Syllabus

Course Information	
Course:	ITN 170
Format:	**Virtual Synchronous**
Section:	050A
Semester:	Summer 2024 *(1st 6wk)*
Date/Time:	T/Th @ 1800-2130
Location:	**ZOOM**

Instructor	
Name:	Prof. Ryan Ammons, JD, MS-Soft.Eng.
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Office:	AN-CC-120B + Zoom
Hours:	M/W 1300-1700 or by appointment
	www.ProfAmmons.com

Course Objectives and NVCC Course Content Summary

Select the link for further details on NVCC Course Content Summary

Course Description

Focuses instruction on the installation, configuration and administration of the Linux operating system and emphasizes the use of Linux as a network client and workstation. Lecture 3 hours per week.

Student Learning Outcomes

Upon completing the course, the student will be able to:

- Install common Linux distributions
- Automate the installation of Linux through the use of "kickstart" scripts
- Modify and maintain system configuration files and startup scripts
- Install and maintain software applications
- Administer user and group accounts
- Configure and control hardware devices
- Integrate Linux as a client within an existing network
- Configure TCP/IP network parameters
- Configure client software
- Configure and use the X-Window system
- Perform basic troubleshooting
- Configure basic host security
- Compile and install a custom Linux kernel
- Describe and identify the run levels 0-6
- Configure printing (local and network)

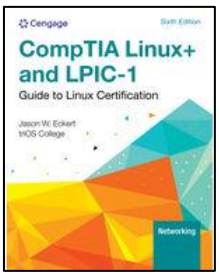
Course Prerequisites/Co-requisites: Prerequisite: ITE 152 *or* ITE 115 *or* ITE 119

Technical Competencies

Basic Canvas knowledge is assumed. Use the following to learn more about Canvas: https://www.nvcc.edu/canvas/

Textbook(s) for the class:

[REQUIRED] CompTIA Linux+ Guide to Linux Certification, 6e (Eckert)
MindTap ISBN: 9798214000879
Course Key: n/a | **You will sign up through Canvas.**



Required Materials/Software/Hardware

Students will need access to the following software for the course. Required course software is available on all campus lab computers.

Chrome or Edge browser
[optional]
For Windows: WSL or Oracle VirtualBox
For all OSes: Oracle VirtualBox

Course Grading, Examinations, & Grades Composition

Your final grade, rounded to the nearest integer, is based on the following scale:

A: >= 90 | **B:** <90, >=80 | **C:** <80, >=70 | **D:** <70, >=60 | **F:** <60

Note: Depending on circumstances I may curve the grade scale.

Description	Percent	Notes
Midterm Exam	20%	Closed book
Final exam	20%	Closed book
Quizzes and Assignments	60%	In- and out-of-class Canvas + Cengage MindTap
Total:	**100%**	

Schedule - ***Please note: The instructor reserves the right to adjust the schedule.***

Module 1	**Intro to Linux** • Explain the purpose of an operating system • Outline the key features of the Linux operating system • Describe the origins of the Linux operating systems • Identify the characteristics of various Linux distributions and where to find them • Explain the common uses of Linux in industry today
Module 2	**Linux Installation and Usage** • Prepare for and install Fedora Linux using good practices • Outline the structure of the Linux interface • Enter basic shell commands and find command documentation • Properly shut down the Linux operating system
Module 3	**Exploring Linux Filesystems** • Describe and navigate Linux directory structure using relative and absolute pathnames • Describe the various types of Linux files • View filenames and file types • Use shell wildcards to specify multiple filenames • Display the contents of text files and binary files • Search text files for regular expressions using grep • Use the vi editor to manipulate text files • Identify common alternatives to the vi text editor used today
Module 4	**Linux Filesystem Management** • Find files and directories on the filesystem • Understand and create linked files • Explain the function of the Filesystem Hierarchy Standard • Use standard Linux commands to manage files and directories • Modify file and directory ownership • Define and change Linux file and directory permissions • Identify the default permissions created on files and directories • Apply special file and directory permissions

	• Modify the default access control list (ACL) • View and set filesystem attributes
Module 5	**Linux Filesystem Administration** • Identify the structure and types of device files in the /dev directory • Understand common filesystem types and their features • Mount and unmount filesystems to and from the Linux directory tree • Create and manage filesystems on hard disks, SSDs, and removable media • Create and use ISO images • Use the LVM to create and manage logical volumes • Monitor free space on mounted filesystems • Check filesystems for errors • Use disk quotas to limit user space usage
Module 6	**Linux Server Deployment** • Identify the types of hardware present in most server systems • Describe the configuration of SCSI devices and SANs • Explain the different levels of RAID and types of RAID configurations • Configure the ZFS and BTRFS filesystems • Install a Linux server distribution • Troubleshoot the Linux server installation process • Identify and resolve issues related to hardware device driver support • Access an installed system using system rescue
Module 7	**Working with the BASH Shell** • Redirect the input and output of a command • Identify and manipulate common shell environment variables • Create and export new shell variables • Edit environment files to create variables upon shell startup • Describe the purpose and nature of shell scripts • Create and execute basic shell scripts • Effectively use constructs, special variables, and functions in shell scripts • Use Git to perform version control for shell scripts
Midterm	**Midterm Exam**
Module 8	**System Initialization, X Windows, and Localization** • Summarize the major steps necessary to boot a Linux system • Detail the configuration of the GRUB boot loader • Explain the UNIX SysV and Systemd system initialization processes • Start, stop, and restart daemons • Configure system to start and stop daemons upon entering certain runlevels and targets • Identify and explain the purpose of major Linux GUI components: X Windows, window manager, and desktop environment • Configure X Windows settings and accessibility options • Configure time, time zone, and locale information on a Linux system
Module 9	**Managing Linux Processes** • Categorize the different types of processes on a Linux system • View processes using standard Linux utilities • Explain the difference between common kill signals • Describe how binary programs and shell scripts are executed • Create and manipulate background processes • Use standard Linux utilities to modify the priority of a process • Schedule commands to execute in the future using the at daemon • Schedule commands to execute repetitively using the cron daemon
Module 10	**Common Administrative Tasks** • Set up, manage, and print to printers on a Linux system • Understand the purpose of log files and how they are administered • Create, modify, manage, and delete user and group accounts

Module 11	**Compression, System Backup, and Software Installation** • Outline the features of common compression utilities • Compress and decompress files using common compression utilities • Perform system backups using the tar, cpio, dump, and dd commands • View and extract archives using the tar, cpio, restore, and dd commands • Use burning software to back up files to CD and DVD • Describe common types of Linux software • Compile and install software packages from source code • Install, manage, and remove software packages using the Red Hat Package Manager (RPM) and Debian Package Manager (DPM) • Identify and support shared libraries used by software
Module 12	**Network Configuration** • Describe the purpose and types of networks, protocols, and media access methods • Explain the basic configuration of IP • Configure a network interface to use IP • Configure a PPP interface • Describe the purpose of host names and how they are resolved to IP addresses • Configure IP routing • Identify common network services • Use command-line and graphical utilities to perform remote administration
Module 13	**Configuring Network Services and Cloud Technologies** • Configure infrastructure network services, including DHCP, DNS, and NTP • Configure Web services using the Apache Web server • Configure file-sharing services, including Samba, NFS, and FTP • Configure email services using Postfix • Configure database services using PostgreSQL • Describe how virtualization and containers are created and used within cloud environments • Configure containers using Docker • Identify the components that comprise a CD workflow
Finals Week	**Final Exam**

Incomplete Grades

A grade of "I" (Incomplete) is given only when a student has completed the majority of the course (60% or more) and becomes unable to attend class or to complete course requirements near the end of the course due to a mitigating circumstance. Also, read the Withdrawal Policy section below for further grade information.

Mitigating Circumstances

Mitigating circumstances are defined as unavoidable situations that can be verified and documented. Examples would include situations like the serious illness of the student, the serious illness or death of a family member, family financial problems, a change in employment hours, or temporary absence from the area because of employment.

Attendance/Participation/Tardiness Policy

Attendance is expected in both in-class meetings and participation in Canvas. Students are expected to attend every scheduled face-to-face class meeting and to enter Canvas weekly. When absence from class becomes necessary, please attempt to inform the instructor ahead of time. Students are responsible for all material missed in class due to an absence. Any instruction missed and not subsequently completed either in-class or on Canvas

will necessarily affect the grade of the student regardless of the reason for the absence. Review the student attendance/student participation guidelines Attendance & Student Participation.

Disclaimer

I reserve the right to modify the syllabus contents, policies, and course schedule assignments if I determine that such a change will improve the effectiveness of the course presentation without unfairly penalizing student assessment.

- All assignments must be submitted no later than the instructor assigned due date. **Late work will not be accepted or graded beyond the due date, and you will receive a grade of zero on the assignment.** No partial points will be awarded. Emergency situations will be handled case by case.
- A grade of zero will be calculated into your final grade for any exams or assignments not completed and submitted.
- Exams may be paper or Canvas-generated with multiple choice, fill-ins, essays, true or false, or any other chosen format. The test must be completed within a set timeframe and must be taken in the class, on the scheduled date. In the event of a system failure, the backup method for taking a test will be at the discretion of the instructor. In the event of inclement weather, the exam may be administered at home, but that is at the discretion of the instructor. If you are caught cheating during an exam, you will receive a zero grade.
- No make-up exam will be given. Emergency situations will be handled case by case.
- Electronic devices must be on silent.
- **Plagiarizing** is dishonest and a form of cheating. *See below under Academic Integrity Policy for more details.*

NOVA is a place for learning and growing. You should feel safe and comfortable anywhere on this campus. In order to meet this objective, you should: a) let your instructor, his/her supervisor, the Dean of Students or Provost know if any unsafe, unwelcome or uncomfortable situation arises that interferes with the learning process (Campus Police-703-764-5000); b) inform the instructor within the first two weeks of classes if you have received a special needs or a disability accommodation that may affect your performance in this course

NVCC IT Policy Statement

Select the link for information pertaining to IT Policies, Procedures, & Plans.

NOVA Alert

To receive alerts and emergency notifications register for NOVA ALERT

Note: In the event of class cancelation, we will continue with class assignments and lessons using online resources. Thus, students are responsible for monitoring their email and checking the class Canvas page for assignments and lessons material.

College and IET Division Policies

Students are responsible for knowing and following the policies in the Student Handbook. The following are highlights of information that students should be aware of as they begin a course.

Current Supplemental Syllabus Inserts

https://faculty.nvcc.edu/rwa2938/syllabus-inserts/Summer_2024_Syllabus_Insert.docx

The insert(s) linked above take precedence in the case of any conflict with this syllabus.

Academic Integrity Policy

NOVA promotes and emphasizes the importance of honesty in academic work. It is therefore imperative for students to maintain the highest standard of honor in their scholastic work.

Academic dishonesty, as outlined in more detail in the Academic Integrity Policy (Policy Number: 224), can include, but is not limited to cheating on an exam or quiz, submitting work that is not your own (plagiarism), or sharing assessments online. Consequences of academic dishonesty can include a failing grade on an assignment, a failing grade in the course, and may include additional administrative sanctions such as suspension or expulsion from the college. Procedures for disciplinary measures and appeals are outlined in the Academic Integrity Procedures. It is a

student's responsibility to become familiar with the student code of conduct. Lack of awareness is no excuse for noncompliance with NOVA's policies and procedures.

Accommodations and Accessibility Services

NOVA is committed to ensuring all students have an opportunity to pursue a college education regardless of the presence or absence of a disability. No academically qualified student with a disability will be denied access to or participation in the services, programs, and activities of the College. Your access to and inclusion in this course is important to NOVA and me. Please request your accommodation letter (Memorandum of Accommodations) early in the semester or as soon as you become registered so that we have adequate time to arrange your approved academic accommodations. Returning students must renew their Memorandum of Accommodations (MOA) every semester; these students should submit the request 24 hours or later after enrolling in at least one class. Allow up to 7 business days for the request to be approved.

Accommodations are provided for in-person, online, and remote/synchronous (Zoom) learning. To get started, review NOVA's Accommodation and Accessibility Services website. Following a meeting with a counselor, you will be issued a Memorandum of Accommodation (MOA). You must provide your MOA to your professors, testing proctor, and/or tutoring center in order to receive your accommodations. You may provide your MOA any time during the semester; however, accommodations are not retroactive. You may email your MOA or provide me with a printed copy. I will send you an email to acknowledge receipt. If I have any questions or if there is anything about your accommodations you wish to explain, we will schedule a meeting outside of class for that purpose. Please remind me of any special arrangements that must be made in advance of tests and assessments. If you need a sign language interpreter, or if you need live captions for your Zoom class, send an email to interpreters@nvcc.edu.

Buy Books with Excess Financial Aid

If your anticipated financial aid is more than what you owe for the semester, you may use your excess aid to purchase books, supplies, or even a laptop through the NOVA Bookstore. Book purchases must occur during the provided disbursement dates every semester. Note that this excess financial aid can only be used to purchase course books (physical and digital) and supplies at the NOVA Bookstore, not from other vendors. Two disbursement periods are available during the fall and spring semesters. Any holds on a student's account regarding a debt to the College must be resolved prior to using financial aid at the bookstore.

Career Services

The College is committed to providing career services to all students as part of the comprehensive educational journey. Career Services assists students with exploring, developing and setting goals related to each student's unique educational and academic needs. These services include career assessments, occupational information, goal setting, planning and employment resources. You can request an appointment with a career counselor.

Closing Information

NOVA announces campus and college closings on the NOVA homepage. You can also receive notification by cell phone or email if you register for NOVA Alert. Also review NOVA's guidance on emergency closings, delayed openings, and continuation of instruction.

If a course is canceled due to a weather event or other unforeseen situation, check the course Canvas site or NOVA email as soon as possible for instructions and assignments to avoid falling behind in coursework. You are expected to be up to date with all assignments the next time the class meets.

Communication

Northern Virginia Community College (NVCC) faculty, staff, and administrators communicate with students through their official NVCC email accounts (rammons@nvcc.edu). Students are likewise required to use their VCCS email accounts (_@email.vccs.edu) to communicate with instructors and other college personnel. Students should check their email accounts regularly.

Course Drop/Withdrawal Policy

Please note these important deadlines related to your enrollment in a course:

- Students may drop courses through NOVAConnect until the last day to drop with a tuition refund (census date). Students who drop a class during this period will receive a full refund.
- Requests to change your grade status to audit must also be completed before the last day to drop with a tuition refund (census date).
- Students who do not attend at least one class meeting or participate in an online learning class by the last day to drop with a tuition refund (census date) may be administratively deleted from the class. This means that there will be no record of the class or any letter grade on the student's transcript. The student's tuition will not be refunded.
- The *Last Day to Withdraw* is the last day to withdraw from classes without a grade penalty. Students will receive a grade of W. Students may withdraw from a course through NOVAConnect. The student's tuition will not be refunded.

Dropping a course after the census date and before the withdrawal date will result in a "W" grade appearing on your transcript. To identify these dates for your courses, please visit the College Academic Calendar and scroll down to the specific session for your course. Please note that any drops or withdrawals from a course may impact financial aid, International Student status, or military benefits. Students with questions should check with the appropriate offices.

COVID-19 Updates: COVID-19 information and updates can be found on the Stay Safe with Ace webpage.

Financial Stability and Advocacy Centers

The Financial Stability and Advocacy Centers provide assistance to students who are experiencing financial hardships that might prevent the students' academic success. The personnel at the Financial Stability and Advocacy Centers work with students to identify college or community services available. For more information, please visit the Financial Stability and Advocacy Centers webpage, or contact the office by calling 703.323.3450 or emailing financialstability@nvcc.edu.

Office of Wellness and Mental Health

During your time at NOVA, you may experience challenges including struggles with academics, finances, or your personal well-being. NOVA has support resources available. Please contact the Office of Wellness and Mental Health if you are seeking resources and support, or if you are worried about a friend or classmate.

Prerequisite Verification Statement

As noted in the Course Prerequisites Policy, some courses have prerequisite or corequisite requirements that are established to foster a student's success in the course. Students may not enroll in a course for which they do not meet the prerequisites by the time the course begins or for which they do not simultaneously enroll in any corequisite. Students may be administratively dropped from any course for which they have not met the prerequisite. If a course has a prerequisite, it is the responsibility of the student to ensure completion of this pre-requisite course first. Any student needing assistance in determining prerequisite or corequisite requirements can reach out to their faculty member or Campus Academic Division office for support.

Remote Student Support Services

If you need academic assistance or need college services but cannot make it to campus, please review NOVA's Remote Student Support Services to receive virtual assistance. Services provided include enrollment services, advising, tutoring, and financial aid assistance.

TITLE IX

Title IX is a civil rights law that prohibits discrimination on the basis of sex in educational programs, activities, admission, and employment. Complaints of sex-based discrimination, sexual violence, domestic violence, dating violence, and sexual or gender- based harassment are governed by the Title IX Policy. For more information or to make a report, visit the Office of Title IX.