety of operations on a one dimensional array, to include: initializing, traversal, insertion, deletion, exchange of elements, searching and sorting.

10. Use good style in coding a computer program, to include meaningful and readable identifiers, appropriate indentation, use of comments for documentation, and modularity of program structure including the use of sub programs and separate header and include files.

11. Use standard, customized and personal libraries as tools for creating a java program.

12. Utilize some basic theory of computing and computer science to express computing concepts and to solve problems using a computer.

V. COURSE COMPETENCIES

DPI 11.1 Develop and analyze algorithms for computational efficiency
DPI 11.2 Develop skills in using interactive and recursive techniques in solving problems
DPI 11.3 Develop computer programs in a structured language

VI. EVALUATION CRITERIA / GRADING SCALE

Your final grade will be based on the following weighting.

Class participation 10% (deduce 2% for each day you are absent)
Three tests 30%
Machine programs/Assignments/Quizzes 35%
Comprehensive final 25%

Letter grades will be assigned on the basis of the following scale.

A 90 – 100%
B 80 – 89%
C 65 – 79%
D 55 – 64%
F below 55%
WN See the University’s Attendance/Withdrawal Policy in the Undergraduate Catalog. This will be applied to all students.
W Student initiated withdrawal from class.
VII. COURSE OUTLINE

<table>
<thead>
<tr>
<th>WEEK</th>
<th>TOPICS</th>
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<tbody>
<tr>
<td>08/16—8/20</td>
<td>Linux/Chapter 1 Overview of Linux, computers and prog. languages</td>
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<tr>
<td>08/23—8/27</td>
<td>Chapter 2 Basic Elements of Java</td>
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<td>08/30—9/03</td>
<td>Chapter 2 Basic Elements of Java</td>
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<td>09/06—9/10</td>
<td>Chapter 3 Objects and I/O Concepts, Labor Day Holiday 9/6/2004</td>
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<td>09/13—9/17</td>
<td>Chapter 3 Objects and I/O Concepts</td>
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<td>09/20—9/24</td>
<td>Chapter 3 Objects and I/O Concepts</td>
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<td>09/27—10/1</td>
<td>Chapter 4 Control Structures, Mid-Term Exam-Test #1</td>
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<td>10/04—10/8</td>
<td>Chapter 4 Control Structures</td>
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<td>10/11—10/15</td>
<td>Chapter 4 Control Structures, Fall Break Oct 11-12</td>
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<td>10/18—10/22</td>
<td>Chapter 5 Control Structures</td>
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<td>10/25—10/29</td>
<td>Chapter 7 Functions and Methods, Test #2</td>
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<td>10/31—11/05</td>
<td>Chapter 7 Functions and Methods</td>
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<td>11/08—11/12</td>
<td>Chapter 9 Functions and Methods</td>
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<td>11/15—11/19</td>
<td>Chapter 9 Arrays, Test #3</td>
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<td>11/29—12/01</td>
<td>Chapter 9/10 Arrays, Sorting and Searching, Review for final exam</td>
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<td>12/02—12/08</td>
<td>Cumulative final exam</td>
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Note: This schedule is subject to change for the optimum benefit of the class as a whole. Therefore, it is important to stay alert and attend class regularly.

VIII. COURSE REQUIREMENTS

Students are expected to enter the classroom on time until the class ends. Late arrivals and early departures will be noted in the record book. Three late arrivals make an absence. Please, do not come to class if you are going to be more than 10 minutes late.

Talking in class between students is strictly unacceptable. Students are encouraged to ask questions of the lecture in class.

Students are responsible for availing themselves of all class meetings and individual help from the instructor.

Each student must independently complete all homework and programming assignments. However, you may discuss the assignments (in general) with each other.

Twenty percent (20%) of the total points will be deducted from each school day the programming assignment is overdue.

IX. TEACHING STRATEGIES

Lectures and labs.

X. REFERENCES

