

Course discipline/number/title: COMP 2243: Programming and Problem Solving

A. CATALOG DESCRIPTION

1. Credits: 4
2. Hours/Week: 4
3. Prerequisites (Course discipline/number): COMP 1150, MATH 1115, and READ 0900
4. Other requirements: Prerequisites may be satisfied by equivalent Math and/or Reading placement scores.
5. MnTC Goals (if any): NA

B. COURSE DESCRIPTION: This course introduces the major concepts of problem solving, algorithm design, and programming. Emphasis is on algorithm development, analysis, refinement, top-down and object-oriented program development concepts. Simple and composite data types, classes, and control structures are covered. Programming languages such as Java, Python, or C++ will be used. Students may take COMP 1150 and COMP 2243 concurrently.

C. DATE LAST REVISED (Month, year): March, 2023

D. OUTLINE OF MAJOR CONTENT AREAS:

1. Problem solving approaches
2. Program development process
3. Input and output
4. Arithmetic expressions
5. Logical and relational expressions
6. Selection control structures
7. Repetition control structures
8. Methods
9. Simple data types
10. Object-oriented programming concepts including class, encapsulation, and information hiding

E. LEARNING OUTCOMES (GENERAL): The student will be able to:

1. Design algorithms using stepwise refinement.
2. Document algorithms using flowcharts of pseudo code.
3. Write and document programs using simple data types and arrays.
4. Use standard input and output devices, and file input and output in programs.
5. Use selection and repetition control structures, and user-defined methods in programs.
6. Implement algorithms utilizing recursive structures.
7. Design, write, and document programs using object-oriented programming concepts including class, encapsulation, and information hiding.
8. Compile, link and run programs.
9. Test and debug programs.

F. LEARNING OUTCOMES (MNTC): NA

G. METHODS FOR EVALUATION OF STUDENT LEARNING: Methods may include but are not limited to:

1. Tests
2. Lab Exercises
3. Programming Assignments
4. Comprehensive Final Exam

H. RCTC CORE OUTCOME(S). This course contributes to meeting the following RCTC Core Outcome(s): Critical Thinking. Students will think systematically and explore information thoroughly before accepting or formulating a position or conclusion.

I. SPECIAL INFORMATION (if any): None