

# CSCI 2150 – Computer Organization

Course Syllabus – Summer 2025

## The Stuff You're Looking For...

### Contact Information

Instructor: William H. Rochelle

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Office: BlueSky 2.2I76

### Office Hours

Monday:

Tuesday:

Wednesday:

Thursday:

### Class Meeting Schedule

Meeting Days: Tuesday & Thursday

Meeting Time: 9:00 AM – 12:00 PM

Location: BlueSky 2.2H74

Start Date: June 9

End Date: August 15

## Learning Outcomes

The student shall be able to:

1. Perform mathematical and logic manipulations with numbers in binary format
2. Convert between binary, decimal, hexadecimal, and BCD formats
3. Demonstrate an understanding of the operation of combinational and sequential logic circuits
4. Design combinational and sequential logic circuits
5. Demonstrate an understanding of the circuitry that comprises memory and other storage devices
6. Design memory interface logic
7. Demonstrate an understanding of the principles of microprocessor organization and interfacing
8. Demonstrate an understanding of serial protocols

## Course Description

**Prerequisites:** B- or better in CSCI 1250 and C- or better in CSCI 1900.

Presents the physical implementation of the computer including mathematical and logical foundations, component-level design, and an introduction to machine architecture.

## Major Topics & Schedule

Major course topics are listed below:

- Boolean algebra
- Data representation
- Logic gates
- Combinational and sequential circuit design

- Memory cells
- Memory subsystems
- Memory hierarchy
- I/O subsystems
- I/O handling
- Interrupts
- Instruction representation
- Error detection
- Serial protocols

A schedule will be provided on D2L outlining the timing of content and deliverables. The schedule is subject to change depending on content progress and extenuating factors. Students will be notified if this occurs.

## Course Policies

### Course Format

This section of CSCI 4350 is an in-person course offering; class sessions will be conducted in person at the BlueSky campus. There may be occasions throughout the semester where classes will be held remotely via Zoom, Discord, or Microsoft Teams. Students will be notified in advance if this is to occur.

This course will use a flipped classroom modality – in-class time will not be lecture-heavy; most class sessions will consist of an in-class summation of the required readings, an in-class activity, and in-class time to work on assignments or reverse-classroom projects.

### Makeup Work

Late work and makeup work will not be accepted barring extenuating circumstances such as illnesses; the student must notify the instructor as soon as possible to arrange makeup work and arrange a delayed due date.

## Assignments and Deliverables

Coursework will consist of the following:

- Assigned readings: brief writeups or problems from the book will be the deliverables for the readings
- In-class activities: these will reinforce the topics covered in the readings and will provide a more hands-on approach to the learning topics
- Quizzes: these will be administered via D2L and will reinforce the topics covered in the readings and in-class activities
- Tests: there will be three exams (15% each) given during the semester; these tests will consist of short and long answer questions. Additional details regarding each exam will be provided during the scheduled review sessions.

## Attendance

Attendance for this course is mandatory, and the following policy will be enforced: students may miss two scheduled class days before the grade is negatively impacted. Tardiness exceeding 15 minutes will result in that student being marked absent.

Exceptions may be made for extenuating circumstances, provided that the student emails the instructor ahead of time.

## Grading

The weights for individual grade categories are shown below:

- **Attendance:** 20%
- **Homework:** 15%
- **Quizzes:** 20%
- **Tests:** 45%

## Required Text

The primary textbook for this course is *Computer Organization and Design Fundamentals* by David Tarnoff. It is available in three formats: hardcopy, PDF of full text, and PDF of individual chapters. Both of the electronic formats are free, and if you are comfortable with e-books, one or the other should be all you need. If, however, you like to read from paper, the hardcopy should be cheaper than the ink cartridge you'd use printing out the PDFs (\$16.90 before shipping). The following links will direct you to URLs where you can obtain the different formats:

Single PDF of entire book: <https://www.lulu.com/shop/david-tarnoff/computer-organization-and-design-fundamentals/ebook/product-18n2z8e2.html>

- **CODF** - Tarnoff, D. L. (2005). *Computer Organization and Design Fundamentals*. Johnson City, TN, Retrieved July 16, 2024, from Lulu Press, Inc. <https://www.lulu.com/shop/david-tarnoff/computer-organization-and-design-fundamentals/paperback/product-14g7dj.html>.
- **GEA** - Gregory, Jason (2018). *Game Engine Architecture, 3rd Ed.* Natick, MA: CRC Press, A K Peters, Ltd., Retrieved November 17, 2022, from O'Reilly Media, Inc. <https://learning.oreilly.com/library/view/game-engine-architecture/9781351974271/>.
- **DMU** - Clive Max Maxfield (1998). *Designus Maximus Unleashed!*. Boston, MA: Newnes Books, Retrieved July 22, 2022, from O'Reilly Media, Inc. <https://learning.oreilly.com/library/view/designus-maximus-unleashed/9780750690898/>.
- **CAQA** - Hennessy J.L. & Patterson, D.A. (2011). *Computer Architecture: A Quantitative Approach, 5th Ed.* Burlington, MA: Morgan Kaufmann, Retrieved October 25, 2024, from O'Reilly Media, Inc. <https://learning.oreilly.com/library/view/computer-architecture-5th/9780123838735/>

## AI Use Policy

The instructor reserves the right to utilize AI tools toward the purpose of administrative efficacy (e.g., creating groups, generating potential group discussion topics, etc.).

As generative AI is prone to making mistakes, the instructor will **never** use AI to grade any student assignments, generate feedback, or perform any other tasks which directly interfere with the interpersonal responsibility the instructor has to the students.