

North Hennepin Community College

CSCI 2020: Machine Architecture and Organization

A. COURSE DESCRIPTION

Credits: 4

Lecture Hours/Week: *.*

Lab Hours/Week: *.*

OJT Hours/Week: *.*

Prerequisites:

This course requires any of these six prerequisites

CSCI 1130 - Introduction to Programming in Java (Minimum grade: 1.67 GPA Equivalent)

CSCI 1190 - Introduction to C++ Programming

CSCI 1150 - Programming in C# for .NET (Minimum grade: 1.67 GPA Equivalent)

CSCI 1030 - Programming for Internet

CSCI 1090 - Programming in VB .NET

CSCI 1120 - Programming in C/C++

Corequisites: None

MnTC Goals: None

As an introduction to computer organization and structure, this course includes beginning machine and assembly language programming. Topics to be covered include logic gates and Boolean algebra, basic elements of computing devices, basic components of a computer, data representation and number systems, micro operations, microprogramming, and input-output programming.

Prerequisite: CSci 1030 or CSci 1090 or CSci 1120 or CSci 1130 or CSci 1150 or CSci 1190

B. COURSE EFFECTIVE DATES: 08/27/1997 - Present

C. OUTLINE OF MAJOR CONTENT AREAS

1. Computer arithmetic, data representation and number systems, addition, subtraction, 1s complement, 2s complement, BCD representation, sequential logic, digital components, beginning assembly language programming, aspects of computer architecture and compilers, memory technology, memory hierarch, caches, disk, locality, high-level and low-level I/O

D. LEARNING OUTCOMES (General)

1. Develop an understanding of the organization of basic components in modern computers such as processors, hierarchical memory systems, and I/O peripherals. (Discipline Goal A; NHCC Core Ability Critical Thinking, comps. b)
2. Comprehend computer system behavior and operation. (Discipline Goal A; NHCC Core Ability Critical Thinking, comps. b, c)
3. Develop critical thinking skills by learning to optimize program performance, for working within the finite memory and word size of computers, and for system-level programming. (Discipline Goal C; NHCC Core Ability Critical Thinking, comps. a, b, c)
4. Demonstrate an understanding of computer arithmetic concepts and analyze how they are used by the system for efficient results. (Discipline Goal C; NHCC Core Ability Critical Thinking, comps. b)
5. Implement machine language programs and analyze the difference between machine language and higher level languages in terms of features and functionalities. (Discipline Goal B; NHCC Core Ability Critical; NHCC Core Ability Critical Thinking, comps. b, c)

E. Minnesota Transfer Curriculum Goal Area(s) and Competencies

None

F. LEARNER OUTCOMES ASSESSMENT

As noted on course syllabus

G. SPECIAL INFORMATION

None noted