

CS150: Computer Organization and Architecture

Spring 2024

About the Course: This course is an introduction to the organization and architecture of computing machines. The following is a list of the topics that will be covered in this course:

- Turing's thesis
- Bits and data types
- Number systems and base conversion
- Binary arithmetic
- Two's complement numbers
- Transistors
- Logic gates
- Combinational logic circuits
- Sequential logic circuits
- Finite-state machines
- FSMD and Controller/Datapath design
- Register-Transfer Language
- Instruction processing cycle
- Instruction formats
- Addressing modes
- Harvard and VonNeumann architectural models
- Overview of AVR family of processors
- ATmega328 processor
- Assemblers and their operation
- AVR Assembly language
- Stacks in hardware and software
- Subroutines
- Interrupts
- Programming in machine code (tentative)
- Cache memory (tentative)
- Out-of-Order execution (tentative)

Textbook: No textbook is required for the course. There are multiple references on the course website to assist you in learning the material. You will be required to purchase an Arduino Metro or Arduino UNO R3 board (about \$25). A link to the adafruit website to purchase the board appears on the course website.

Course Website: <http://www2.cs.uidaho.edu/~mdwilder/cs150>

Meeting Time: MWF 1:30 – 2:20.

Office Hours: MWF 12:30-1:20 in JEB 226 (or by appointment).

Assignments and Expectations: There will be homework assignments in this course. Assignments will not be graded. You will be provided with answers for all assignments, and the questions and answers will be discussed in lectures. You are expected to learn the material that is covered by the assignments. There will be quizzes in this course. Quizzes will be administered with no advance notice. The lowest quiz score you earn will be dropped when calculating your final grade in the course.

Exams: There will be two midterms and a comprehensive final exam in the course. The exams will be administered in class on the following dates:

Midterm 1: 16 February

Midterm 2: 5 April

Final Exam: 10 May (12:45 – 2:45 PM)

Grading:

Quizzes (5%)

Two midterm exams (25% each)

Final Exam (45%)

The letter grade you earn in this course will be determined as follows:

A: 100% - 90%

B: 89.9% - 80%

C: 79.9% - 70%

D: 69.9% - 60%

F: 59.9% - 0%

The instructor reserves the right to adjust these percentages lower if deemed necessary.

Academic Honesty: As a student enrolled at the University of Idaho, you are bound by the UI Student Code of Conduct. Article II, Section A.1 of this code addresses academic dishonesty. This code states “Academic honesty and integrity are core values at a university and the faculty finds that even one incident of academic dishonesty may merit expulsion. Instructors and students are jointly responsible for maintaining academic standards and integrity in university courses. In addition to any disciplinary sanctions imposed under the Code, additional consequences for academic dishonesty may be imposed by the course instructor, including issuing a grade of F in the course. Any grade issued by the course instructor, whether as a result of academic dishonesty or not, constitutes an academic evaluation and is not disciplinary action.” Academic honesty is vital in preserving the integrity of any academic institution. The Student Code of Conduct outlines the expected behavior of all students in all classes at UI. It can be found at <http://www.uidaho.edu/student-affairs/dean-of-students/student-conduct/student-code-of-conduct>.

Please do your own work in this course unless the instructor specifically directs otherwise. Academic dishonesty will be severely penalized.

University of Idaho Classroom Learning Civility Clause: In any environment where people gather to learn, it is essential that all people feel as free and safe as possible in their participation. To this end, it is expected that everyone in this course will be treated with mutual respect and civility, with an understanding that all of us (students, instructors, professors, guests, and teaching assistants) will be respectful and civil to one another in discussion, in action, in teaching, and in learning. Should you feel that our classroom interactions do not reflect an environment of civility and respect, you are encouraged to meet with your instructor during office hours to discuss your concern. Additional resources for expression of concern or requesting support include the Dean of Students office and staff (885-6757), the UI Counseling and Testing Center’s confidential services (885-6716), or the UI Office of Human Rights, Access, and Inclusion (885-4285).

Computer Science Support: For questions involving course content and assignments, please contact me or visit the Computer Science Assistance Center (CSAC) located in JEB211D. For technical issues involving computing equipment or other resources administered by the Computer Science department, please contact support@uidaho.edu

Center for Disability Access and Resources Reasonable Accommodations Statement:

The University of Idaho is committed to ensuring an accessible learning environment where course or instructional content are usable by all students and faculty. If you believe that you require disability-related academic adjustments for this class (including pregnancy-related disabilities), please contact Center for Disability Access and Resources (CDAR) to discuss eligibility. A current accommodation letter from CDAR is required before any modifications, above and beyond what is otherwise available for all other students in this class will be provided. Please be advised that disability-related academic adjustments are not retroactive. CDAR is located at the Bruce Pitman Building, Suite 127. Phone is 208-885-6307 and e-mail is cdar@uidaho.edu. For a complete listing of services and current business hours visit <https://www.uidaho.edu/cdar>

SI-PASS (Supplemental Instruction-Peer Assisted Study Sessions):

SI-PASS are peer-led, group study sessions scheduled outside of class time. These sessions are led by an SI-PASS Leader, who is a student who has taken this course and is an expert in the subject area. The SI-PASS Leader facilitates study sessions using a variety of activities aimed to help students master course content and develop effective study skills. These sessions are free and voluntary for students to attend.

Your SI-PASS Leader:

Daniel Franks

Session Days/Times & Location:

M 4:30-5:20 in TLC 051

W 3:30-4:20 in TLC 051

R 5:30-6:20 in TLC 051

If you have questions, please talk to your SI-PASS Leader or email si-pass@uidaho.edu