COSC-240 JAVA PROGRAMMING 3 CREDITS

SYLLABUS

CATALOG DESCRIPTION

Object-oriented programming in Java. The course covers all the basics of java Programming with special emphasis on classes, graphical user interface (GUI), and animation (honors section only).

Prerequisites: MATH 096, ENGL-095 and RDNG 095 or RDNG-096 (obtain appropriate Accuplacer scores).

Semester Offered:

COMMON STUDENT LEARNING OUTCOMES

Upon successful completion of San Juan College programs and degrees, the student will demonstrate competency in…

BROAD AND SPECIALIZED LEARNING

Students will actively and independently acquire, apply, and adapt skills and knowledge with an awareness of global contexts.

CRITICAL THINKING

Students will think analytically and creatively to explore ideas, make connections, draw conclusions and solve problems.

CULTURAL AND CIVIC ENGAGEMENT

Students will act purposefully, reflectively, and ethically in diverse and complex environments.

EFFECTIVE COMMUNICATION

Students will exchange ideas and information with clarity in multiple contexts.

INFORMATION LITERACY

Students will be able to recognize when information is needed and have the ability to locate, evaluate, and use it effectively.

INTEGRATING TECHNOLOGIES

Students will demonstrate fluency in the application and use of technologies in multiple contexts.

Student work from this class may be randomly selected and used anonymously for assessment of course, program, and/or institutional learning outcomes. For more information, please refer to the Dean of the appropriate School.

COURSE LEARNING OUTCOMES

Upon successful completion of the course, the student will be able to…

1. To instill in students the basics of problem solving.
2. To equip students with a basic understanding of the Java language and syntax.
3. To provide students with hands-on programming experience in both procedural and object-oriented programming**.**

Specific Learning Outcomes

1. Analyze, design, implement and test a computing problem (I) (T, A).
2. Describe the Input/Process/Output Algorithmic Pattern (I) (T).
4. Understand the nuts of bolts of C++ programs: variable declaration, initialization, assignment, Input/Output, and arithmetic expressions (II) (L).
5. Design and implement the Prompt then Input pattern (I) (T, I, A).
6. Evaluate and write arithmetic expressions (I, II, III) (T, A).
7. Read and write function heading, preconditions and postconditions (II, III) (T, I, C, A).
8. Do int quotient/remainder division with / and % (I, II) (T, I, C, A).
9. Work with Java primitive types (II, III) (L, A).
10. Work with Java classes (II, III) (L, A).
11. Comprehend the relationship between objects and classes (III) (L, T, C, I, A).
12. Send messages to instance methods (II, III) (C, A).
13. Appreciate why software is divided up into classes and instance methods (II, III) (L, I).
14. Discern why software is structured into methods communicating via argument/parameter associations and returns (II) (L, T, I, C, A).
15. Appreciate the importance of testing (I, III) (L, T, I, C, A).
16. Use test drivers to help implement and test free functions (III) (T, A).
17. Properly define and understand scope rules (II, III) (I, A).
18. Use existing classes and their instance methods available in Java standard packages (II) (I, A).
19. Read and write class definitions (III) (L, T, I, C, A).
20. Discuss class design issues (public versus private; choosing members) (III) (L, T, C).
21. Implement classes including instance variables and instance methods given the class definition (III) (T, I, A).
22. Explain the roles of constructor, accessor, mutator methods and how to implement them (III) (L, T, I, C, A).
23. Learn the meaning of qualifiers such as public, private, protected (II, III) (L, I, A).
24. Implement algorithms using if, if…else, and nested if…else (I, II) (L, A).
25. Develop programs using repetition (while, for and do while loops) (I, II) (L, A).
26. Distinguish between determinate and indeterminate loops (I, II) (L, A).
27. Recognize nested repetition (I, II) (L, T, I, C, A).
28. Use file input and output (II) (L, A).
29. Read until the end of file using the indeterminate loop pattern (II) (L, T, I, C, A).
30. Utilize arrays as object that stores a collection of objects (I, II, III) (L, A).
31. Present sequential search and a simple O(n2) sorting algorithm (selection sort) (I, II, III) (L, T, I, C, A).
32. Outline binary search and indicate that it is more efficient than sequential search by comparing O(log n) and O(n) (I, II, III) (L, T, I, C, A).
33. Develop Windows GUI programs in Java using the Swing package (II, III) (L, A).
34. Develop Applets (II, III) (L, A).
35. Understand inheritance and polymorphism (III) (L, T, I, C, A).