



Essentials: Communication, Content, and Structure

1 Communication

Class Meetings: Monday, Thursday 14:45 - 16:00; 206 HW
Office: HN1090J
Office Hours: Monday, 11:30 - 13:30
Email: stewart.weiss@hunter.cuny.edu
Telephone: (212) 772-5469

Regarding email, please note that I will not read email containing Microsoft Word-encoded documents. If you need to attach a document, it must be either plain text or PDF. Note too that all email must be sent from your “myhunter” account. It is a violation of federal law (FERPA) to have an email conversation about school-related matters using a non-school account because there is no proof that it is not spoofed and it might be insecure¹.

Regarding office hours, you can see me during my office hours *without an appointment*. If you need to see me at a different time, you need an appointment. The best way to make an appointment is to send me email with a few suggested times. You can also call my office and leave a message. I am usually unable to schedule meetings in a conversation before or after class because I need to see my calendar to know when I am available.

2 Resources

Required Textbook: *Operating System Concepts, 10th Edition*. Abraham Silberschatz; Greg Gagne; Peter B. Galvin, Wiley, New York. e-book version: ISBN 9781119320913; paperback abridged edition: ISBN 978-1119456339. It can be obtained from the bookstore here:
<http://bit.ly/2v8zDB7>

Computing Facilities: Registered students will be given user accounts on the Computer Science Department network of instructional computers. The labs that you can use for this class are located on the tenth floor of Hunter North. The lab of choice is the 1001B Walk-In lab, whose hosts run Ubuntu 18.04 (and which were in the old 1000G Linux Lab.) There is also the 1001B Linux/Windows Lab, which you may use if no class is scheduled there. In addition, students will be able to use a secure remote login service such as *ssh* to access these accounts. See Section 10 below for more details.

Website: All course materials, including lecture notes, slides, assignments, syllabus, and other resources, including this document, are posted on the course website, at
http://www.compsci.hunter.cuny.edu/~sweiss/course_materials/csci340/csci340_spr20.php

Discussion Board: This class will use Piazza as a discussion board. Please see the section below entitled "Course Materials, the Web, Piazza, and Blackboard" for the details.

¹ Email sent from the *myhunter* account requires an authenticated login, it satisfies FERPA's written consent requirement. However because security measures for other email systems are not as strict, an email received from Gmail or other mail accounts, for example, would NOT satisfy FERPA requirements.



3 Prerequisites

You are required to complete CSci 235, CSci 260, Math 155, and either Stat 113 or Stat 213 with a grade of C or better to take this course.

4 Departmental Learning Goals

Material in this course supports the following departmental learning goals: 1b: (understanding the relationship between computer architecture and software systems) by discussing virtual memory, hardware support for various OS tasks, and interrupt handling; 3a: (ability to communicate ideas effectively) by requiring homework that is graded in part on clarity and proper use of the English language; 3c: (ability to perform competitively on the Computer Science GRE) by exposing them to some of the material on that exam.

5 Course and Learning Objectives

The course is an introduction to the key concepts of operating systems. It begins with a brief overview of their structure and organization and then examines various aspects of operating system design, including process management, synchronization and communication, memory management, I/O system design and structure, and if time permits, protection and security mechanisms. The focus of the course is not on the details of particular operating systems, but on concepts, features, and characteristics of operating systems in general. When concrete examples are needed to clarify concepts, these will be drawn primarily from Unix and Unix-like operating systems such as Linux.

We will not cover all of the topics contained in the textbook; it has more than can be covered in a one semester undergraduate course. For a list of the actual topics that we will cover, as well as the readings and class schedule, see the accompanying document on this website: http://www.compsci.hunter.cuny.edu/~sweiss/course_materials/csci40/csci340_spr20_schedule.pdf.

6 Achieving Success in This Course

If you want to be successful in this course and presumably get a good grade, then you should do all of the following:

- Read the assigned reading *before* the lecture, not after it.
- Post questions to the Piazza Discussion Board when you need help.
- Try to answer questions on the Piazza Discussion Board.
- Come to my office to ask questions when you need help and all else has failed.
- Submit all assignments on time. *They are worth zero if submitted late.*
- Start studying for exams many days before the exam.
- Do as many of the textbook's sample questions as you have time to do.
- Do your assignments yourself.



7 Assignments, Exams, Grading, and Lateness

The grade for the course is based entirely on exams and assignments. There will be no programming projects in this class. There will be a few assignments, a few quizzes, one midterm, and a final exam. Assignments may or may not count towards the grade in the class, and their total value towards the grade is 10%. The midterm and final exams are each 35% of the total grade and cover the first and second half of the course material respectively. Exams will be based upon the class lectures and the required readings. The table below defines the weights assigned to each component:

Component	Weight Towards Grade
<i>assignments</i>	10%
<i>quizzes</i>	20%
<i>midterm exam</i>	35%
<i>final exam</i>	35%

7.1 Exams

There will be one midterm exam, one final exam, and four or five short quizzes. Quizzes may be unannounced in advance and will usually be based on material from a scheduled reading, or a recent class. These quizzes will be about ten minutes long. The final exam will cover the material from after the last class covered by the midterm exam to the end of the semester. *Please note that the final exam is not cumulative.*

Exam	Exam Date
Midterm	March 19
Final	May 18, 1:45 - 3:45 PM. <i>Note that this is NOT the class meeting time!</i>

7.2 Incomplete Grades

Assignments that are graded must be submitted by their due dates. **Late assignments will not be accepted and will be given a grade of zero.** Failure to take an exam counts as a zero grade on that exam. The only exceptions to these two rules are in the case that you have a legitimate, documented medical or personal emergency that prevents your timely completion of homework or sitting for an exam and have notified me in a timely manner about this emergency. I will schedule a make-up exam or grant a homework deadline extension only in that case. I do not give incomplete (IN) grades except to those students who were making progress through most of the semester and submitting assignments on time and who were unable to complete some work because of legitimate, documented medical or personal problems, and this is entirely at my discretion.

8 Class Schedule

The document at

http://www.compsci.hunter.cuny.edu/~sweiss/course_materials/csci340/csci340_spr20_schedule.pdf

contains the detailed class schedule.

9 Class Calendar and Important Dates

There are no classes on **Monday February 17** and during the spring recess from Wednesday April 8 through Thursday April 16. *The last day to drop without a W is February 16. The last day to withdraw is April 1.* The last day of class is Thursday, May 14.



10 Programming and System Access

All students enrolled in the class are given accounts on the Computer Science Department's network. This entitles you to physical access to the 1001B lab, which is equipped with Linux workstations. This lab is normally open from early morning through late evening. You may also use the 1001B Linux/Windows Lab if there is no class using it. The account also enables you to work from home or another remote computer by connecting to any of the lab machines remotely. The details are described below.

The advantage of working in the lab, as opposed to working remotely, is that you will be sitting at the console of a Linux host and will not be subject to potential disconnections that can take place when working remotely. You will also be much less affected by network problems than if you connect remotely from outside of Hunter. The disadvantage is that you have to be in school to do this.

When you are in the lab there are a few important rules that must be followed:

- Never power down a machine for any reason.
- Never leave a machine without logging out.
- Never use lockscreen to lock the screen in your login.

There are several other rules regarding lab use, which are posted in the lab. Also, please read the documentation at

<http://www.compsci.hunter.cuny.edu/~csdir/>

for more information. Please take the time to read this page and the others referenced on it.

The Computer Science Department has a *gateway* machine named

`eniac.cs.hunter.cuny.edu`,

available to students who have accounts on the network. `eniac` is a gateway computer - you will be able to login to this host from any computer that has `ssh` client software on the Internet. Once you login to `eniac`, you must login from `eniac` to one of the computers in the network that are named `cslab1`, `cslab2`, `cslab3`, and so on, up to `cslab30`. You cannot `ssh` directly to those machines from outside of Hunter College for security reasons. For example, you can first login to `eniac`, and then when it gives you a prompt such as “\$”, you would type

```
ssh cslab5
```

and re-enter your network password at the prompt from `cslab5`.

Many computers come with a version of `ssh` already installed. If yours does not, you can get one for free. There are several free versions of `ssh`. *OpenSSH* is an open source version developed for the *OpenBSD* project. *PuTTY* `ssh` is a free version for the Windows operating systems, available at

<http://www.chiark.greenend.org.uk/~sgtatham/putty/>.

Macintosh computers come with a command-line `ssh` client.

11 Course Materials, the Web, Piazza, and Blackboard

All lecture notes will be posted on the course's home webpage (whose URL is above), which does not require special privileges to access. The only thing for which I use Blackboard is for posting of grades, which will be posted in the grade center there. This term we will be using Piazza for class discussion. The system is highly catered to getting you help fast and efficiently from classmates and me. Rather than emailing questions to me, you are to post your questions on Piazza. If you have any problems or need feedback for the developers, email team@piazza.com.



You can find our class's discussion page at:

<https://piazza.com/class/k4x9v1svw52u>.

An invitation to join the Piazza discussion board will be sent to your Hunter College email address close to the start of the semester. You should accept this invitation. Your Hunter email address can be used for reading and sending messages to the group, or you can change the email address or add another on the settings page by visiting the above page and making a request to join the group with any email address you choose. The discussion board can also be accessed at this URL:

piazza.com/hunter.cuny/spring2020/csci340/home

I require that you use the following protocol if you have a question:

1. Check whether the question you want to ask has been posted and answered on Piazza.
2. If it has been answered, you are finished. If not, post the question on Piazza.
3. Anyone in the class can answer the question. If no one else answers the question in a timely manner, I will post an answer to it.

I will ignore any non-personal questions sent to my Hunter email address. Personal questions (such as a questions about a grade or a missed class or alternative times to meet with me) should be sent via private email to my Hunter email address, not to Piazza.

12 Academic Honesty

The *Oxford English Dictionary* states that “plagiarism is the act or practice of taking someone else’s work, idea, etc., and passing it off as one’s own; literary theft.” If you pass someone else’s work as your own you have committed *plagiarism*, which is an act of academic dishonesty. Unless I state otherwise, all assignments and projects are to be your work alone. If someone else does part of this for you, it is considered to be academic dishonesty. Hunter College regards acts of academic dishonesty, such as plagiarism, cheating on examinations, obtaining unfair advantage, and falsification of records and official documents, as serious offenses against the values of intellectual honesty. The college is committed to enforcing the *CUNY Policy on Academic Integrity* and will pursue cases of academic dishonesty according to the *Hunter College Academic Integrity Procedures*. In this class, I will enforce the *University’s Policy on Academic Integrity* and bring any violations that I discover to the attention of the Dean of Students Office.

13 ADA Compliance

In compliance with the *American Disability Act of 1990* (ADA) and with *Section 504* of the *Rehabilitation Act of 1973*, Hunter College is committed to ensuring educational parity and accommodations for all students with documented disabilities and/or medical conditions. It is recommended that all students with documented disabilities (emotional, medical, physical and/or learning) consult the *Office of Accessibility* located in Room E1124 to secure necessary academic accommodations. For further information and assistance, the student can call (212-772-4857)/TTY (212-650- 3230).

14 Hunter College Policy on Sexual Misconduct

In compliance with the *CUNY Policy on Sexual Misconduct*, Hunter College reaffirms the prohibition of any sexual misconduct, which includes sexual violence, sexual harassment, and gender-based harassment retaliation against students, employees, or visitors, as well as certain intimate relationships. Students who have experienced any form of sexual violence on or off campus (including CUNY-sponsored trips and events) are entitled to the rights outlined in the *Bill of Rights for Hunter College*.



- Sexual Violence: Students are strongly encouraged to immediately report the incident by calling 911, contacting NYPD Special Victims Division Hotline (646-610-7272) or their local police precinct, or contacting the College's Public Safety Office (212-772-4444).
- All Other Forms of Sexual Misconduct: Students are also encouraged to contact the College's Title IX Campus Coordinator, Dean John Rose (jtrose@hunter.cuny.edu or 212-650-3262) or Colleen Barry (colleen.barry@hunter.cuny.edu or 212-772-4534) and seek complimentary services through the Counseling and Wellness Services Office, Hunter East 1123.
- CUNY Policy on Sexual Misconduct Link: <http://www.cuny.edu/about/administration/offices/1a/Policy-on-Sexual-Misconduct-12-1-14-with-links.pdf>

15 Changes to This Syllabus

Except for changes that substantially affect the implementation of the grading statement, this syllabus is a guide for the course and is subject to change with advance notice. Any changes will be posted to the course website and to the Piazza group for the course.



CSci 340 Syllabus/Schedule

The following table identifies the topics that we will cover, and approximately how much class time will be spent on each. The number of classes spent on any topic may vary from what is listed here. The purpose of this syllabus is to make it possible for you to prepare in advance. **You are expected to read the relevant parts of the book before the class in which it will be covered.** Quizzes may be based on these readings. There is more material in the chapters than we will cover in class, and the table lists sections that will be skipped. There may be some small deviations from this plan, which will be announced in advance.

Use this schedule as a guide for your reading of the textbook. The column labeled "Skipped Sections" indicates which sections of the chapters we will skip. You are expected to read all of the remaining material in the chapters that we will cover in class **before** the class meeting.

Several of the chapters in the book contain material that should be a review of topics that are covered in the prerequisite courses. You are expected to know this material, although it will not be discussed in class. If you need to brush up on it, you should read it carefully. If it is still "fresh" in your mind, you may optimize your time by skipping it. This is a judgment call on your part.

Class	Date	Topic/Material	Textbook Chapters	Skipped Sections
1	1/27	Course Business/ Introduction to Operating Systems	Chapter 1	§1.8
2	1/30	Introduction to Operating Systems		
3	2/3			
4	2/6	Operating System Structures	Chapter 2	§2.7, §2.9, §2.10
5	2/10			
6	2/13	Processes	Chapter 3	§3.7, §3.8
7	2/17			
8	2/20	Threads and Concurrency	Chapter 4	§4.5, §4.6
9	2/24			
	2/27	College is closed		
10	3/2	CPU Scheduling	Chapter 5	§5.6, §5.8
11	3/5			
12	3/9			
13	3/12	Synchronization Tools	Chapter 6	§6.3, §6.4, §6.7
14	3/16			
15	3/19	Midterm Exam		
16	3/23	Synchronization Examples	Chapter 7	§7.4
17	3/26	Deadlocks	Chapter 8	§8.6, §8.7, §8.8
18	3/30			
19	4/2	Main Memory	Chapter 9	Nothing is skipped.
20	4/6			
21	4/20			
22	4/23	Virtual Memory	Chapter 10	§10.7, §10.8, §10.9
23	4/27			
24	4/30			
25	5/4	I/O Systems	Chapter 12	§12.1, §12.4 - §12.7
26	5/7			
27	5/11	File Systems	Chapter 13	§13.4, §13.5
28	5/14			