COMMON COURSE OUTLINE: Course discipline/number/title: COMP 2247: Algorithms and Data Structures

A. CATALOG DESCRIPTION
   1. Credits: 4
   2. Hours/Week: 4
   3. Prerequisites (Course discipline/number): COMP 1150, COMP 2243, college level reading
   4. Co-requisites (Course discipline/number): None
   5. MnTC Goals (if any): NA

   This course covers the principles of complexity of algorithms and problem solving techniques with data structures. Topics include analysis of algorithm, linked lists, stacks, queues, binary search trees, sorting searching, and recursive algorithms. In-depth study of object-oriented programming concepts is covered. Additional topics may include lists, iterators, heaps and priority queues, balanced binary search trees, hashing and graph algorithms.

B. DATE LAST REVISED (Month, year): October, 2013

C. OUTLINE OF MAJOR CONTENT AREAS:
   1. Object-Oriented Programming concepts including inheritance, polymorphism, abstract method/class, and interface
   2. Analysis of complexity of algorithms
   3. Linked lists
   4. Stacks
   5. Queues
   6. Sorting algorithms
   7. Searching algorithms
   8. Recursion
   9. Binary search trees

D. LEARNING OUTCOMES (GENERAL): The student will be able to:
   1. Analyze complexity of algorithms.
   2. Design and write programs using object-oriented concepts including inheritance, polymorphism, abstract method/class, and interface.
   3. Design and implement data structures including linked lists, stacks and queues.
   4. Use sorting and search algorithms in programs.
   5. Solve problems using recursive algorithms.
   6. Design and implement binary search trees.

E. LEARNING OUTCOMES (MNTC): NA

F. METHODS FOR EVALUATION OF STUDENT LEARNING:
   1. Tests
   2. Programming assignments
   3. Comprehensive final exam

G. RCTC CORE OUTCOME(S) ADDRESSED:
   - Communication
   - Critical Thinking
   - Global Awareness/Diversity
   - Civic Responsibility
   - Personal/Professional Accountability
   - Aesthetic Response

H. SPECIAL INFORMATION (if any): None