



Course Title: Linux for Network Engineers

Course Number: TELE 5600

Term and Year: Fall 2024

Credit Hours: 4

CRN: 11719

Class Meeting Times: Friday 6:00pm – 9:20 pm

Room: Snell 005

Course Format: In Person (an attempt will be made to record the class)

Instructor: James E. Jones

E-mail: ljf@coe.neu.edu

Office Hours: Via Microsoft Teams, by appointment.

Reference Texts:

1. Ellen Siever, Stephen Figgins, Arnold Robbins, et. al., Linux in a Nutshell: A Desktop Quick Reference (6th Edition), O'Reilly
2. Evi Nemeth, Carth Snyder, et. al., Unix and Linux System Administration Handbook (5th Edition), Prentice Hall
3. Graham Glass, King Ables, UNIX for Programmers and Users
4. Bruce Blinn, Portable Shell Programming: An Extensive Collection of Bourne Shell Examples, Prentice-Hall PTR
5. William E. Shotts, Jr. The Linux Command Line, a Complete Introduction, No Starch Press
6. Naomi Ceder, The Quick Python Book 3rd Edition, Manning

Equipment Requirement: Because of the nature of this course, laptops will be **required equipment** for this class.

Classroom Environment for Fall 2024:

- *This course will be delivered in person, and students are expected to be physically present in class.*
- *An attempt will be made to record classes to enable all students to review material covered in class. Please contact me if you have any concerns.*
- *Please feel free to ask questions, discuss, and interact with me and other students during the class.*
- *I will also be available for virtual office hours by appointment as mentioned in this syllabus.*

Class Materials related to lectures will be posted on Canvas. The URL for Canvas is: <https://canvas.northeastern.edu>

Course Description: This course is an introductory/survey course in the Linux operating system in a networking/Internet environment. This is a survey course covering several topics such as Linux system concepts, tools, and utilities, networking and security issues, data and text processing using scripts and filters.

Prerequisite: None.

Class modules to be covered in the course are described below. Each module may take multiple class sessions to complete.

Modules	Topic	Readings [Book Number]
1	Introduction: <ul style="list-style-type: none"> • login procedures, password management • manual pages and other help sources • creating and editing files (vi, other editors) • the Unix file system 	[1]
2	Working on the command line <ul style="list-style-type: none"> • Basic Unix commands. • The Bourne and bash shell environment • Unix processes, how to control them 	[3]
3	<ul style="list-style-type: none"> • The Bourne and bash shell environment • Personalizing the shell environment. • Intro to shell scripting • Unix utilities and filters • Using utilities and filters in shell scripts 	[2,3]
4	Unix scripting languages and applications <ul style="list-style-type: none"> • Sed and Regular Expressions (regex) • Perl • Python • Why do we need scripting? 	[3,6]
5 (Optional, time permitting)	Networking, Network Services <ul style="list-style-type: none"> • configuring network connections • daemon processes and ports • networking using scripts: examples 	[3,6]

	<ul style="list-style-type: none"> • ssh, ssh tunneling • diagnostic tools: netstat, nmap, wireshark 	
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Modules	Topic	Readings [Book Number]
6 (Optional, time permitting)	Security Topics: <ul style="list-style-type: none"> • name and authentication services: LDAP • Access schemes like tcpwrappers • Other Topics 	[5]
7 (Optional, time permitting)	System Admin topics: <ul style="list-style-type: none"> • boot loader (GRUB) • system initialization scripts and processes • file system creation, and types (ext3, ext4, etc) • networked file systems • installation (auto and otherwise) • configuration management (RCS, SVN) • system update tools 	[3] and other material

Grading:

- Mini-Projects 30%
- Midterm 30%
- Final: 40%

Tests are presently planned to be held in the Canvas environment. More information will be forthcoming concerning the tests.

Grading Scale:

	87-89.9% B+	77-79.9% C+	
95-100% A	84-86.9% B	74-76.9% C	
90-94.9% A-	80-83.9%B-	70-73.9% C-	
			69.9% or below F

Attendance/Late Work Policy

Attendance Policy:

Students registered in MGEN courses (INFO, CSYE, and DAMG) are allowed a **maximum of 2 absences per course, with 3 or more absences resulting in an automatic 'F' for that course.** Students are expected to inform their instructors of any absences in advance of the class; if a student is sick long-term or experiences a medical issue that prevents class attendance, it is strongly encouraged that they speak with their Academic Advisor (coe-mgen-gradadvising@northeastern.edu) to learn more about the Medical Leave of Absence. Should a student anticipate being unable to attend 3 or more classes, they should discuss their situation with their Academic Advisor to explore other types of leave in accordance with the University's academic and global entry expectations. International students should review the Office of Global Services webpage to understand their visa compliance requirements.

Teaching Assistants (TAs) or Instructional Assistants (IAs) will be present at each class to collect student attendance.

Late Work Policy:

Students must submit assignments by the deadline in the time zone noted in the syllabus. Students must communicate with the faculty prior to the deadline if they anticipate work will be submitted late. Work submitted late without prior communication with faculty will not be graded.

End-of-Course Evaluation Surveys:

Your feedback regarding your educational experience in this class is particularly important to the College of Engineering. Your comments will make a difference in the future planning and presentation of our curriculum.

At the end of this course, please take the time to complete the evaluation survey at <https://neu.evaluationkit.com>. Your survey responses are **completely anonymous and confidential**. For courses 6 weeks in length or shorter, surveys will be open one week prior to the end of the courses; for courses greater than 6 weeks in length, surveys will be open for two weeks. An email will be sent to your Northeastern University Mail account notifying you when surveys are available.

Academic Integrity:

A commitment to the principles of academic integrity is essential to the mission of Northeastern University. The promotion of independent and original scholarship ensures that students derive the most from their educational experience and their pursuit of knowledge. Academic dishonesty violates the most fundamental values of an intellectual community and undermines the achievements of the entire University.

As members of the academic community, students must become familiar with their rights and responsibilities. In each course, they are responsible for knowing the requirements and restrictions regarding research and writing, examinations

of whatever kind, collaborative work, the use of study aids, the appropriateness of assistance, and other issues. Students are responsible for learning the conventions of documentation and acknowledgment of sources in their fields. Northeastern University expects students to complete all examinations, tests, papers, creative projects, and assignments of any kind according to the highest ethical standards, as set forth either explicitly or implicitly in this Code or by the direction of instructors.

Go to <http://www.northeastern.edu/osccr/academic-integrity-policy/> to access the full academic integrity policy.

MGEN Student Feedback

Students who would like to provide the MGEN unit with anonymous feedback on this particular course, Teaching Assistants, Instructional Assistants, professors, or to provide general feedback regarding their program, may do so using this survey:

https://neu.co1.qualtrics.com/jfe/form/SV_cTIAbH7ZRaaW0Ki

University Health and Counseling Services

As a student enrolled in this course, you are fully responsible for assignments, work, and course materials as outlined in this syllabus and in the classroom. Over the course of the semester if you experience any health issues, please contact UHCS.

For more information, visit <https://www.northeastern.edu/uhrs>.

Student Accommodations

Northeastern University and the Disability Resource Center (DRC) are committed to providing disability services that enable students who qualify under Section 504 of the Rehabilitation Act and the Americans with Disabilities Act Amendments Act (ADAAA) to participate fully in the activities of the university. To receive accommodations through the DRC, students must provide appropriate documentation that demonstrates a current substantially limiting disability.

For more information, visit <https://drc.sites.northeastern.edu>.

Library Services

The Northeastern University Library is at the hub of campus intellectual life. Resources include over 900,000 print volumes, 206,500 e-books, and 70,225 electronic journals.

For more information and for education specific resources, visit

<https://library.northeastern.edu>

Network Campus Library Services: [Northeastern University Library Global Campus Portals](#)

24/7 Canvas Technical Help

For immediate technical support for Canvas, call 617-373-4357 or email

help@northeastern.edu

Canvas Student Resources: <https://canvas.northeastern.edu/student-resources/>

For assistance with my Northeastern e-mail, and basic technical support:

Visit ITS at <https://its.northeastern.edu>

Email: help@northeastern.edu

ITS Customer Service Desk: 617-373-4357

Diversity and Inclusion

Northeastern University is committed to equal opportunity, affirmative action, diversity, and social justice while building a climate of inclusion on and beyond campus. In the classroom, members of the University community work to cultivate an inclusive environment that denounces discrimination through innovation, collaboration, and an awareness of global perspectives on social justice.

Please visit <http://www.northeastern.edu/oidi/> for complete information on Diversity and Inclusion.

Title IX

Title IX of the Education Amendments of 1972 protects individuals from sex or gender-based discrimination, including discrimination based on gender-identity, in educational programs and activities that receive federal financial assistance.

Northeastern's Title IX Policy prohibits Prohibited Offenses, which are defined as sexual harassment, sexual assault, relationship or domestic violence, and stalking. The Title IX Policy applies to the entire community, including male, female, transgender students, faculty, and staff.

In case of an emergency, please call 911.

Please visit <https://www.northeastern.edu/ouec> for a complete list of reporting options and resources both on- and off-campus.