CSCI 132: Practical UNIX and Programming
2020 Fall Term (August 26 – December 20)
CSCI 132 Section 01 Class 6357
Online Zoom Class Meeting Sessions: Mondays and Wednesdays,
7:00PM to 8:15PM Eastern Standard Time
Last Day to drop this course: Tuesday September 15

1. Communication
Instructor: Trami Dang

Email: tdang@hunter.cuny.edu

Office Hours and Availability: Email first to schedule an appointment on Collaborate, WebEx, or Zoom. I will typically respond within 24 hours or the next business day. In your email, indicate your section number in the subject line or the body of your email message. For questions concerning anything that might fall under the FERPA regulations (e.g. , sensitive information about grades or other class related issues), it must be sent from your student email account (username@myhunter.cuny.edu)

2. Resources, computing facilities and required instructional materials
- Internet access is required for going to CUNYfirst, Blackboard, the Linux Lab, Zoom, and Youtube.
- A laptop or desktop computer is required to complete the programming assignments and the project.
- Access to your myHunter email to receive course announcements and your Linux Lab account details from the Linux Lab network administrator.
- This course is designated as Low Textbook Cost, abbreviated as 'LTC'. The assigned textbooks are:
  - Dave Taylor, *SAMS Teach Yourself Unix in 24 Hours*, Third edition or greater. Sams Publishing, 2001. ISBNs: 978-0672337307, 978- 0672328145, ISBN 978-0672319938.
  - Charles R. Severance, *Python for Everybody, Exploring Data Using Python 3*, 2016, ISBN 978-1530051120

  The assigned textbooks are optional and are not necessarily required to complete the course. Various online resources can be used per your preference for outside reference.
- All course materials will be on the course Blackboard.
  Take the time to explore the primary areas in the course Blackboard navigation menu: Syllabus, Course Materials, Quizzes, Lectures, Assignments, Submissions, Exams, Discussion Board, and Zoom: Class Meetings.

- **The Linux Lab**
  All registered students will be given user accounts on the Hunter College Computer Science Department's UNIX network, the Linux Lab, unless they already have one.
    - You are required to complete the assignments and project while logged into the Linux Lab.
    - These accounts provide access to all UNIX hosts in the network, including those in the 1001B lab classroom on the tenth floor of Hunter North.
    - This lab is available '24 hours a day, 7 days a week', to students enrolled in computer science courses at Hunter College. That is, the accounts also enable students to remotely login to the network using an `ssh` client. See section 7. Programming and System Access on Syllabus page 9 for instructions on how to use or obtain an `ssh` client for your personal computer.

Course Blackboard navigation
Syllabus
The outline and policies for the course will always be available online on the course Blackboard.

Course Materials
The course material for the semester is divided into units.
  - Each weekly topic will be covered in a select variety of readings, presentations, web links, and/or demonstration videos.
  - A short list of practice exercises asks you to apply your knowledge using what you have learned. If you get stuck, there might be some video tutorials, or solutions in print-format, showing how to complete each exercise.
  - A unit should ideally be learned and completed before attending the synchronous Zoom: Class meetings for the scheduled topic.

Quizzes
Each week, there will be a time-restricted quiz that tests your knowledge of the scheduled topics.

Videos
All video multimedia will be organized for each weekly topic into two parts: demonstration videos and video tutorials.
  - Videos for each corresponding unit will be available as separate Youtube links and as a Youtube playlist.
  - You will not be required to have a Youtube account to view the videos.

Assignments
The primary instructions and details of all course assignments will be posted regardless of the due dates.

Submissions

Assignments submissions must be uploaded to the respective submission period. You can submit an unlimited number of attempts for an assignment until submissions are no longer accepted for an assignment. Submissions are graded on a daily basis from 9AM – 5PM. If you submit one or multiple attempts, only the last graded attempt will count for the assignment.

Exams

A practice exam will be available for your convenience as technical preparation for the final exam. The final exam will appear in this section of the course Blackboard on the scheduled day and time during the Final Examinations period:

Monday December 14, 6:20PM – 8:20PM

Discussion Board

This section is for interaction with your classmates and the instructor in a time-flexible, synchronous fashion. Every few weeks there will be a new Forum to complete for a specified Participation activity: an Interaction or a Reading.

Zoom: Class Meetings

For this semester, synchronous lectures for class meetings will take place on the video-conferencing platform **Zoom** at the time the class session is scheduled. Attendance to these class meetings is not required for the Participation Grade. *It is strongly recommended to attend every class meeting for successful completion of the course.*

- The main site to use zoom is https://zoom.us
- Zoom software installation is required for attendance to the class sessions.
- Each week, you will be required to register for every weekly class session, through Zoom registration links, before the class meeting sessions begin.

The purpose of the Class Meetings is to make the most of your time:
- as lecture sessions; the instructor touches upon the topics in the weekly units of the Course Materials,
- as a flipped classroom; special Q&A sessions where you ask your questions or need assistance with the Linux Lab, such as remote login, and
- if time allows, as extended programming practice sessions; reviewing, expanding on, the practice programs and additional exercises.

3. Course Objective and Learning Outcomes

This pragmatic fifteen-week course is an introduction to elementary computer programming and the UNIX operating system. The fundamental programming principles learned from this course can be applied to any programming language. Course prerequisites: None.

Although the course is primarily described as a gateway into the bioinformatics concentration program at Hunter College in the Biology department or Computer Science Department, it is focused on your skill acquisition in using and navigating UNIX environment, bash shell-scripting, elementary programming techniques to be learned in the Python programming language, and understanding the basic concepts of open-source, collaborative software development.

Specific learning outcomes are that the student will:
- Understand the structure of the file hierarchy, permissions and security within UNIX operating systems.
- Understand the structure of `man` pages and know how to use the information contained in them.
- Know how to use key word searches combined with filtering techniques to do topic searches in the `man` pages.
- Know how to customize the bash environment.
- Use pipelines and file globs for processing textual data.
- Use UNIX filters for manipulating and processing textual data
- Write bash scripts that use command line arguments and have conditional control structures.
- Identify the variable inputs, outputs, and fixed parameters of a problem statement.
- Use top-down stepwise refinement to convert an informal problem statement into a precise, pseudo-code description of an algorithm.
- Know the basic types of variables and methods of storing data in Python.
- Recognize the differences in programming languages through the history of computing.
- Know the basic statements structures, including iteration and conditional and selective branching.
- Know how to create and use functions with parameters.
- Know how to redirect I/O within a program and use operating system commands from within Python
- Know how to construct and use text patterns for manipulating textual data in Python
- Know various list processing techniques.
- Know what open source software is and how it differs from proprietary software.

Successful completion of this course will reward you beyond with many invaluable skills as a programmer. Programming is not something you can do by reading about it or listening to lectures. The only way to make progress is to write and execute programs and that is how you will be spending most of your time: learning by doing.

4. Criteria for Grading and Evaluation

Getting a Good Grade: As a fair warning, the pace of this course is fast: you will learn up to three new topics every week. Ideally, you must spend at least nine (9) hours learning the material by completing the unit modules, activities, and doing some programming every week as directed in the course document titled 'CSCI 132 Section 01 Fall 2020 Course Schedule'. A good plan is to schedule a 90-minute session every day, and to attend every Zoom class meeting.

Grade Scale:

Letter Grade	Grade Scale %
A+	97.5 to 100%
A	92.5 to 97.4%
A-	90.0 to 92.4%
B+	87.5 to 89.9%
B	82.5 to 87.4%
B-	80.0 to 82.4%
C+	77.5 to 79.9%
C	70.0 to 77.4%
D	60.0 to 69.9
F	0.0 to 59.9%
CR (Credit)	70.0 to 100%
NC (No Credit)	0.0 to 69.9%
WN (Never Attended)	No student activity (see Note)
WU (Unofficial Withdrawal)	No student activity (see Note)

Note: Logging into an online course is not sufficient, by itself, to demonstrate participation in an academically related activity.

Weighting Policy:
The course grade will be based on the weighted average of the following factors:

Assessment	Percent
Participation	20%
Programming Assignments	30%
Weekly Quizzes	30%
Programming Project	10%
Final Exam	10%

Participation:

Active student participation is required, and accounts for 20% of your course grade. It is comprised of two elements to be completed in the **Discussion Board** on the course Blackboard.

Interactions

Collaboration is encouraged for successful course completion. For each non-Reading Forum, each discussion is worth a potential of 10 points.

- o Completion of the Introduction Forum in Week 1 and the Closure Forum in Week 15: each forum requires one individual post by you, and a response to at least one classmate's post.
- o In Week 7, completion of the Group/Individual Programming Project Survey, and at least one post or reply in the Reach-Out Forum is required.
- o In Week 8, at least one post or reply in a Contract Forum, and submission of the respective Contract for the Programming Project, is required.

Readings

About every two weeks, there will be a topic reading and a discussion prompt posted as a Forum Topic. Each discussion is worth a potential of 10 points.

- o In the first week, participants must have completed the reading and posted their individual response to the weekly topic prompt, for the first potential 5 points.
- o In the second week, each student must respond to at least two classmates' discussion posts, for a potential of 2.5 points each, totaling to the latter potential 5 points.

Programming Assignments:

There will be eight total assignments worth 30% of your course grade. Details for each assignment are accessible in **Assignments** on the course Blackboard.

- Students are expected to complete the assignments independently unless stated otherwise.
- The assignments are generally due weekly during the period of Week 1 to Week 10.
- Each assignment is to be completed on time by the end of each week, before Sunday 11:59PM Eastern Standard Time.
- Assignments must be uploaded as submissions during the respective Submission Period. The links for the submission period for each assignment is located in **Submissions** on the course Blackboard.

Weekly Quizzes:

Starting Week 2, there will be a weekly review quiz of the previous week's course topics, accessible in **Quizzes** on Blackboard. The grade you score on the quizzes account for 30% of your course grade.

- Each quiz is composed of no more than ten (10) questions.
- The review quiz will only be available for five days following the end of the previous week, due before Friday 11:59PM Eastern Standard Time.

- You may consult your notes, the unit modules, and lecture videos in answering the question.
- The quizzes are timed and must be completed in one sitting. You get a maximum of one minute per question to complete the quiz.
- You will be given two attempts to take the quiz. The Blackboard Grade Center will retain the higher grade of the two quiz attempts.
- Completion of all weekly quizzes is required. The lowest grade on all quizzes is NOT dropped. Failure to take a quiz will result in a grade of zero, which will be averaged with other quiz grades.

Programming Project:
Students will complete a series of structured assignments. The outcome of each assignment is designed to get students to practice baseline skills in using UNIX and programming, in preparation for the programming project due the end of the course. The programming project is worth 10% of your course grade.

Based on your response to the Group/Individual Programming Project Survey in Week 7, you will be following one of two paths as a beginning programmer: as an individual freelancer, or as a part of a development team. The Programming Project will appear as a new section called **Project** in the course Blackboard starting in Week 7.

- As an individual freelancer:
    - you will not be required to work as part of a group.
    - However, you will be partnered with at least one other individual classmate who will act as your 'client'. In return, you will be their 'client'.
    - You will be required to create 2-4 programs of increasing difficulty.
- As part of a development team:
    - You will be required to work with at least two classmates.
    - Each member of the group share the collective responsibilities of the project, but assume variations of group roles as needed for completion of the project.
    - As a group, you will be collectively responsible for the development of an interactive program.

Regardless of which beginning programmer path you pick, programming project contracts and weekly check-ins will be required as proof of programming development process, efforts of each individual, requests for critiques and feedback, and other commentary. You will be working on this program starting from Week 8 to Week 14, with full intent of the presentation of your programs taking place at one of the synchronous Zoom class meetings scheduled in Week 15.

Final Exam:
The final exam is composed of fifty (50) questions, worth 10% of your course grade.

The final exam will appear in **Exams** on the course Blackboard on the scheduled day and time during the Final Examinations period:

<p align="center">Monday December 14, 6:20PM – 8:20PM</p>

5. Lateness and Incomplete Grades
- Late assignment submissions will be docked total points at the rate of 1 point for every day it is late until it is no longer accepted for grading.
- Failure to take the final exam counts as a grade of zero.

The only exceptions to the rules is the case that you have a legitimate medical or personal emergency, that prevents your timely completion of homework or final exam, and have notified me in a timely manner about the emergency. Only in this case I will grant a time extension for a given assignment or final exam, or the re-scheduling of the final exam.

I do not give incomplete (IN) grades, except to those students who were completing all work throughout the semester but were unable to complete the last few tasks because of legitimate, documented medical or personal problems, and this is entirely at my discretion.

6. Class Calendar
There are no classes scheduled on:

- Week 2: Monday, September 7
- Week 3: Friday September 18 – Sunday September 20
- Week 5: Monday September 28
    - Monday schedule of classes on Tuesday September 29
- Week 7: Monday October 12
    - Monday schedule of classes on Wednesday October 14
- Week 13: Thursday November 26 to Sunday November 29
    - Friday schedule of classes on Wednesday November 25

Final Examinations take place Monday December 14 to Sunday December 20.

The end of the Fall 2020 semester is on Sunday December 20.

7. Programming and System Access

Linux Lab Accounts:
All students enrolled in the class are given accounts on the Hunter College Computer Science Department's UNIX network, the Linux Lab, at the beginning of the semester, unless they have already taken a Computer Science course requiring one in the previous semester. This account entitles you to around-the-clock access to all of the Department's publicly accessible computers and access to the Linux Lab, which is equipped with Linux workstations. This lab is normally open "24/7". The account also enables you to work from home or another remote computer by connecting to any of the lab machines remotely.

The advantages of working in the lab, as opposed to working remotely, are 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, and you will learn how to use the Linux desktop environments. The disadvantage is that you have to be in school to do this, pending the current situation in accordance to CUNY Coronavirus Updates.

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 the lockscreen to lock the screen in your login.

There are several other rules regarding lab use; they are posted there. Please take the time to read them and then follow them.

More information about the Linux Lab in is available at the FAQ website here:
http://compsci.hunter.cuny.edu/~csdir/

Remote Logins:
You cannot `ssh` directly to the Linux Lab computers from outside of Hunter College for security reasons. Instead, the Computer Science Department makes a UNIX host, named

<p align="center"><code>eniac.cs.hunter.cuny.edu</code></p>

which is 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 and is on the Internet.

When connected to a stable Internet connection, login to *eniac* using `ssh` client software. After logging into *eniac*, login to any of the 25 computer machines of the Linux Lab, named `cslab1`, `cslab2`, `cslab3` to `cslab25`. Sometimes, there may be less than 25 available when machines are taken out of service. To login to a Linux Lab machine, use the `ssh` client software that is already on *eniac*.

As an example of remotely logging in, first login to *eniac*. After the password prompt, 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. All Apple and modern Microsoft computers have the `ssh` client pre-installed and available by opening the appropriate command prompt application (Apple has `Terminal` and Microsoft has `Command Prompt`) and typing the `ssh` command, such as

```
ssh <username>@eniac.cs.hunter.cuny.edu
```

where `<username>` is their given username by the network administrator.

For older Microsoft computers and alternative systems other than those developed by Apple and Microsoft, there are several free versions of `ssh`. `OpenSSH` is an open source version developed for the OpenBSD project. `PuTTY` is a free version for Windows operating systems, available at http://www.chiark.greenend.org.uk/~sgtatham/putty/.

8. Academic Honesty

Unless stated otherwise, all quizzes, assignments, the final exam, and participation efforts are to be your work and effects alone. If someone else does part of this for you, it is considered to be academic dishonesty. For example, simply submitting an assignment does not entitle you to credit for it. It is your responsibility to ensure the assignment can be accessed and read by the instructor. This responsibility may include converting the format of a file and re-submitting it as soon as possible.

Hunter College regards acts of academic dishonesty (e.g., 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 course, 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.

Cheating and plagiarism are forbidden. Some common forms of cheating include, but are not limited to: recording quiz or test questions by handwriting or photographing them; passing questions and/or answers to other students; consulting third party websites for the purpose of ascertaining answers to questions.

For a full discussion and examples, please see CUNY's Academic Integrity Policy as stated in

CUNY's Policies and forms site: https://www.cuny.edu/about/administration/offices/legal-affairs/policies-procedures/academic-integrity-policy/.

9. Class Dropping/Withdrawal Policy

If you feel that you are in danger of failing, do not just stop attending class and/or discontinue the coursework. Please discuss the possibility of dropping or withdrawing the class with the instructor by email.

Hunter College does not permit students to drop classes after the official deadline set up by the college for doing so. That deadline appears on the first page of this course outline and on the academic calendar governing this course.

10. Accessibility and Accommodations: ADA Compliance

Qualified students with disabilities will be provided reasonable academic accommodations if determined eligible by the Office of AccessABILITY. Prior to granting disability accommodations in this course, the instructor must receive written verification of student's eligibility from the Office of AccessABILITY.

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 AccessABILITY located in Room E1124 to secure necessary academic accommodations and for having the accommodation notices sent to the instructor. For further information and assistance, the student can call (212-772-4857)/TTY (212-650-3230), and visit Hunter College's accessabilty website here: https://hunter.cuny.edu/accessibility/.

11. Student Support Services and Technology Support

If you need any additional help, please visit the Hunter College student services website: https://ww2.hunter.cuny.edu/students/student-services/

Technology Support is also available for assistance with your CUNY Login (CUNYfirst, Blackboard), MyHunter email account at Hunter College's ICIT Helpdesk: http://www.hunter.cuny.edu/it/get-help

For Support on Zoom, visit the Support page on the Zoom.us site: https://support.zoom.us/hc/en-us

12. Online Etiquette and Anti-Harassment Policy

The University strictly prohibits the use of University online resources or facilities, including Blackboard, for the purpose of harassment of any individual or for the posting of any material that is scandalous, libelous, offensive or otherwise against the University's policies. For more information on proper behavior, such as intended, please see the Netiquette Guide here: http://catalog.sps.cuny.edu/content.php?catoid=2&navoid=205.

13. Hunter College Policy on Sexual Misconduct

In compliance with the *CUNY Policy on Sexual Misconduct*, 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), 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, 212-650-3262) or
Colleen Barry (colleen.barry@hunter.cuny.edu or 212-772-4534)

- Do seek complimentary services through the Counseling and Wellness Services Office, Hunter East 1123 (http://www.hunter.cuny.edu/cws/counselingservices)

- CUNY Policy on Sexual Misconduct Link:
https://www.cuny.edu/wp-content/uploads/sites/4/page-assets/about/administration/offices/legal-affairs/policies-procedures/Sexual-Misconduct.pdf

14. 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 for the course will be informed to all students by email and as course Blackboard announcements.