MISSOURI WESTERN STATE UNIVERSITY
COLLEGE OF LIBERAL ARTS AND SCIENCES

DEPARTMENT OF COMI'U'I'ER'SCIENCE, MATHEMATICS, AND PHYSICS

COURSE NUMBER: CSC 254
COURSE NAME: Computing Concepts II

C0URSE DESCRIPTION:
This course is a continuation of CSC 184. Topics include multidimensional arrays and array processing, elementary sorting and searching techniques, classes, linked lists, data abstraction, and GUI interface creating.

PREREQUISITE:
CSC 184 with a grade of C or better plus credit or concurrent enrollment in MAT 112 or MAT 116 or higher.

TEXT:
Introduction to Java Programming, Comprehensive Version (10th Ed.) by Y. Daniel Liang Prentice-Hall, ISBN 978013376313

COURSE OBJECTI VES :

- Provide the student with the knowledge necessary to develop more advanced programs using arrays, objects and classes.
- Prepare the student to discuss and evaluate the need for various data structure techniques to solve programming problems.
- Introduce the student to more advanced concepts in Java such as data abstraction, generics, and information hiding, inheritance, polymorphism.
- Establish a foundation upon which the further study of computer science and object-oriented programming—related topics can be based.
- Provide experience working with java packaging techniques for multiple source code files.
- Furnish students with skills and techniques used to develop large programs.

COURSE OUTLINE:
1. Review of Single Dimensional Arrays
    A. Array Declarations and Initialization
    B. Processing Array Information
    C. Sorting and Searching an Array
    D.Multidimensional Arrays in Java
2. Objects and Classes
    A. Programming Concepts
    B. Class Declaration
    C. UML
    D. Object initialization using constructors
    E. Object reference variables
    F. Static variables,

G.Visibility Modifiers and Access/Mutator Methods
H.Passing Objects to Methods
I.Array of Objects

3.. String and Text [/0
A. Java API Classes for String Manipulation
B. File based Text I/O

4.. Inheritance and Polymorphism
A. Superclass and Subclass
B. Method Overriding
C. toStringO and equalsO methods in Object class
D. Polymorphism, dynamic binding and generic programming
E. Casting
F. The “protected” and “final” visibility modifier

5. Abstract Classes and Interfaces
A. Abstract Classes and Abstract Methods
B. Definition of an Interface
C. Interfaces vs. Abstract Classes
D Wrapper Classes

6.. GUI Basics (As time permits)