

**SAN DIEGO COMMUNITY COLLEGE DISTRICT
CITY, MESA, AND MIRAMAR COLLEGES
ASSOCIATE DEGREE COURSE OUTLINE**

SECTION I**SUBJECT AREA AND COURSE NUMBER:** Computer and Information Sciences 190**COURSE TITLE:** Java Programming**Units: 4**
Grade Only**CATALOG COURSE DESCRIPTION:**

This course is an introduction to programming using Java. The course covers the fundamentals of object-oriented programming utilizing the Java programming language for general purpose business programs and interactive World Wide Web-based Internet programs.

REQUISITES:

NONE

FIELD TRIP REQUIREMENTS: May be required**TRANSFER APPLICABILITY:** Associate Degree Credit & transfer to CSU and/or private colleges and universities UC Transfer Course List**TOTAL LECTURE HOURS:** 48 - 54**TOTAL LAB HOURS:** 48 - 54**STUDENT LEARNING OBJECTIVES:**

Upon successful completion of the course the student will be able to:

1. Design, compile, and test Java programs that display objects, patterns, and words.
2. Create methods that carry out tasks using Java programming.
3. Employ the use of blocks within a method to create Java programming codes.
4. Diagram flowcharts for the purpose of constructing decision structures, accepting keyboard input, and nesting "if" statements for Java programs.
5. Create and test Java programs that use arrays.
6. Create and use an HTML document to host an applet.
7. Use paint and repaint, drawString, setFont, and setColor methods to create graphics objects and draw lines, rectangles, and ovals in Java programs.
8. Apply knowledge of general categories to more specific objects using the inheritance principle to create Java programs.
9. Employ the abstract method to create arrays of subclass objects in Java programs.
10. Apply inheritance concepts to create frames and applets with frames.
11. Design Java programs using layout managers and event models to align program components.
12. Create a Java program that employs exception handling as an object-oriented technique to manage program errors.
13. Design Java programs that employs the use of file classes to gather information for the programs.
14. Describe multithreading and list the components of the thread lifecycle.

SECTION II

1. COURSE OUTLINE AND SCOPE:

A. **Outline Of Topics:**

The following topics are included in the framework of the course but are not intended as limits on content. The order of presentation and relative emphasis will vary with each instructor.

I. The following topics may be included in the framework of the course but are not intended as limits on content. The order of presentation and relative emphasis may vary with each instructor. Distance learning students will complete the same course content.

- A. Java programs
 - 1. Java programming tasks
 - 2. Object-oriented programming concepts
 - 3. Java programming language
 - 4. Writing Java programs
 - 5. Adding comments to Java programs
 - 6. Running Java programs
 - 7. Modifying Java programs
- B. Java programming using methods
 - 1. Methods with no arguments
 - 2. Methods requiring single arguments
 - 3. Methods requiring multiple arguments
 - 4. Methods that return values
- C. Blocks within methods to create Java programming codes
 - 1. Blocks and scopes described
 - 2. Overloading methods
 - 3. The concept of ambiguity
 - 4. Sending arguments to constructors
 - 5. Overloading constructors
- D. Input and decision making for Java programs using flowcharts
 - 1. Accepting keyboard input
 - 2. The decision structure
 - 3. The use of "if" statements
 - 4. The use of "if...else" statements
 - 5. The use of compound statements
 - 6. Nesting "if" statements
- E. Arrays
 - 1. Declaring arrays
 - 2. Initializing arrays
 - 3. Subscripts with an array
 - 4. Declaring arrays of objects
 - 5. Searching arrays for exact matches
 - 6. Passing arrays to methods
 - 7. Using length fields
- F. HTML and Applets
 - 1. Writing HTML documents to host applets
 - 2. Writing simple applets using labels
 - 3. Changing Label Fonts
 - 4. Adding text fields and buttons to applets
 - 5. Event-driven programming
 - 6. Adding outputs to applets
- G. Java graphics
 - 1. Paint and repaint methods
 - 2. Drawstrings
 - 3. SetFont and setColor methods
 - 4. Applet background color
 - 5. Creating graphics objects
 - 6. Drawing lines and rectangles
 - 7. Drawing ovals

- H. Inheritance
 - 1. The concept of inheritance
 - 2. Extending classes
 - 3. Overriding superclass methods
- I. Abstract classes and dynamic method binding
 - 1. Creating and using abstract classes
 - 2. Dynamic method binding
 - 3. Creating arrays of subclass objects
- J. Frames and applets using frames
 - 1. Displaying frames that contain words
 - 2. Applets with frames that count numbers
 - 3. Applets with frames that hold labels
 - 4. Programs that calculate
 - 5. Programs that draw charts
- K. Layout managers
 - 1. Layout managers described
 - 2. BorderLayout
 - 3. FlowLayout
 - 4. GridLayout
 - 5. Panels
 - 6. Advanced layout managers
- L. Exceptions
 - 1. Exceptions described
 - 2. Exception classes
 - 3. Try codes
 - 4. Throw and catch exceptions
 - 5. Exception getMessage method
 - 6. Throw and catch multiple exceptions
 - 7. Finally blocks
- M. Files classes
 - 1. Using file classes
 - 2. Organization and streams
 - 3. Use of streams
 - 4. Writing to files
 - 5. Reading data files
- II. Multithreading
 - 1. Multithreading described
 - 2. Using thread classes
 - 3. Thread class life cycle
 - 4. Sleep method
 - 5. Setting thread priorities
 - 6. Runnable interfaces

B. Reading Assignments:

Reading assignments are required and may include but, are not limited to, the following:

I. The reading assignments for traditional and distance education students may include but are not limited to the following:

II. 1. Barboza, David, Motorola and Sun to build joint system for fast net access. New York Times. C. 7, June 10, 1999

III. 2. Clark, Don, Sun and 3Com to put Java in palm devices. Wall Street Journal.1, June 15, 1999.

IV. 3. Gomes, Lee, Software: Upstart linux draws a Microsoft attack team. Wall Street Journal, B. 1, May 21, 1999.

V. 4. Hamilton, David, Sun gains ground in suit over Java but Microsoft cleared to develop version. Wall Street Journal, 1, May 26, 1999.

C. Appropriate Assignments that Demonstrate Critical Thinking:

Critical thinking assignments are required and may include, but are not limited to, the following:

I. Critical thinking assignments are required and may include but are not limited to the following:

- II. 1. Create Java programs.
- III. 2. Assess Java programs and logically debug and correct errors.
- IV. 3. Analyze and evaluate Java programs.

D. Appropriate Outside Assignments:

Outside assignments may include, but are not limited to, the following:

- I. Outside assignments may include but are not limited to the following:
- II. 1. Write a program that displays a frame.
- III. 2. Create an applet with a frame that counts numbers.
- IV. 3. Evaluate and analyze Java programming requirements.
- V. 4. Write an applet that displays letters and words.

E. Writing Assignments:

Writing assignments are required and may include, but are not limited to, the following:

- I. Writing assignments may include but are not limited to the following:
- II. 1. List and explain in writing Java programming tasks.
- III. 2. Describe, in writing, the concept of inheritance.
- IV. 3. Create a flowchart for the use of "if" statements.

2. METHODS OF EVALUATION:

A student's grade will be based on multiple measures of performance unless the course requires no grade. Multiple measures may include, but are not limited to, the following:

- I. A final grade of "C" or better indicates the student has the ability to successfully apply theory and techniques taught in this course in subsequent courses and in practice. Distance learning students will submit their evaluation items electronically and may receive electronic feedback. Performance on hands-on assignments. Written responses to in-class assignments. Responses to in-class objective and/or essay question quizzes and/or examinations. Development of programs in Java. Interactive one-on-one demonstration of program testing and operations in Java. Participation in classroom discussion. Development of Java program documentation.

3. METHODS OF INSTRUCTION:

Methods of instruction may include, but are not limited to, the following:

- * Other (Specify)
- * Distance Education
- * 1. Computer assisted instruction.
- * 2. Lecture.
- * 3. Audio/visual aided instruction.
- * 4. In-class computer hands-on practice of concepts and techniques included in course objectives.
- * 5. Interactive group activities including analysis, evaluation, and modification of Java programs.
- * 6. Distance learning (TMI) students will attend electronic conferences, or where feasible, attend scheduled on-site conferences. Communications between TMI students and instructor will take place as per instructor's course syllabus with a minimum of two electronic communications during the semester between instructor and each student.

4. REQUIRED TEXTS AND SUPPLIES:

Textbooks may include, but are not limited to:

TEXTBOOKS:

1. Arnold, K.. The Java Programming Language, NA ed. Reading, MA, Addison-Wesley, 1998, ISBN: NA
2. Farrell, J.. Java Programming, NA ed. Cambridge, MA, Course Technology-ITP, 1999, ISBN: NA

3. Holmes, B.. Programming with Java, NA ed. Sudbury, MA, Jones and Bartlett, 1998, ISBN: NA
4. Hunt, J.. Java and Object Orientation, NA ed. New York, NY, Springer-Verlag, 1998, ISBN: NA

MANUALS:

PERIODICALS:

SOFTWARE:

SUPPLIES:

ORIGINATOR: Curricunet Version 2

CO-CONTRIBUTOR(S)

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