

**NORMANDEALE COMMUNITY COLLEGE**  
**COMMON COURSE OUTLINE**  
**CSCI 2021, MACHINE ARCHITECTURE AND ORGANIZATION**

**9/28/2011**

**I. EFFECTIVE DATE OF OUTLINE**

Spring Semester, 2006. To be reviewed by the department annually.

**II. CATALOG DESCRIPTION**

- A. CSCI 2021
- B. Machine Architecture and Organization
- C. 4 credits
- D. Offered Fall Semester
- E. Prerequisites: CSCI 1101 and experience with C, C++, or Java
- F. Introduction to computer organization, machine language, and the use of assembly language programming using the Motorola 680x0 or DEC alpha instruction set.

**III. RECOMMENDED ENTRY SKILLS/KNOWLEDGE**

Before taking CSCI 2021, students should be able to:

- A. Use a top-down approach to problem-solving, designing procedures and functions to modularize problem solutions.
- B. Express problem solutions as algorithms, using some sort of algorithmic representation, e.g., flowchart or pseudocode.
- C. Complete traces of algorithms showing their dynamics.
- D. Use structured programming and program documentation.
- E. Use a variety of control structures and data structures, e.g., iteration and arrays.
- F. Program in some high-level programming language.
- G. Understand parameter passing to functions and recursive algorithms and functions.

**IV. OUTLINE OF MAJOR CONTENT AREAS**

- A. Computer structure and machine language
- B. Addressing techniques
- C. Computer organization
- D. Assembly language instruction set
- E. Number systems
- F. Boolean algebra
- G. Digital data representation
- H. Symbolic coding and assembly systems
- I. Program control
- J. Subroutines
- K. Program design
- L. Modular design

**V. LEARNING OUTCOMES**

Upon successful completion of CSCI 2021, students will be able to:

- A. Design and execute assembly language computer programs.
- B. State and apply the rules of assembly language programming.
- C. Describe basic machine architecture and design.
- D. Successfully operate a computer system to test assembly language programs.

**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.