

LINUX Administration Template

IST-191

3 Credits 06/06/2020 to 06/06/2030 Modified 12/06/2021

Meeting Times

Contact Information

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(https://www.gvltec.edu/academics_learning/business-computer/computer_technology/index.html)

Description

3-0-3 Offered based on need Prerequisite: IST 190 This course will provide students with the skills necessary to administer a LINUX system, including hardware/software configuration, user and group administration, LINUX network configuration, and file system management.

Requisites

Prerequisite: IST 190

Materials

RHCSA/RHCE Red Hat® Linux® Certification Study Guide,

Author: Michael Jang and Alessandro Orsaria

Publisher: McGraw Hill Education

Edition: Seventh Edition

ISBN: 978-0-07-184196-2

Book with DVD

Exams EX200 & EX300

1. The CPT Department at Greenville Technical College is a member of the Red Hat Academy. The curriculum content for IST 191 will be delivered online via the Red Hat Academy Learning Portal. Students in IST 191 will be given access to the online curriculum. Internet access is required for a student in IST 191 to complete this course.

2. NOTE: Students in traditional classes must access Blackboard for course-related information. Students in hybrid and online classes will access their online content through Blackboard.

Additional Materials, Supplies, Equipment, and Technology (i.e. Webcams):

1. Access to an Internet-capable computer system.
2. Computer with Webcam if taking hybrid or online class.
3. NOTE: Students in traditional classes must access Blackboard for course related information. Students in hybrid and online classes will access their online content through Blackboard.

Course Objectives

Course Outcomes:

Students who successfully complete this course will have demonstrated the skills required to accomplish the following objectives with a minimum competence level of 70 percent.

1. Scheduling Future Tasks.
2. Tuning System Performance.
3. Controlling Access to Files with ACLs.
4. Managing SELinux Security.
5. Managing Basic Storage.
6. Managing Logical Volumes.
7. Implementing Advanced Storage Features.
8. Accessing Network-Attached Storage.
9. Controlling the Boot Process.
10. Managing Network Security.
11. Installing Red Hat Enterprise Linux.
12. Running Containers.
13. The Apache Web Server.
14. The Samba File Server.
15. The Postfix Email Server.
16. An Introduction to Domain Name Service (BIND).
17. The Dynamic Host Configuration Protocol (DHCP) Server.

Revised December 2021

Program Learning Outcomes

Program Student Learning Outcomes:

Upon successful completion of the Computer Technology Degree students will be able to:

1. Install and configure an array of computing devices and software.
2. Analyze and describe technological needs using appropriate industry terminology.
3. Build, maintain, and troubleshoot secure applications, systems, or networks using modern resources and tools.
4. Utilize effective customer support and problem resolution skills.
5. Apply techniques and skills learned, appropriate to the discipline, to develop systems solutions.
6. Identify the local and global impacts of computing on individuals, organizations, and society.

Core Competencies

Communication Core Competency: Students will demonstrate effective written and oral communication skills to convey information, ideas, or opinions.

- **Written Communication:** Students will demonstrate effective written communication skills to convey information, ideas, or

opinions.

- Oral Communication: Students will demonstrate effective oral communication skills to convey information, ideas, or opinions.

Critical Thinking Core Competency: Students will demonstrate effective reasoning, problem solving, or quantitative skills to develop an opinion or conclusion.

- Critical Reasoning: Students will employ inquiry, analysis, and synthesis of information to formulate and/or evaluate an opinion or conclusion.
- Problem Reasoning: Students will design and formulate a strategy to answer a question or achieve a desired goal.
- Quantitative Reasoning: Students will be able to analyze numerical information or observable facts resulting in informed conclusions.
- Creative Thinking: Students will have the capacity to combine or synthesize existing ideas, images, or expertise in original ways and the experience of thinking, reacting, and working in an imaginative way characterized by a high degree of innovation, divergent thinking, and risk taking.

Information Literacy Core Competency: Students will be able to locate, evaluate, and use information effectively from diverse sources.

Professionalism Core Competency: Students will demonstrate conduct and etiquette appropriate to the community and chosen career.

- Professionalism: Students will display professional conduct and work habits.
- Teamwork: Students will collaborate with others to accomplish a shared goal.

✓ Grading Scale

Computer Technology students must obtain a minimum grade of “C” in all CPT and IST courses. Please refer to Departmental Policies in Blackboard to review additional course and department policies.

Breakdown

10 Point Letter Grade (rounding up)

Final letter grades will be issued as follows:

Grade	Range	Notes
A	90 to 100+	
B	80 to 89	
C	70 to 79	
D	60 to 69	<i>Computer Technology students must obtain a minimum grade of “C” in all CPT and IST courses.</i>
F	0 to 59	<i>Computer Technology students must obtain a minimum grade of “C” in all CPT and IST courses.</i>

Criteria

Weighted Percentages for this Class:

Grades for this course will be calculated as follows:

Unit Tests	35 percent
Assignments	17.5 percent
Labs	17.5 percent
Skills Based Final Exam	19.5 percent

* Course Policies

Polices and Procedures

- Computer Technology students must obtain a minimum grade of “C” in all CPT and IST courses in order to earn credit towards a degree or certificate
- Classrooms assigned to the Computer Technology Department must be locked at all times except during scheduled
- Students may work in CPT classrooms outside of normal class schedule hours if given approval by department
- Under no circumstances should CPT classrooms be open when no one is working in the classroom; the last person leaving the classroom must close the door(s) which should automatically lock

Department Exam Policy

- Exam Policies reference Final Exams, Midterm Exams, and/or Skills Exams
- Exams must be taken as scheduled with no exemptions or exceptions
- A Comprehensive Final Exam will be given, unless otherwise stated the course syllabus
- Midterm and/or Skills Exams may be given and will be stated specifically on the course syllabus
- Exam dates will be announced in class and posted on Blackboard
- The student assumes responsibility for materials and announcements missed when absent
- Exams must be taken on or before the announced day; early exams may be arranged at the instructor’s discretion; Late Exams will not be permitted

Exceptions to the Departmental Exam Policy will be made on an individual basis as a result of a decision involving the department head, instructor, student, and/or the Divisional Dean

Department Test Policy

- Test Policies reference Unit Tests, Chapters Tests, and/or Projects
- Three or more unit tests will be given, unless otherwise stated in the course syllabus
- Test dates will be announced in class and posted on Blackboard
- The student assumes responsibility for materials and announcements missed when absent
- Tests must be taken on or before the announced day; early tests may be arranged at the instructor’s discretion
- Each student will be allowed one make-up test in a course (for a penalty of no more than 20%)
- Additional missed tests will result in a grade of zero for that specific
- The date and time of the make-up test will be at instructor’s discretion, not to exceed seven days after the scheduled test date
- Curves and bonus options will not be allowed for any make-up test

Exceptions to the Departmental Test Policy will be made on an individual basis as a result of a decision involving the department head, instructor, student, and/or the Divisional Dean

Department Assignment Policy

- Assignment Policies reference Assignments, Quizzes, and/or Journals
- Assignment dates will be announced in class and posted on Blackboard
- The student assumes responsibility for materials and announcements missed when absent
- Late assignment will not be accepted
- Assignments makeups will not be permitted, unless otherwise stated in the course syllabus

Exceptions to the Departmental Assignment Policy will be made on an individual basis as a result of a decision involving the department head, instructor, student, and/or the Divisional Dean

Department Lab Policy

- Lab Policies reference hands-on labs, equipment labs, virtual labs, and/or group Labs
- The student assumes responsibility for materials and announcements missed when absent

- Late labs will not be accepted
- Lab makeups will not be permitted, unless otherwise stated in the course syllabus
- The date and time of the make-up labs will be at instructor's discretion

Exceptions to the Departmental Lab Policy will be made on an individual basis as a result of a decision involving the department head, instructor, student, and/or the Divisional Dean

Departmental Academic Honesty Policy for Cheating and Plagiarism

Cheating and Plagiarism will not be tolerated in any Computer Technology course. If cheating and/or plagiarism are found, the following grading penalty will be assessed:

- First Offense – A grade of zero (0) will be assessed for the assignment or test on which the offense
- Second Offense – At a minimum, the student will receive a grade of zero (0) for that portion of the course in which the additional offense

Incompletes:

An INCOMPLETE ("I") will only be approved if ALL of the following conditions exist:

- The student must have no more than 4 weeks (14-week term) or 2 weeks (7-week/10-week term) remaining to complete the
- The student must have a validated, documented reason why he/she cannot complete the course by the prescribed end date (illness, work situation, death,).
- The student must be up to date with all work up to the point of the request for an Incomplete (no untaken tests or un-submitted labs, homework, etc.), and the student must have a passing grade average (C or higher) for all work

Plan of Instruction

Course Schedule (Plan of Instruction)

Please refer to Syllabus Addendum in Blackboard to review the Tentative Course Schedule. Your instructor will provide a detailed, week-by-week plan of instruction along with method of delivery, testing, and assignment submission.

Course Outline:

Course Outline (Modules)

1. Automating Installation with Kickstart
 - Defining the Anaconda Kickstart System
 - Deploying a New Virtual System with Kickstart
2. Using Regular Expressions with grep
 - Regular Expressions Fundamentals
 - Matching Text with grep
3. Creating and Editing Text Files with vim
 - The vim Text Editor
 - Basic vim Workflow
 - Editing with vim
4. Scheduling Future Linux Tasks
 - Scheduling One-Time Tasks with the at daemon
 - Scheduling Recurring Jobs with the cron daemon
 - Scheduling System cron Jobs
 - Managing Temporary Files
5. Managing Priority of Linux Processes

- Process Priority and "nice" Concepts
 - Using nice and renice to Influence Process Priority
6. Controlling Access to Files with Access Control Lists (ACLs)
- POSIX Access Control Lists (ACLs)
 - Securing Files with ACLs
7. Managing SELinux Security
- Enabling and Monitoring Security Enhanced Linux (SELinux)
 - Changing SELinux Modes
 - Changing SELinux Contexts
 - Changing SELinux Booleans
 - Troubleshooting SELinux
8. Connecting to Network-defined Users and Groups
- Using Identity Management Services
9. Adding Disks, Partitions, and File Systems to a Linux System
- Adding Partitions, File Systems, and Persistent Mounts
 - Managing Swap Space
10. Managing Logical Volume Management (LVM) Storage
- Logical Volume Management Concepts
 - Managing Logical Volumes
 - Extending Logical Volumes
11. Accessing Network Storage with Network File System (NFS)
- Storage with NFS
 - Automounting Network Storage with NFS
12. Accessing Network Storage with SMB
- Install, configure, and administer Samba (SMB File Server)
 - Accessing Network Storage with SMB
13. Controlling and Troubleshooting the RHEL Boot Process
- The Red Hat Enterprise Linux Boot Process
 - Repairing Common Boot Issues
 - Repairing File System Issues at Boot
 - Repairing Boot Loader Issues
14. Limiting Network Communication with firewalld
- Limiting Network Communication
15. Additional Topics
- Running containers
 - Administer Linux users and groups
 - Install, configure, and administer Apache Web Server
 - Install, configure, and administer Samba (SMB File Server)
 - Install, configure, and administer Postfix E-mail Server

The instructor reserves the right to modify the Plan of Instruction by changing the sequence of text material or testing content.

The final examination for traditional, online, hybrid, and blended class students will be administered on the Barton Campus. The final examination will be scheduled at a time determined by the administration.

Revised August 2021

Institutional Policies

Instructional Agreement

This syllabus is an agreement between the student and instructor concerning course objectives, course content, grading, and other policies and procedures particular to the course as well as any posted program, departmental, and divisional policies. It is also the student's responsibility to become familiar with the Student Handbook/College Catalog found in the Student Resources area of Blackboard.

Technology Statement

Students can access due dates for all assignments and quizzes/tests on the Course Schedule/Plan of Instruction. All graded work is time-stamped when submitted, so your instructor can check the time of submission. In addition, you will receive a confirmation email message when you submit assignments via Blackboard. You must provide this confirmation information in case of any dispute regarding the submission.

[Computer labs \(https://www.gvltec.edu/student_resources/computer_labs/\)](https://www.gvltec.edu/student_resources/computer_labs/) are available at multiple campus locations and offer various hours as well as staff who are available for assistance.

Student should use Microsoft Office programs or PDF format for submitting assignments in Blackboard. Students can access the [Microsoft portal \(http://portal.office.com\)](http://portal.office.com), log in with their @my.gvltec.edu email address and Blackboard/GTC4me password, then follow the prompts to install Microsoft Office free of charge.

Students enrolled in any course, regardless of delivery method (face-to-face, online, blended), may incur additional expenses such as equipment (microphone and/or web cam) and test proctoring.

Verification of Students in Online Testing

Greenville Technical College is committed to student learning and the academic integrity of all courses. All GTC online courses are required to have at least one proctored learning activity that constitutes a significant percentage of the course grade, which may include a test, midterm, final exam, presentation or other assignment. Instructors teaching face-to-face and/or blended courses may also elect to use online testing. Proctored is defined as an experience where an approved person ensures the identity of the student and monitors the learning activity. The proctored learning activity will be determined by the course instructor. The method of proctoring and any additional requirements, such as costs for students and/or trips to campus or approved testing center, will be explained in the course schedule/plan of instruction.

Honorlock

Honorlock may be used to proctor online exams. Honorlock is an online proctoring service that allows you to take your exam from the comfort of your home. You **DO NOT** need to create an account, download software or schedule an appointment in advance. Honorlock is available 24/7 and all that is needed is a computer, a working webcam, and a stable Internet connection. For more information, please visit [Honorlock - Getting Started \(https://www.softchalkcloud.com/lesson/serve/ZFL287jHbOvcyK/html\)](https://www.softchalkcloud.com/lesson/serve/ZFL287jHbOvcyK/html).

Instructional Continuity

In the event of a disruption to the normal class schedule or planned activities for this course, alternate learning activities that may include other methods of instruction or locations may be implemented. If disruption occurs, your instructor will communicate through your GTC email (Gmail) account. Additionally, please make sure your contact information is accurate in GTC's emergency alert system (accessible in GTC4Me/Quick Access/GTC Emergency Messaging).

Assessment of Student Learning

Greenville Technical College is committed to continuous improvement of teaching and learning. Tests, assignments, and/or

projects required in this course may be shared with college faculty and used for assessment purposes. Also, student input is necessary for improving instruction and is requested through course evaluations. Students will be notified when evaluations are available.

Administrative Withdrawals

Students may be administratively withdrawn from this course for the following reasons:

- **NIC (Never in Class)** Not attending a course during the drop/add period including failure to meet the attendance criteria in an online course. In this case, a grade of WA will be assigned. This WA will not count as an attempt and will not affect GPA.
- **14-Day Rule:** At any time during the semester and regardless of a student's use of financial aid benefits, the college will withdraw a student who is not in attendance for 14 consecutive calendar days including weekends, holidays, college breaks, and cancelled class sessions.
 - **Prior to the course withdrawal date**, the college policy is to assign a grade of W (Withdrawal). The student will earn no credits or grade points, and the W will not affect GPA. For students receiving financial aid, the course will count as an attempt and may affect future aid.
 - **After the course withdrawal date**, the college will assign a grade of WF for the course which will negatively affect GPA calculation. The student will be responsible for course payment and will not be eligible for a refund. The college will notify the student of the administrative withdrawal via official college email address. For students receiving financial aid, the course will be recorded as an attempt and may affect future financial aid awards.

Students may request a reinstatement. Reinstatements must be approved by the course instructor.

Dropping, Adding, and Withdrawing from Courses

Students may drop courses during the add/drop period for each courses; student may add courses during the same period only before the class actually meets. Courses dropped during this period will not appear on the transcript. Students who withdraw from a course prior to the withdrawal deadline will earn a grade of W for that course, and the W will be reflected on the transcript. Refer to the college refund policy for information concerning refunds.

Students should not assume that they will be administratively withdrawn if they stop attending classes. It is the student's responsibility to complete the process to withdraw from a course or courses prior to the published withdrawal deadline. Students may withdraw from any or all courses either [electronically](#) (https://www.gvltec.edu/admissions_aid/student_forms/AddDropWithdrawal-Form.pdf) or through the Office of Student Records. Some students such as transient and career development students must complete the withdrawal process through the Office of Student Records. Any hold on a student's account (due to fines owed or similar obligations to the college) will prevent a student from withdrawing electronically.

The dates for add, drop, and withdrawal are tied to the particular session code and class section number as well as the start and end dates for each course. For example, a student who withdraws from a first session course and adds a second session course will incur tuition charges for both courses even if they are the same course.

NOTE: Students are responsible for meeting the posted course withdrawal deadlines.

For additional information on dropping, adding, or withdrawing from a course, visit the [College website](#) (https://www.gvltec.edu/student_resources/student_records/add-drop.html).

Students with Disabilities

Students with disabilities, including those who were served in Special Education (resource or tutorial), should contact [Student Disability Services](#) (<http://gvltec.edu/disability-services>) (SDS) to discuss their need for services and accommodations. This process must be completed each term. The main SDS office is located on the Barton Campus in the Student Center Building 105, office 113.

Students may reach staff by phone at 864-250-8202 or via [email \(mailto:DisabilityServices@gvltec.edu\)](mailto:DisabilityServices@gvltec.edu). Appointments are available at all satellite campus locations.

The college is committed to providing materials that are accessible to all students. However, if you experience any difficulty accessing materials, please notify your instructor immediately so that we can provide a solution. You may also contact Student Disability Services directly at 864-250-8202 or via [email \(mailto:DisabilityServices@gvltec.edu\)](mailto:DisabilityServices@gvltec.edu).

Students who need a PDF reader to access course documents presented in PDF formats may download [Adobe Reader \(https://get.adobe.com/reader\)](https://get.adobe.com/reader).

Blackboard Ally

Blackboard Ally is a tool to improve students' experiences within online courses. It enables students to convert files in a course to more accessible formats such as HTML, electronic braille, audio and more. For more information, refer to [Blackboard Ally for Students \(https://www.softchalkcloud.com/lesson/serve/XVETeqkBpJIWdZ/html\)](https://www.softchalkcloud.com/lesson/serve/XVETeqkBpJIWdZ/html) located in Student Resources in the course menu.

FERPA Policy

Because Greenville Technical College abides by FERPA privacy guidelines, personal email accounts may not be used for any College-related communication. Faculty and students must use the college Gmail system only.

Title IX Policy

Greenville Technical College does not discriminate against any student on the basis of pregnancy or related conditions and will comply fully with Title IX regulations.

Absences due to medical conditions relating to pregnancy and maternity leave will be excused for as long as deemed medically necessary by a student's doctor, and the student will be given the opportunity to makeup missed work. Documentation from the student's doctor is required. Students needing assistance may seek accommodations from the Title IX Coordinator or Student Disability Services. Please contact the Title IX Coordinator via [email \(mailto:TitleIX@gvltec.edu\)](mailto:TitleIX@gvltec.edu) or Student Disability Services via [email \(mailto:DisabilityServices@gvltec.edu\)](mailto:DisabilityServices@gvltec.edu) for additional information.

Non-Discrimination Policy

Greenville Technical College provides equal opportunity and affirmative action in education and employment for all qualified persons regardless of race, color, religion, sex, national origin, age, disability, sexual orientation, or veteran status.

The college complies with the provisions of Titles VI and VII of the Civil Rights Act of 1964, as amended; Title IX of the Education Amendments of 1972 and the Higher Education Amendments of 1986; Sections 503 and 504 of the Rehabilitation Act of 1973, as amended; the South Carolina Human Affairs Law of 1972; and with the Americans with Disabilities Act (ADA) of 1990 as well as the ADA Amendments of 2008 (ADAA).

For additional information on nondiscrimination policies, students should contact Student Disability Services, which coordinates Title II of the ADA/ADAA, Section 504 at 864-250-8408 v/TTY; Title IX Coordinator at 864-250-8144.

Assistance with Food and Housing

The faculty and staff of Greenville Technical College are invested in ensuring that you are successful throughout your academic career. To be successful, we understand that your basic needs must be met. If you are struggling with food or housing difficulties, please reach out to your instructor, visit the [Caring Corner \(https://www.gvltec.edu/student_resources/student_support/caring-corner.html\)](https://www.gvltec.edu/student_resources/student_support/caring-corner.html) in the ET building (103), Room 340 on the Barton Campus, or contact by phone at 864-250-8814.

COVID 19

Effective August 18, 2021, Greenville Technical College has instituted a mandatory mask policy. Masks must be worn indoors by everyone –employees, students, visitors, and vendors, whether vaccinated or unvaccinated. This policy applies to all indoor spaces on our campuses unless someone is working alone in a private office. Masks may be removed for eating or drinking. Masks are not mandatory outside but are strongly encouraged when groups gather. We will evaluate the situation at regular intervals as the semester progresses to determine a safe end date for the mandate.

GTC's COVID-19 Response Team continues to monitor the pandemic and to provide guidance to those affected, helping the college mitigate the spread of disease. Although the college is doing everything possible to keep students and employees safe,

the college's best weapon against COVID-19 is you. In addition to wearing a mask as required, everyone is strongly encouraged to get vaccinated, to stay home when you are sick, and to follow guidelines that protect you and others from COVID-19, so that we can all get back to normal. If you test positive, have symptoms, or have been around someone who is ill, please complete a [COVID-19 reporting form](#) right away.

Schedule

Course Schedule (Plan of Instruction)

Please refer to Syllabus Addendum in Blackboard to review the Tentative Course Schedule. Your instructor will provide a detailed, week-by-week plan of instruction via addendum along with method of delivery, testing, and assignment submission.