CSCI 237: Computer Organization
Syllabus for Fall 2023

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**General Info**

**Instructor:** Bill Jannen
**Office:** TPL 304
**Phone:** x4509
**Email:** 09wkj@williams.edu

**Lectures:**
- Section 01: MoWeFr 9–9:50am in Schow 030B
- Section 02: MoWeFr 11–11:50am in Wachenheim 114

**Labs:**
- Wednesday or Thursday at 1–2:25pm or 2:35–4pm
- All lab lab deadlines and checkpoints fall on Tuesdays at 10:00pm

**Web Page:** [https://www.cs.williams.edu/~cs237/](https://www.cs.williams.edu/~cs237/)

**Textbooks:**
- *The C Programming Language (2nd Edition)*, by Brian W. Kernighan and Dennis M. Ritchie (optional)

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**Course Objectives**

This course provides a programmer’s view of how computer systems execute programs, store information, and communicate. The course will enable students to become more effective programmers, especially in dealing with issues of performance, portability, and robustness. The course material also serves as the foundation for courses on compilers, networks, operating systems, distributed systems, storage systems, security, and graphics, where a deeper understanding of systems-level issues is required. At the same time, the course develops a model of computer hardware organization from the gate level upward.

Topics covered include: machine-level code and its generation; performance evaluation and optimization; computer arithmetic; memory hierarchies, organization and management; and supporting concurrent computation.

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**Course Work**

Beyond the scheduled lectures and weekly lab meetings, you should expect to:
- read the assigned textbook readings before each class,
- prepare for the weekly programming lab sessions,
- complete the weekly lab milestones,
- complete a modest number of written questions, and
- study for the mid-term and final exam.

Some students program quickly but read slowly, some do the opposite. The typical student should expect to spend at least 10 hours a week beyond the scheduled lecture and lab hours. If you find yourself spending substantially more time than that on a regular basis, discuss the situation with your instructor and we will develop strategies to help.
**Labs.** On most weeks, there will be lab programming assignments. **Attendance in lab is mandatory:** there are many valid reasons to miss a lab meeting, but *unexcused lab absences or latenesses will result in course failure.*

Strong programs will be correct, efficient, carefully designed, well-documented, and use consistent style. Completed programs and program milestones should be submitted electronically by 10pm on the due date, typically the Tuesday following the associated lab meeting. Each student may use a maximum of **three free late days** during the semester. A late day permits you to hand in an assignment up to 24 hours late, without penalty. Once late days are exhausted, late work will not be accepted; the most recent on-time submission will, however, be graded so that partial credit may still be obtained.

To use a late day, you must:

- Email the instructor in advance. No reason must be given; the only purpose of this email is to make it clear that you are using one of your free late days.
- By the regular submission deadline, submit the work you have completed so far, with a comment at the top of your README.md file that says: “Incomplete assignment, late day requested.”.
- When you have submitted the completed assignment, email your instructor and remove the “Incomplete assignment” comment from the README.md file that you submit.

Late days are provided to help students deal with unforeseen circumstances and to allow some balancing of occasional uneven work demands. They should be used judiciously; if you find yourself struggling with the workload of this (or any other) course, we encourage you to reach out to your instructor to identify holistic solutions.

**Exams.** There will be one midterm and one final exam. The midterm will be scheduled on the evening of Thursday, October 19, and it will replace the lab for that week. The final exam will be a scheduled exam during the exam period. The exams are closed book, closed notes, and stress conceptual understanding of the material. Details regarding the specific format of the exams will be discussed in class, and a sample exam will be provided to help you prepare.

**Engagement.** You are expected to attend lectures regularly. One goal of this course is to promote discussion of the assigned topics among all class members. As such, you are encouraged to ask questions, point out problems, and make observations during class. Learning is a collaborative and nonlinear process; if you find yourself confused, you are not at fault—asking a question signals that the whole class would benefit from a careful explanation of the topic or concept.

**Grading.** Grades will be determined as follows:

- Final exam: 30%
- Midterm exam: 25%
- Labs and assignments: 40%
- Written Questions: 5%
Honor Code

Homework and lab assignments are to be the sole work of each student unless the assignment explicitly states otherwise. Students may discuss issues related to an assignment, provided that such discussions are cited in the material turned in. However, students may not collaborate on writing code. One way to be sure you are not violating the honor code is to refrain from writing/typing/crafting your answers when talking with others—have all discussions away from any keyboard, and cite your discussions in your work.

You should never seek out or use others’ code posted online. Sources like StackOverflow are only appropriate for diagnostic purposes, like identifying cryptic error messages. You should never search out code on StackOverflow or similar forums. Similarly, you should never seek or publicly post assignment solutions, even after the course is complete. And finally, you may not use AI tools to assist with any work in this course. This prohibition includes plugins for editors (e.g., VSCode), the emerging suite of chat bots (e.g., ChatGPT or Bard), or any form of “intelligence” that is not your own.

Uncredited collaborations or code will be considered a violation of the honor code and will be handled appropriately. If in doubt of what is appropriate, do not hesitate to ask your instructor. For a full description of the Computer Science Honor Code, please see https://csci.williams.edu/the-cs-honor-code-and-computer-usage-policy/.

Help!!!

Help. We all need it. There are many resources available when you need it. You are encouraged to discuss any questions, concerns, difficulties, or thoughts about the course with your instructor. In addition, TAs are available to help you with challenges you might face as you work through the course material and lab assignments. If you find yourself facing challenges beyond the typical, we encourage you to reach out. Talk to your instructor, a friendly face from the Dean’s Office, or some of the many professionals across campus who stand ready to help, including:

- The Peer Tutor Program: Tutors can be arranged when 1-1 help is required beyond that available from your instructor and TAs. https://academic-resources.williams.edu/peer-tutor-program/
- Math & Science Resource Center: Support is available for students grappling with the more quantitative aspects of their coursework. https://academic-resources.williams.edu/math-science/
- Accessible Education and Disability Support Center: Some students with documented disabilities may require accommodations in certain situations. If that’s you, take advantage of the options available. The Office of Accessible Education is available to facilitate the removal of barriers and to ensure access and reasonable accommodations. https://academic-resources.williams.edu/disabilities/
- The Health Center: Sometimes your challenges are not course-related. The Health Center provides a range of medical, psychological, and health/wellness services. https://health.williams.edu

Inclusivity

The Williams community embraces diversity of age, background, beliefs, ethnicity, gender, gender identity, gender expression, national origin, religious affiliation, sexual orientation, and other visible and non-visible categories. We welcome all students in this course and expect that all students contribute to a respectful, welcoming and inclusive environment. If you feel that you are not being welcomed, included, or accepted in this class, please come to me or a college administrator to share your concern.