

Casper College Course Syllabus  
**COSC 2150 — Computer Organization**  
Fall 2015

**Lecture hours:** 3

**Class time:** 12–12:50 p.m.

**Instructor's name:** Kevin Lenth

**Office hours:** M 1–2,  
T 11–12 & 1–2,  
W/Th/F 11–12

**Lab hours:** 0

**Days:** MWF

**Office:** PS 335

**Office phone:** 268-2519

**Credit hours:** 3

**Room:** PS 325

**E-mail:** [lenthk@caspercollege.edu](mailto:lenthk@caspercollege.edu)

## Course Description

Foundations class for advanced coursework in computer science. Use of assembly and high-level languages to study the structure and operations of computers. Topics include the logical organization of computers, structured data and instruction representation in various types of languages, and extensive study of the assembly language of a modern microprocessor. Most programming is done at the assembly language level.

## Prerequisites

COSC 2030 (or concurrent enrollment) or permission of instructor

## Goal

This course grants an understanding of the levels of operation of a modern digital computer, how they are connected, and how their interoperability impacts high-level programming languages. Approximately half the course is spent on programming in the assembly language of the x86 family of microprocessors.

## Outcomes

### General education

This course meets the following Casper College general education outcomes:

1. Demonstrate effective oral and written communication
3. Solve problems using critical thinking and creativity
4. Demonstrate knowledge of diverse cultures and historical perspectives
6. Use appropriate technology and information to conduct research
8. Use quantitative analytical skills to evaluate and process numerical data

Casper College may collect samples of student work demonstrating achievement of the above outcomes. Any personally identifying information will be removed from student work.

## Course objectives

Upon successfully completing this course, students will be able to

- \* define and explain the levels of operation of a digital computer from digital logic to high-level languages;
- \* identify common components of a digital computer, their purpose, and how they are connected to one another;
- \* design a circuit implementing a desired Boolean function;
- \* program algebraic computations using assembly language;
- \* implement conditionals, loops, and functions in an assembly language.

## Methodology

For the most part this course is presented as a traditional lecture. In the assembly programming portion of the class there will be occasional opportunity for experimentation in a laboratory setting.

## Evaluation Criteria

The grade breakdown is as follows.

<i>Assignments</i>	30%
<i>Projects</i>	6×5%
<i>Tests</i>	6×5%
<i>Research paper</i>	10%

Final grades will follow the usual 60/70/80/90 scale (90% or higher is an A, etc.) with the following exceptions:

- \* Students shall not receive a passing grade unless they earn a passing grade (60% or higher) within each category individually. For instance, a student who has 70% overall but only 40% on the research paper will receive an F.
- \* Students who demonstrate dedication to the course (i.e., good attendance, much class participation, frequent office hour visits) may have their final grade bumped upward in borderline cases at the instructor's discretion.

*Assignments* will be given approximately weekly to allow students to master each section of course material and may take the form of either written work or a program; all assignments are to be done individually.

*Projects* are more involved and dive in depth into a topic of the unit. Each of the six class units has one project, which will be due one week after the end of the unit in class. Students may work in pairs on projects.

*Tests* assess students' knowledge of the course material; there will be one for each unit and they will be delivered through the course Moodle shell. Resources such as calculators, the textbook, course notes, and the Internet are all permitted on tests, however they are to be done individually with no direct human assistance.

The *research paper* is to be written on a topic of the student's choice from the material of the course; students will perform appropriate research to develop and support a conclusion. Sources must be cited and students are expected to make use of the writing center and the library in the process of writing their papers.

In the case of programming assignments and projects, the grade breakdown is summarized below.

<i>Weight</i>	<i>Requirements</i>
70%	The submission correctly and completely implements the required behavior
10%	The submission is structured in a reasonable fashion and makes use of appropriate language constructs
10%	The submission is adequately commented and easy to read
10%	A sufficient narrative document is supplied

*If the submitted program does not compile/assemble, no grade higher than 50% will be awarded.*

The submission of each assignment or project involving programming must be accompanied by a *narrative document*, a brief description of the purpose of the program along with a discussion of the process of writing the program (challenges, mistakes found, additional resources used, etc.).

## Required Text, Readings, and Materials

The required textbook is *Pearson Custom Computer Science: Computer Organization and Assembly*, a compilation of chapters by Andrew S. Tanenbaum and Kip Irvine. As it was specially printed for this course, *the Casper College bookstore is the only source for the book.*

The course Moodle shell (accessible from <https://moodle4me.caspercollege.edu/>) will be used extensively: daily readings, assignments and projects, tests, and announcements will be posted thereon.

## Class Policies

*Last Date to Audit or Withdraw:* November 12<sup>th</sup>

*Attendance.* Every student is expected to attend every class meeting with punctuality.

*Class participation.* All students are expected to participate actively in class; this entails asking questions and being receptive to questions asked by the instructor. Students are also expected to use the classroom computers for purposes related to class, i.e. taking notes and following along in examples. Excessive or disruptive use of the computers for non-class-related activities will result in ejection from the class.

*Late assignments.* Projects will be accepted up to five days after their due date with a penalty of 10% credit for each day. *Assignments will not be accepted late unless special dispensation is received from the instructor in advance.*

*Syllabus emendation.* The instructor reserves the right to amend this course syllabus at any time. If this occurs, an announcement will be made and the modified syllabus will be made available to the class.

## Student Rights and Responsibilities

Please refer to the Casper College Student Conduct and Judicial Code for information concerning your rights and responsibilities as a Casper College student.

## Chain of Command

If you have any problems with this class, you should first contact the instructor to attempt to solve the problem. If you are not satisfied with the solution offered by the instructor, you should then take the matter through the appropriate chain of command starting with the Department Head, the Dean, and lastly the Vice President for Academic Affairs.

## Academic Dishonesty

Casper College demands intellectual honesty. Proven plagiarism or any form of dishonesty associated with the academic process can result in the offender failing the course in which the offense was committed or expulsion from school. See the Casper College Student Code of Conduct for more information on this topic.

## Official Means of Communication

Casper College faculty and staff will employ the student's assigned Casper College e-mail account as a primary method of communication. **Students are responsible for checking their account regularly.**

The instructor's e-mail address is [lenthk@caspercollege.edu](mailto:lenthk@caspercollege.edu) (*not* [klenth@caspercollege.edu](mailto:klenth@caspercollege.edu)); e-mail is the best method of contacting the instructor outside of class or office hours. Class announcements will be made via the course's Moodle shell.

## ADA Accommodations Policy

If you need academic accommodations because of a disability, please inform the instructor as soon as possible. See him privately after class or during his office hours. To request academic accommodations, students must first consult with the college's Disability Services Counselor located in the Gateway Building, room 344, (307) 268-2557, [bheuer@caspercollege.edu](mailto:bheuer@caspercollege.edu). The Disability Services Counselor is responsible for reviewing documentation provided by students requesting accommodations, determining eligibility for accommodations, and helping students request and use appropriate accommodations.

# Course Calendar

<i>Week(s)</i>	<i>Topic</i>
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<b>Part I — Computer organization</b>	
1–2	Chapter 1 — Computer organization
3–5	Chapter 2 — Digital logic
6–7	Chapter 3 — Instruction set architecture
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<b>Part II — Assembly programming</b>	
8–9	Chapters 4–5 — Assembly fundamentals
10–12	Chapter 6–7 — Flow control and procedures
13–15	Chapters 8, 10, 11 — Arrays and arithmetic