MASTER COURSE OUTLINE

Prepared By: Arthur Wanner/Tom Willingham | Date: February 2021

COURSE TITLE

Computer Science I: Java

GENERAL COURSE INFORMATION

Dept.: CS&	Course Num: 141	(Formerly:)
CIP Code: 11.0201	Intent Code: 11	Program Code: 527
Credits: 5		
Total Contact Hrs Per Qtr.: 88		
Lecture Hrs: 22	Lab Hrs: 66	Other Hrs:

Distribution Designation: Specified Elective (SE)

COURSE DESCRIPTION (as it will appear in the catalog)

An introduction to computer programming using the Java programming language. Students learn algorithm development and computational problem solving while writing Java programs. Language features that are studied include keywords, variables, data types, control structures, arrays, methods, classes, and objects.

PREREQUISITES

MATH& 141 or concurrent enrollment

TEXTBOOK GUIDELINES

Textbook and materials to be determined by CS Faculty (Example: *Starting Out with Java, From Control Structures through Objects* with *MyProgramming Lab,* Tony Gaddis)

COURSE LEARNING OUTCOMES

Upon successful completion of the course, students should be able to demonstrate the following knowledge or skills:

1. Identify the relationship between programming, hardware, and software.
2. Read, write, compile, execute and debug Java programs.
3. Utilize predefined code libraries (APIs) when building programs.
4. Define variables and objects use them appropriately in statements and expressions.
5. Use common data types and the operations that are defined on those types.
6. Use arithmetic, relational, and logical operators to develop complex expressions.
7. Apply control structures (sequence, decision, and repetition) to correctly control the flow of a program.
8. Create methods to modularize a problem into smaller, manageable parts.
9. Utilize Arrays, ArrayLists and their methods to define and manipulate collections of data.
10. Implement basic classes with constructors, instance fields, and methods.

INSTITUTIONAL OUTCOMES

IO1 **Communication**: Students will be able to communicate clearly and effectively within a workplace context

IO2 **Quantitative Reasoning**: Analyze and solve computational problems using a modern program language

COURSE CONTENT OUTLINE

1. Development environment setup and first program
2. Statements, expressions, data types, variables, values, operations
3. Program modularization using methods
4. If statements and conditional expressions
5. Repetition / iteration using for and while loops
6. String objects and indexing
7. Simple data structures using Arrays and ArrayLists
8. Data abstraction using basic classes and objects

DEPARTMENTAL GUIDELINES *(optional)*

Ryan Durell

DIVISION CHAIR APPROVAL

February 2, 2021

DATE