**EECE 1610 Introduction to Computer Programming**

**Credits and contact hours:** 3 credit course, meeting for 3 50-minute periods each week.

**Course coordinator:** Dr. Richard J. Povinelli

**Text:** Anthony J. Dos Reis, An Introduction to Programming Using Java, Jones & Bartlett, 2012 (with Program Access Code for access to supplemental web material).

**Catalog description:** Students will be introduced to computer programming with an emphasis on object-oriented programming (OOP) and OOP design methodologies. The students will learn about typical programming constructs including data types, data structures, control structures, data input and output techniques as well as several algorithms used for solving engineering problems. In addition, students will learn to use modern programming tools in an integrated development environment by focusing on developing software solutions to significant engineering problems.

**Prerequisites:**  None

**Required**

**Professional component:**

Engineering science – 70%

Engineering design – 30%

**Course Goals:** To enable students to become object oriented programmers able to implement real‑world programs using the Java language.

**Specific outcomes of instruction***By the end of this course, students should be able to:*

1. Use the basics of object oriented programming (OOP) including (but not limited to) classes, objects, messages, methods, and attributes.
2. Explain software engineering and compare it to other engineering disciplines.
3. Describe the software life cycle.
4. Design, implement, and run a Java application.
5. Manipulate numerical data using variables, constants, and arithmetic expressions.
6. Instantiate classes, define constructors, declare local variables, and use methods (return values and parameter passing).
7. Process graphical user input (GUI) from an application.
8. Use selection statements such as if and switch.
9. Use repetition statements such as while and do‑while.
10. Distinguish between and use primitive and reference types.
11. Use arrays.
12. Understand and use file input and output (I/O) including handling exceptions.
13. Distinguish between and use method overriding and overloading.
14. Write event driven programs that use GUI objects.
15. Define and use inheritance and polymorphism.
16. Describe and use searching, sorting, and recursive algorithms

**Student outcomes addressed by the course:**Partial fulfillment of Criterion 3 objectives A, C, D, E, F, G, I, and K

**Brief list of topics to be covered**

Introduction to Computers and Programming Languages

Introduction to Object‑Orient Programming and Software Development

Java Programming Basics

Numerical Data

Defining Instantiable Classes

Selection Statements

Repetition Statements

Characters and Strings

Arrays

File Input and Output

Reusable Classes and Packages

GUI Objects and Event‑Driven Programming

Inheritance and Polymorphism

Searching, Sorting, and Recursive Algorithms

Last modified: February 16, 2018