

## 1 Course Information

- ▶ Instructor: Shudong Hao, [shao14@stevens.edu](mailto:shao14@stevens.edu);
- ▶ Lecture Times: Mondays/Wednesdays/Fridays;
- ▶ Office Hours: Mondays/Fridays 3pm–4pm;
- ▶ Office Location: Gateway South 245;
- ▶ Prerequisite(s): CS 284.

### 1.1 Course Description

An introduction to computer architecture. Topics include: data (data types and formats), hardware (stored program computer concept, addressing methods and program sequencing, instruction sets and their implementation, the CPU and microprogrammed control, input/output organization, and main memory), communication (network protocols), assembly language programming, compiling, debugging.

### 1.2 Learning Objectives

After successful completion of this course, students will be able to:

- ▶ **C Language:** Write C programs, demonstrate skills, such as C memory management, pointers, and pointer arithmetic;
- ▶ **Assembly Language:** Acquire skills in assembly language programming and write advanced programs using branching, the stack, and subroutines. Become familiar with the development and debugging environments;
- ▶ **Computer System Architecture:** Identify and explain the functions of the basic architectural components including the datapath and pipelining;
- ▶ **Memory Hierarchy:** Describe concepts such as memory hierarchy, cache organization, virtual memory, and address translation.

### 1.3 Format and Structure

This course comprises three lectures and one lab session per week, homework assignments, projects, and exams.

### 1.4 Course Materials

**Textbook:** Computer Architecture & Organization. 2023 Edition. Shudong Hao. *Free access on Canvas.*

## 2 Assessment

### 2.1 Grading Items

- ▶ Homework assignments (4): 20%;
  - All homework assignments are individual work;
- ▶ Projects (2): 20%;
  - The first project will be individual work. The second project is done in pairs;

- ▶ Lab Assignments (10): 20%;
  - All lab assignments can be done in pairs;
  - Note that students in the same group have to be in the same lab session, and both students need to submit the work on Canvas;
- ▶ Lab Attendance (10): 5%;
  - All students are required to attend lab, and the attendance is taken individually. Regardless of how the lab assignments are done in a group, only students showing up at the lab will have the credit for attendance;
- ▶ Reading Quizzes (10): 5%;
  - Students are encouraged to discuss problems with peers, but the work should be done individually;
- ▶ Midterm Exam: 15%;
- ▶ Endterm Exam: 15%.

## 2.2 Extra Credit Policy

We strongly encourage students start and finish all coursework as early as possible. To this end, we offer an **earlybird** extra credit opportunity. For homework assignments and projects, the earlybird deadline is two days before regular deadline; for labs, the earlybird deadline is one day before. For example, if homework 1 is due 9/30/2023, 11:59PM EST, the earlybird deadline is 9/28/2023, 11:59PM EST. There's no earlybird deadline for all other items.

Any work submitted before the earlybird deadline will be given **2%** extra credit, which will be applied to the grade received for that work. To receive this extra credit, the submission cannot be changed/modified after the earlybird deadline; otherwise, no extra credit will be given.

## 2.3 Late Submission Policy

All the assignments, including reading quizzes, homework assignments, labs, and projects, need to be submitted before the deadline.

For each hour that a submission is late, 2% of your points will be deducted. The lateness penalty rounds up to the nearest hour—that is, an assignment that is 1 hour and 5 seconds late will receive a 4% late penalty. In addition to our extensions policy (see next section), everyone gets one no-questions-asked 3-day (including weekends and holidays) extension.

## 2.4 Extensions Policy

Extensions will be given on an individual basis. This section details the policy on extensions. To request an extension, please email the instructor, state the type of extension you would like to apply, and include any relevant documents.

The deadline for requesting an extension is at least 12 hours prior to the deadline of the assignment. Until you receive confirmation, it is not advisable to assume the extension is approved. For special cases where the application cannot be submitted early, the course staff will review them on a case-by-case basis.

Don't be afraid to reach out! We're here to help you succeed in our course.

### 2.4.1 No-Questions-Asked (NQA) Extensions

Life happens, and we would like to support you through those times. Therefore, everyone has **one time** no-questions-asked 3-day extension. This grants you three days of extension on any item you choose, but you cannot split it for different items. It cannot be applied retroactively either.

### 2.4.2 Extenuating Circumstances

We also strive to create a fair environment for everyone, so no extension will be granted without a valid cause. If an extension is granted, the student will have three days of extension without penalty. After three days, the late policy described in Section 2.3 will be applied.

The following lists most common excuses. Other excuses not listed below will be considered on a case-by-case basis.

- **Technical issues:** if a technical issue has occurred, e.g., virtual machine is broken, code editor is broken, etc., the student will be granted a two-day extension. This is allowed only **once** per semester;
- **Athletic events:** to receive extensions, the course instructor needs an email from the athletics department. Note that the student has to be competing in that event; only participating or observing does not count;
- **Student activities:** some student activities may occupy a large amount of time, which may prevent the student from finishing the assignments on time, such as student council. Please be aware that these activities are voluntary, so no extensions can be granted for that;
- **Family emergency:** if there's a family emergency, the student will be granted a two-day extension. Exceptions will need further proof and will be granted on a case by case basis. Please note that emergencies involving individuals not biologically related to the student themselves, such as boy/girlfriends, besties, etc., do not count as family emergencies, and extensions will not be granted;
- **Physical illness:** a doctor's note is **not** sufficient for being granted an extension. If the student has a medical condition or health emergency, please contact the Office of Disability Services to verify the issue and request an accommodation. Upon receiving a confirmation email directly from the office, the student will be granted a two-day extension;
- **Mental health:** we care about everyone's mental health and take it very seriously. If the student couldn't perform well because of mental health issues such as depression, please contact Counseling and Psychological Services as soon as possible, and get **diagnosed** and treated first. Upon receiving an email directly from the office for an accommodation, the student will be granted a two-day extension.

### 2.5 Pair-Work Policy

For items such as lab assignment that can be done in pairs, both students in the same group need to submit the work on Canvas. We only consider it as a pair work when both students have the same submission. If two students claim to be in the same group but have different work submitted, only one student's work will be graded (randomly chosen), and the same grade will be assigned to the other student as well. If two students did not claim to be in the same group but have the same work, that is a violation of honor code. Please refer to Section 3.1.

Both late penalty and earlybird extra credits will be applied individually. For example, student A and B are working in pairs. Student A submitted the code before the deadline, but student B submitted it later than the deadline. Since A and B are working on the same code, their initial grading will be the same, but B will receive late penalty while A will not.

### 2.6 Grading Dispute Policy

Students are encouraged to bring their graded work to either the instructor or the CAs to understand the grading, and in some cases, to modify erroneous gradings. We establish the following terms for grading dispute:

- To dispute a grading, the student has to bring the work back to either the instructor or the CAs within

two business days of grade release, no exceptions. After two business days, no grade can be changed;

- ▶ When bringing the work and its grading, the student has to clearly state the possible wrong grading item in the rubric, why their work satisfies the item, and how many points they should receive back;
- ▶ Any grading rubric at the point of submission deadline is a contract between the student and the course, so no arguments about rubric item are accepted. For example, “Item X does not make sense so I should get points back” will not receive any response from course staff;
- ▶ Due to The Family Educational Rights Privacy Act (FERPA) regulations, the course staff has right not to discuss grades with any party — including parents — other than the student themselves. When there’s a disagreement, please reach out to the instructor first;
- ▶ We ask any student bringing a grading dispute to respect course staff and to behave in a professional manner. Any inappropriate and disrespectful behavior will cancel the student’s opportunity for all future grading dispute, and will guarantee a report to the Stevens Student Code of Conduct Committee.

### **3 Academic Integrity**

#### **3.1 Undergraduate Honor System**

Enrollment into the undergraduate class of Stevens Institute of Technology signifies a student’s commitment to the Honor System. Accordingly, the provisions of the Stevens Honor System apply to all undergraduate students in coursework and Honor Board proceedings. It is the responsibility of each student to become acquainted with and to uphold the ideals set forth in the Honor System Constitution. More information about the Honor System including the constitution, bylaws, investigative procedures, and the penalty matrix can be found online at <http://web.stevens.edu/honor/>.

The following pledge shall be written in full and signed by every student on all submitted work (including, but not limited to, homework, projects, lab reports, code, quizzes and exams) that is assigned by the course instructor. No work shall be graded unless the pledge is written in full and signed.

*“I pledge my honor that I have abided by the Stevens Honor System.”*

Students who believe a violation of the Honor System has been committed should report it within ten business days of the suspected violation. Students have the option to remain anonymous and can report violations online at <http://www.stevens.edu/honor>.

#### **3.2 Honor System Reporting**

For any potential violation of academic integrity in this class, a report will be filed to the Honor System. We do not give “First-Time” forgiveness. Once a report is filed, all communication will have to go through the Honor System; the course staff will not negotiate or discuss the incident without the involvement of the Honor System.

#### **3.3 Learning Accommodations**

Stevens Institute of Technology is dedicated to providing appropriate accommodations to students with documented disabilities. The Office of Disability Services (ODS) works with undergraduate and graduate students with learning disabilities, attention deficit-hyperactivity disorders, physical disabilities, sensory impairments, psychiatric disorders, and other such disabilities in order to help students achieve their academic and personal potential. They facilitate equal access to the educational programs and opportunities offered at Stevens and coordinate reasonable accommodations for eligible students. These services are designed to encourage independence and self-advocacy with support from the ODS staff. The ODS staff will facilitate the provision of accommodations on a case-by-case basis.

For more information about Disability Services and the process to receive accommodations, visit <https://www.stevens.edu/office-disability-services>. If you have any questions please contact: Phillip Gehman, the Director of Disability Services Coordinator at Stevens Institute of Technology at [pgehman@stevens.edu](mailto:pgehman@stevens.edu) or by phone 201-216-3748.

### **3.4 Disability Services Confidentiality Policy**

Student Disability Files are kept separate from academic files and are stored in a secure location within the Office of Disability Services. The Family Educational Rights Privacy Act (FERPA, 20 U.S.C. 1232g; 34CFR, Part 99) regulates disclosure of disability documentation and records maintained by Stevens Disability Services. According to this act, prior written consent by the student is required before our Disability Services office may release disability documentation or records to anyone. An exception is made in unusual circumstances, such as the case of health and safety emergencies.