GROSSMONT COLLEGE

Official Course Outline

# COMPUTER SCIENCE INFORMATION SYSTEMS 293 –INTRODUCTION TO JAVA PROGRAMMING

1. Course Number Course Title Semester Units Semester Hours

CSIS 293 Introduction to Java 4 3 hours lecture: 48-54 hours

Programming 3 hours lab: 48-54 hours

96-108 outside-of-class hours

for lecture

192-216 total hours

2. Course Prerequisites

None.

Corequisite

None

Recommended Preparation

A “C” grade or higher or “Pass” in CSIS 110 and 119 or equivalent.

3. Catalog Description

An introductory course in Java programming focusing on object-oriented methodology. The course will include developing fundamental programming constructs**,** using objects from the standard Java Class Library, writing and using new objects, developing inheritance hierarchies of classes, using polymorphism to build extendible systems,utilizing recursion and multithreading to efficiently solve problems**,** and performing the subsequent testing and debugging of these programs.

4. Course Objectives

The student will:

a. Demonstrate knowledge of basic object-oriented design principles including polymorphism and inheritance.

b. Design, develop, test, and debug Java applications.

c. Develop programs that utilize basic computation, conditional and iterative control structures, methods, and objects/classes.

d. Use Java objects from the standard Java libraries and write programs that will call upon the services of these preexisting objects.

e. Implement recursive and multithreading strategies to more efficiently solve computing problems.

f. Utilize a modern Integrated Development Environment (IDE) to develop and debug Java applications.

g. Summarize evolution of programming languages and illustrate the resulting modern day programming paradigms.

5. Instructional Facilities

Standard computer lab with one internet-connected workstation per student with appropriate software installed.

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6. Special Materials Required of Student

Flash/USB drive or cloud storage for backup of in-class work.

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7. Course Content

a. Java language.

1) What is Java?

2) History of Java.

3) How Java works with the World Wide Web and the Write-Once-Run-Anywhere (WORA) model.

b. Programming environments and Oracle compliance.

c. Object-oriented programming.

1) What are objects, classes and methods?

2) Object-oriented data hiding, encapsulation, inheritance, and polymorphism.

3) Relational operators and Boolean expressions.

4) Mathematics, operators and built-in data types.

5) Selection statements – making decisions in Java.

6) Repetition as a basic control structure.

d. Debugging and testing.

e. Data hiding and encapsulation.

f. Basic dialog input and output.

g. Methods and argument passage.

h. Multithreaded programs.

i. Recursion.

j. Introduction to swing classes and Java event modeling.

8. Method of Instruction

a. Lectures.

b. Demonstrations.

c. Student lab exercise sessions.

9. Methods of Evaluating Student Performance

a**.** Projects and hands-on labs: an example would include the writing of a program to solve a problem with a scientific or business situation or an interactive game.

b. Written tests and quizzes.

c. Final written or performance examination.

10. Outside Class Assignments

a. Textbook reading assignments.

b. Prepare programming projects such as scientific, business, and action game programs in the Java programming language.

c. Algorithm and problem-solving exercises**.**

11. Texts

a. Required Text(s):

Deitel, Harvey and Paul Deitel. *Java: How to Program, Early Objects*. 11th edition. Boston, MA: Pearson, 2017.

b. Supplementary texts and workbooks:

None.

Addendum: Student Learning Outcomes

Upon completion of this course, our students will be able to do the following:

* 1. Given a problem specification, design and develop a Java program solution that successfully uses an ordered set of executable steps to successfully meet program requirements.
  2. Compile, run**,** test and debug object-oriented Java programs using an integrated set of software tools.

Date approved by the Governing Board: May 15, 2018