CSE 1002 Fundamentals of Software Development 2 (4 credits)

Primary instructor: Ryan Stansifer **Supporting faculty:** Ronaldo Menezes

Textbooks and references:

R. Sedgewick and K. Wayne, Introduction to Programming in Java. Addison Wesley, 2007. ISBN 978-0-321-498805-2. (T)

Course information:

2014–2015 Catalog description: CSE 1002 Fundamentals of Software Development 2 (4 credits). Introduces the basic data structures and algorithms used in software design and implementation. Includes sorting and searching techniques. (CL) Prerequisites: CSE 1001.

Prerequisites by topic: Programming fundamentals: types, control structures, input/output, arrays

Place in program: Required, grade of C or better. Prerequisite for: CSE 2010

Course outcomes & related student outcomes: The student will be able to

1. Understand and use the Java API for reading and writing text including the Scanner class. (3: Skillful use of tools)
2. Understand and use object-oriented programming concepts, including the Java class hierarchy, inheritance, overriding, and dynamic dispatch. (1: Fundamental knowledge)
3. Understand and use the Java Collections classes to create dynamic data structures. (2: Scientific, computing, and engiueering problem solving)
4. Understand and use object-oriented design principles to create dynamic data structures without using built-in Java classes. (1: Fuudamental knowledge)
5. Understand and use recursion on numbers, arrays, and lists. (1: Fundamental knowledge)
6. Understand performance analysis concepts: time/space trade-offs and the relations between linear, polynomial, and exponential growth. (4a: Fundamental knowledge & 2: Scientific, computing, and engineering problem solving)
7. Understand and use built-in Java methods for parsing, formatting and converting data. (4a: Skillful software construction)
8. Understand generics and parametric polymorphism. (4a: Skillful software construction)

Topics covered:

1. Reading and writing text including the Scanner class (5 hours)
2. Object-oriented programming concepts, including the Java class hierarchy, inheritance, overriding, and dynamic dispatch (10 hours)
3. Java Collections classes to create dynamic data structures (stacks and queues) (5 hours)

4. Object-oriented design principles to create dynamic data structures without using built-in Java classes (5 hours)
5. Recursion on numbers, arrays, and lists (5 hours)
6. Performance analysis concepts: time/space tradeoffs and the relations between linear, polynomial, and exponential growth (5 hours)
7. Java methods for parsing, formatting, and converting data (5 hours)
8. Generics and parametric polymorphism (5 hours)

Approved by: Ryan Stansifer, Associate Professor and Director of Computer Science Programs, & Ronaldo Menezes, Associate Professor

Signature: Ryan Stansifer **Date:** 30 Jan 2015

Signature: _____ **Date:** 4 Feb 2015