

# WENTWORTH INSTITUTE OF TECHNOLOGY

## College of Engineering and Computer Science

### Computer Organization

Spring 2020

**Course Number:** COMP1200

**Instructor Name:** Frank Kreimendahl

**Classroom:** ANXCN 207/107

**Office Location:** Dobbs 136

**Class Schedule:** MW 11, F(lab) 10

**Office Hours:** T 1-2:30, W 1-2

**Lecture/Lab/Total Credits:** 3/2/4

**Course Website:** 1200.witcompsci.com

**Email address:** kreimendahlf@wit.edu

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#### **COURSE DESCRIPTION:**

*This course covers binary number and codes, logic elements, combinational and sequential logic, architectural design of a computer using these elements, and introduces concepts such as process and memory management.*

#### **COURSE PREREQUISITES/COREQUISITES:**

*Prerequisite: COMP1000*

*Corequisite: MATH2300*

#### **REQUIRED TEXTBOOK(S):**

*Introduction to Computing Systems 2nd Edition Yale N. Patt and Sanjay Patel, McGraw Hill (ISBN 978-0-07-24650-5)*

#### **THE COLLEGE BOOKSTORE:**

Location: 103 Ward Street Boston MA 02115

Telephone: 617-445-8814

#### **COURSE LEARNING OUTCOMES:**

At the completion of the course you should be able to:

- Perform arithmetic on (binary, decimal, and hexadecimal) integer number formats.
- Construct arbitrary combinational and/or sequential logic circuits.
- Analyze and understand machine code/instructions in a binary format.
- Write short programs in assembly code.

## INSTRUCTIONAL METHODOLOGIES:

Lectures and in-class examples will provide knowledge about practical aspects of computer organization. Students will practice numeric representations, circuit construction, and simple assembly language coding, in labs and with take-home assignments. Building a CPU from basic circuits will engage all the separate parts of knowledge from the course for the final project.

## GRADING POLICY:

There will be approximately 5 assignments (20% of grade) and 9 labs (30% of grade) during the semester. There will also be 2 in-class exams during the semester. Each exam will be worth 15% of the final grade. There is no final exam for this course. The final project will be worth 20% of the final grade.

Assignments and labs are accepted up to two days after their given due date, at a penalty of **20 points per day**.

## WENTWORTH GRADING SYSTEM:

Grade	Weight	Numerical Definition	Definition
A	4	93-100	Student learning and accomplishment far exceeds published objectives for the course/test/assignment and student work is distinguished consistently by its high level of competency and/or innovation.
A-	3.67	90-92	
B+	3.33	87-89	Student learning and accomplishment goes beyond what is expected in the published objectives for the course/test/assignment and student work is frequently characterized by its special depth of understanding, development, and/or innovative experimentation.
B	3	83-86	
B-	2.67	80-82	
C+	2.33	77-79	Student learning and accomplishment meets all published objectives for the course/test/assignment and student work demonstrates the expected level of understanding and application of concepts introduced.
C	2	73-76	
C-	1.67	70-72	
D+	1.33	67-69	Student learning and accomplishment based on the published objectives for the course/test/assignment were met with minimum passing achievement.
D	1	60-66	
F	0	0-59	Student learning and accomplishment based on the published objectives for the course/test/assignment were not sufficiently addressed or met.

## ADD/DROP:

Students should check the academic calendar to confirm the add/drop deadline. Dropping and/or adding courses is done online. Courses dropped in this period are removed from the student's record.

Non-attendance does not constitute dropping a course. If a student has registered for a course and subsequently withdraws or receives a failing grade in its prerequisite, **then the student must drop that course**. In some cases, the student will be dropped from that course by the Registrar. However, it is the student's responsibility to make sure that he or she meets the course prerequisites and to drop a course if the student has not successfully completed the prerequisite. The student must see his or her academic advisor or academic department chair for schedule revision and to discuss the impact of the failed or withdrawn course on the student's degree status.

## **ACADEMIC SUPPORT:**

The Center for Academic Excellence facilitates Wentworth students' academic success and helps them to achieve their full learning potential. Students may choose to receive individual assistance through one-on-one tutoring in many subjects, including math, science, writing, and major classes. In addition, the Center for Academic Excellence offers Facilitated Study Groups (FSGs), tutor-led study tables, academic workshops, and learning-strategy consultations. The peer-tutoring program is certified by the College Reading and Learning Association's International Tutor Training Certification program. To make an appointment or to review our drop-in offerings, please visit [www.wit.edu/cae](http://www.wit.edu/cae). For additional assistance or support on subjects not listed, please reach out via email at [cae@wit.edu](mailto:cae@wit.edu).

## **ACADEMIC HONESTY STATEMENT:**

Students at Wentworth are expected to be honest and forthright in their academic endeavors. Academic dishonesty includes but is not limited to cheating, prohibited collaboration, coercion, inventing false information or citations, plagiarism, tampering with computers, destroying other people's coursework or lab or studio property, theft of course materials, posting coursework/course materials to websites, or other academic misconduct. If you have any questions, contact your professor prior to submitting an assignment for evaluation. See your academic catalogue for a full list of definitions and the WIT Academic Honesty website for the procedures: [wit.edu/academic-honesty](http://wit.edu/academic-honesty).

## **STUDENT ACCOUNTABILITY STATEMENT:**

Any attempt to pass off another's work as one's own is plagiarism.

In this course the penalty for plagiarism is a failing grade in the course for any parties concerned. It is permissible for students to discuss the nature of an assignment or how to use a particular feature of the software. However, not a single keystroke of the work you submit should be done by anyone but you, nor should your work be based on commands supplied by someone else or developed in collaboration with someone else. In other words, you should not sit down and work together with anyone else on the assignments. Nor should you give, receive, or solicit specific information (such as code, commands) from other students in this course. (This, of course, does not apply to labs that are explicitly assigned to a group.) Exchange of detailed information about an assignment is cheating and will not be tolerated. If you are unsure or unclear about the rules, please contact me.

For this course, if I catch you plagiarizing I will give you a 0 on the lab or assignment and a warning. If you submit plagiarized work a second time, you will fail the course. The penalty for sharing your work with someone else is the same as receiving work from someone else.

## **THE CENTER FOR WELLNESS:**

College can be challenging and it is common to feel overwhelmed or stressed at times. If these feelings are related to course work or academic performance, please talk to me. For more significant mental health concerns, **The Center for Wellness (003 Watson Hall, 617-989-4390)** provides free and confidential mental health counseling.

If you or someone you know needs support around thoughts of suicide, the following resources are available:

- The Center for Wellness, Watson 003, 617-989-4390, M-F 8:15-4:45
- Campus Police, First level of 610 Huntington Avenue, 617-989-4444, 24/7
- Samaritans, call or text 1-877-870-4673
- Crisis Text Line, text "start" to 741-741
- National Suicide Prevention Lifeline, call 1-800-273-8255
- GLBT Youth Hotline, call 1-866-488-7386
- Beth Israel Deaconess Emergency Room, 190 Pilgrim Rd Boston, MA

Students requiring academic accommodations must provide an official accommodation memo from **The Center for Wellness** and contact me privately to discuss logistics.

**COLLEGE OF THE FENWAY STUDENTS:**

If you are enrolled in this course through COF Cross Registration, notify your course instructor. Please provide her/him with your email address to be sure that you receive course information in a timely way. You should also discuss how to access online applications that might be used in the course.

**SYLLABUS OUTLINE:**

<b>Week</b>	<b>Topic</b>
1	Introduction to Computer Systems
2	Informational Representation
3	Digital Logic Structures (combinational)
4	Combinational circuits cont'd
5	Digital Logic Structures (sequential)
6	K-maps
7	Exam review/Exam
8	Von Neumann and Harvard Computer Models
9	LC-3 Overview
10	LC-3 ISA
11	LC-3 Programming
12	LC-3 Subroutines
13	Exam review/Exam
14	I/O, runtime stack
15	Final Project Introduction