Syllabus for
CSC 111—Introduction to Computing
3 Credit hours
Spring 2005

I.   COURSE DESCRIPTION

An introduction to the art of programming, including such concepts as data representation, algorithm design, structured programming, step-wise refinement, programming style, testing, debugging, and program documentation. An integral part of this course includes experience in the design and implementation of computer programs.
Academic technology fee: $45.

II.   COURSE GOALS

The purpose of this course is to enable the student to discuss what a computer is, how its components relate to each other, how it handles information, and how to converse with it. The student will understand programming concepts that can be applied to programming languages, including a top-down approach to program design and algorithm development, the use of structured programming concepts in problem solving, program testing, program documentation, and good programming style. They will be able to explain how computers can be used in any field of study or work while achieving additional college work in computer science or management information systems career fields.

III.   STUDENT LEARNING OUTCOMES FOR THIS COURSE

A.   Terminal Objectives
As a result of successfully completing this course, the student will be able to do the following:
1.   determine the input, processing, and output specifications required to produce a computerized solution for many different kinds of problems.
2.   design the input and output data structures and develop the algorithm to produce an appropriate and accurate solution to many different kinds of problems.
3.   describe data manipulated by computer programs as to type, range of values, size, and structure.
4.   implement problem solutions on a computer using the JAVA programming language.
5.   master the syntax and semantics of JAVA as presented in the text and class lectures.
    a.   explain how JAVA programs affect the changing of variables during the operation of the program.
    b.   translate the algorithms and data descriptions into correctly working JAVA programs.
    c.   locate and correct errors in simple JAVA programs.
    d.   design, conduct, and analyze a thorough testing of the programs.
    e.   produce complete documentation of the problem, solution, program, and testing for each of the problems completed.

B. Unit Objectives
    1. For Unit I the successful student will be able to do the following:
        a. explain problem solving techniques.
        b. describe and utilize the principles of structured programming.
        c. write correct arithmetic expressions in JAVA.
        d. utilize correctly selection control structures in JAVA.
        e. design and implement a JAVA program.
    2. For Unit II the successful student will be able to do the following:
        a. correctly utilizes interaction control structures in JAVA.
        b. explain the parameter passing techniques used in JAVA.
        c. discuss design and implement functions.
        d. explain the concepts of scope, loops, logic and lifetime.
    3. For Unit III the successful student will be able to do the following:
        a. explain and utilize the built-in and user-defined types of JAVA.
        b. declare and utilize one dimensional arrays in a JAVA program.
        c. perform list processing tasks on a list stored in an array.
        d. accomplish the task of string manipulation for character strings stored in an array.
        e. declare and utilize multidimensional arrays in a JAVA program.
    4. For Unit IV the successful student will be able to do the following:
        a. explain a class definition that encapsulates a data structure together with the function that manipulates that data.
        b. create and use constructor.
        c. describe the overall features of object-oriented software development.
        d explain the difference between pointer and reference variables.
        e demonstrate the proper use of pointer variables in a JAVA program.

C. Objectives for Students in Teaching Preparation Programs
The teacher Preparation Program meets the competency-based requirements established by the Oklahoma Commission on Teacher Preparation. This course meets the following competencies: Subject Competencies (SC) 8.

This course is designed to help students meet subject competencies:
SC8: Is proficient in the use of a variety of instructional strategies to include, but is not limited to, cooperative learning, use of concrete materials, use of technology (i.e., calculators and computers), and writing strategies to stimulate and facilitate student learning.

IV. TEXTBOOK

A. Required Textbook
Dale, Nell, Weems, Chip and Headington, Mark. <u>Introduction to Java and Software Design.</u> Sudbury: Jones and Bartlett, 2001.

B. Additional Reading Material may be required.

V.   POLICY AND PROCEDURES

    A.   University Policies and Procedures
   1. Attendance at each class or laboratory is mandatory at Oral Roberts University.
   2. Double cuts will be assessed for absences that immediately precede or follow holidays or breaks.
   3. Excessive absences can reduce a student's grade or deny credit for the course.
   4. Students taking a late examination because of an unauthorized absence will be charged a late exam fee.
   5. Students and faculty at Oral Roberts University adhere to all laws addressing the ethical use of other's materials, whether it is in the form of print, video, multimedia, or computer software.
   6. Final examines cannot be given before their scheduled times. Students need to check the final exam schedule before planning return flights or other events at the end of the semester.

    B.   Computer Science and Mathematics Department Policies and Procedures
   1. Each Student who uses the computer is given access to the appropriate computer resources. These limited resources and privileges are given to allow students to perform course assignments.   Abuse of these privileges will result in their curtailment. Students should note that the contents of Computer directories are subject to review by instructors and the computer Administrative staff.
   2. A fee of $10.00 will be assessed for all late exams. This policy applies to all exams taken without notifying the professor prior to the regularly scheduled exam time, and to all exams taken late without an administrative excuse.

    C.   Course Policies and Procedures
   1. Evaluation Procedures
      The final grade will be based on performance in four categories.
      a. 15% on homework (Homework and programming problems will be assigned in class. Details of specific requirements will be given at that time.)
      b. 25% on programs
      c. 40% on exams
      d. 20% on final exam
   2. ePortfolio Requirements
      There may be an ePortfolio artifact associated with this course. Check your ePortfolio handbook for the requirements.

VI.   COURSE CALENDAR

Unit	Lesson	Topic
I	1	Introduction to computers
	2-3	Overview of algorithms
	4-6	Program development and Overview
	7-8	JAVA syntax and semantics
	9-11	Program output
	12-14	Numeric types and expressions
	15	**Examination I**
II	16-17	Input and software design strategies
	18-20	Conditions and control structures
	21-23	Classes and methods
	24-26	Inheritance, polymorphism and scope
	27	**Examination II**
III	28-29	File and loop control
	30-31	Control structures
	32-38	Arrays
	39	**Examination III**
IV	40-41	Recursion
	42	Object-oriented software
	43-44	Internet application and Applets
	45	**Final Examination**

Course Inventory for ORU's Student Learning Outcomes

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This course contributes to the ORU student learning outcomes as indicated below:
Significant Contribution – Addresses the outcome directly and includes targeted assessment.
Moderate Contribution – Addresses the outcome directly or indirectly and includes some assessment.
Minimal Contribution – Addresses the outcome indirectly and includes little or no assessment.
No Contribution – Does not address the outcome.

The Student Learning Glossary at http://ir.oru.edu/doc/glossary.pdf defines each outcome and each of the proficiencies/capacities.

OUTCOMES & Proficiencies/Capacities	Significant Contribution	Moderate Contribution	Minimal Contribution	No Contribution
1 **Outcome #1 – Spiritually Alive** Proficiencies/Capacities				
1A Biblical knowledge				X
1B Sensitivity to the Holy Spirit				X
1C Evangelistic capability				X
1D Ethical behavior			X	
2 **Outcome #2 – Intellectually Alert** Proficiencies/Capacities				
2A Critical thinking	X			
2B Information literacy		X		
2C Global & historical perspectives				X
2D Aesthetic appreciation			X	
2E Intellectual creativity		X		
3 **Outcome #3 – Physically Disciplined** Proficiencies/Capacities				
3A Healthy lifestyle				X
3B Physically disciplined lifestyle				X
4 **Outcome #4 – Socially Adept** Proficiencies/Capacities				
4A Communication skills			X	
4B Interpersonal skills				X
4C Appreciation of cultural & linguistic differences				X
4D Responsible citizenship				X
4E Leadership capacity				X