Tompkins Cortland Community College

Master Course Syllabus

Course Discipline and Number: CSCI 210 **Year: 2020-2021**

Course Title: Assembly Language and Computer Systems **Credit Hours: 3**

Attendance Policy: *To maintain good grades, regular attendance in class is necessary. Absence from class is considered a serious matter and absence never excuses a student from class work. It is the responsibility of all instructors to distribute reasonable attendance policies in writing during the first week of class. Students are required to comply with the attendance policy set by each of their instructors. Students are not penalized if they are unable to attend classes or participate in exams on particular days because of religious beliefs, in accordance with Chapter 161, Section 224-a of the Education Law of the State of New York. Students who plan to be absent from classroom activity for religious reasons should discuss the absence in advance with their instructors. See college catalog for more information.*

Services for Students with Disabilities: *It is the College's policy to provide, on an individual basis, appropriate academic adjustments for students with disabilities, which may affect their ability to fully participate in program or course activities or to meet course requirements. Students with disabilities should contact the Coordinator of Access and Equity Services, to discuss their particular need for accommodations. All course materials are available in alternate formats upon request.*

Course Description

Develops basic concepts of computer systems and introduces the subject of computer architecture. Assembly language programming is covered in considerable detail. Other topics include machine language, addressing techniques, subroutines and control linkage, and macros. Prerequisites: CSCI 205 or ability to program in higher language; MATH 138 or higher; RDNG 116 if required by placement testing; ENGL 099 or prior completion or concurrent enrollment in ESL 120, 121, and 122 (or prior completion of ESL 103) if required by placement testing. 3 Cr. (2 Lec., 2 Lab.) Spring semester.

Course Context/Audience

This course provides the computer science student with the knowledge of the fundamental operation of computer hardware and its interaction with the program software. Through learning and using assembly language the student gains an understanding and appreciation of the structure and complexity of high level languages.

Basic Skills/Entry Level Expectations

Writing: W2 Student should have completed ENGL 099 (if needed). The course requires short written responses and/or short papers without documentation, particularly personal reflection or narrative.

Math: MC College level math skills – Course requires college level math skills. See course description for co-requisite and/or prerequisite requirement(s).

Reading: R4 Before taking this course, students must satisfactorily complete RDNG 116 or have assessment indicating that no reading course was required.

Course Goals

1. The student will learn about the fundamental operation of computer hardware and its interaction with the program software.

2. By using assembly language, the student will gain an understanding and appreciation of the structure and complexity of high level languages.

3. The student will develop thought-skills of methods and techniques to detect and analyze software errors and then how to solve those errors.

Course Objectives/Topics

Objective/Topic	% Course
The student will be able to demonstrate an understanding of the fundamental hardware, structure, and operation of typical microprocessor-based computers and computer systems.	20%
The student will develop a better understanding and appreciation of high level language structure and execution.	20%
The student will be able to use proper methods and procedures to write, document, debug, and execute assembly programs for the i80x86 family of microprocessors.	20%
The student will be able to demonstrate an understanding of binary and hexadecimal number systems and conversion between those number systems and the decimal number system.	15%
The student will be able to demonstrate an understanding of ASCII and BCD text and number representation coding.	10%
The student will be able to demonstrate an understanding of structure and mnemonic commands of assembly language, a low-level, machine-specific programming language.	50%
The student will be able to use procedures, macros, subprograms, and subroutines.	20%
The student will be able to use BIOS and DOS pre-programmed software interrupts.	15%
The students will be able to explain methods of transferring data and use of the stack.	10%
The student will be able to demonstrate an understanding of the fundamentals of monitor screen text and graphics basics.	5%
The student will be able to demonstrate an understanding of the fundamentals of linking assembly language programs with high level language programs and data transfer between those languages.	5%
Note: The sum of the amounts of class time assigned to each objective exceeds 100% because student mastery of the knowledge, skills and understanding of the individual objectives overlap.	

General Education Goals - Critical Thinking & Social/Global Awareness

CRITICAL THINKING OUTCOMES	HOW DOES THE COURSE ADDRESS THE OUTCOMES (Include required or recommended instructional resources, strategies, learning activities, assignments, etc., that must or could be used to address the goal/outcomes)
Students will be able to ➢ develop meaningful questions to address problems or issues. ➢ gather, interpret, and evaluate relevant sources of information. ➢ reach informed conclusions and solutions. ➢ consider analytically the viewpoints of self and others.	

SOCIAL/GLOBAL AWARENESS OUTCOMES	HOW DOES THE COURSE ADDRESS THE OUTCOMES (Include required or recommended instructional resources, strategies, learning activities, assignments, etc., that must or could be used to address the goal/outcomes)
➢ Students will begin to understand how their lives are shaped by the complex world in which they live. ➢ Students will understand that their actions have social, economic and environmental consequences.	

Instructional Methods
The following are appropriate instructional methods/activities for this course: lecture; question and answer sessions, homework problems, lab assignments and practice, and an individual software final project.

Methods of Assessment/Evaluation

Method	% Course Grade
Tests & quizzes	60%
Lab reports & final project	40%

Text(s)
IBM PC Assembly Language and Programming, Abel, Peter, 5th Edition, © 2001 Prentice-Hall Inc. ISBN: 0-13-030655-X

Bibliography
Assembly Language: Step-by-Step, Jeff Duntemann, Wiley, ISBN: 0-471-57814-2.

Assembly Language for Intel-based Computers, 3rd edition, Kip R. Irvine, Prentice-Hall, ISBN: 0-13-660390-4.

Mastering Turbo Assembler, 2nd edition, Tom Swan, Sams Publishing, ISBN: 0-672-30526-7.

The 80x86 IBM PC and Compatible Computers (Volume I), 2nd edition, Muhammad Ali Mazidi, Prentice-Hall, ISBN: 0-13-758483-0.

Intel Microprocessors: Hardware, Software and Applications, Roy W. Goody, Glencoe Press, ISBN: 0-02-801811-7.

Assembly Language for the PC, 3rd edition, John Socha and Peter Norton, Brady Publishing, ISBN: 1-56686-016-4.

Other Learning Resources

Audiovisual
Over head slides

Electronic
Computer use in Computer Lab

Art of Assembly, Randall Hyde, http://webster.cs.ucr.edu/Page_asm/ArtOfAsm.html

Other
No resources specified