

I. EFFECTIVE DATE OF OUTLINE

Fall Semester, 2007. To be reviewed by the department annually.

II. CATALOG DESCRIPTION

- A. CSCI 1101
- B. Introduction to Computing and Problem Solving
- C. 4 credits
- D. Offered Fall and Spring Semesters
- E. Prerequisite: MATH 0700 or MATH 0670 with a grade of C or higher, or placement into MATH 1100
- F. Problem solving techniques in computer programming. A structured approach to algorithm development to solve a large number of problems. Students will write pseudocode to develop problem solving skills. They will write simple programs in one or more programming languages. Satisfies MnTC Goal 4.

III. RECOMMENDED ENTRY SKILLS/KNOWLEDGE

Before taking CSCI 1101, students should have knowledge of the algebra of:

- A. Polynomials
- B. Radicals and radical equations
- C. Function notation
- D. Graphing
- E. Variation
- F. Logarithmic and exponential equations

IV. OUTLINE OF MAJOR CONTENT AREAS

- A. Problem solving using a top-down approach
- B. Modularization, procedures, functions with use of parameters
- C. Algorithm design using pseudo-code and diagrams
- D. Structured programming
- E. Program documentation
- F. Arrays
- G. Algorithm tracing
- H. Recursion
- I. One or more programming languages including a high-level language, e.g., C, C++, or Java.
- J. Usage of computers in the Computer Center

V. LEARNING OUTCOMES

Upon successful completion of CSCI 1101, students will be able to: (Letters in parentheses refer to student competencies of the Minnesota Transfer Curriculum, Goal 2–Critical Thinking, and Goal 4–Mathematical/Logical Reasoning.)

- A. Use a top-down approach to problem-solving. (2a, c; 4a, b, c, d)
- B. Use and write precise and appropriate terminology in the description of problems and their solutions. (2a, c; 4b, d)
- C. Express problem solutions in the form of algorithms using pseudo-code and diagrams. (2a, c; 4b, c, d)
- D. Use structured programming and program documentation. (4a, b, c)
- E. Complete traces of algorithms showing their dynamics. (4b, d)
- F. Employ recursion. (4c, d)
- G. Employ procedures and functions with parameters. (4b, d)
- H. Use arrays. (4b, d)
- I. Design, code and execute programs in one or more programming languages, including a high-level language, using computers with relevant operating systems and text editors. (2a, c; 4b, d)
- J. Enter programs via computers, load and execute programs with appropriate files and obtain output either printed or in files. (4b, d)

VI. METHODS USED FOR EVALUATION OF STUDENT LEARNING

The instructor will choose from among various evaluation techniques including – but not limited to – in-class testing, take-home testing, assignments, quizzes, attendance, group or individual projects, and research. The instructor will also choose a method for end-of-the-semester evaluation.