Springfield Technical Community College

School of Engineering Technology
Department of Electronic Technology

Course: CSE-150 – Linux Command and Shell Programming Date: Spring 2016

Instructor(s): Jeff Cooper, office: 17/631, email: jlcooper@stcc.edu, phone: 413-755-4578

1. Catalog Description

This course covers three command line and shell scripting platforms; Linux/Apple BASH shell, AppleScript, and the Windows command line. The bulk of the material involves the BASH shell with examples from other platforms. BASH runs natively on Linux, BSD, and Apple OS X. Linux compatible systems are capable of running other shells. The topics covered are primarily targeted at automating system administration tasks, workflow automation; arid the skill sets for Linux, OS X, and Windows system administrators or advanced users. Some simple PERL and Python scripts may be introduced for parsing of system, network, and security logs to produce activity reports. Topics include logging in and logging out of the user accounts, remote access using secure shell (SSH), process control, file system commands, file system types and characteristics, encryption and decryption commands, file and directory permissions, user and group security, access to removable and remote storage, remote access to heterogeneous systems, system monitoring and logs, system editors such as vi and nano, moving files through the network securely, hardware status and configuration commands, system log rotation and reporting, and the contents of key configuration files that configure the security, networking, the boot process, scheduling, and applications.

PREREQUISITE: Students are expected to have basic computer skills, but no prior command line skills or Linux experience is assumed.

2. Course Content

This course covers the use of the BASH command line and shell programming. We will concentrate on common system administration related tasks, processing text files, and working in the Linux environment.

3. Course Objectives

1.) Learn how to securely access the Linux server.
2.) Learn basic Linux commands to navigate through the operating system.
3.) Learn to use the vi editor.
4.) Use common Linux BASH commands
5.) Create programs in the BASH shell scripting language.
6.) Determine if the program meets the specifications and debug programs.

4. Grading & Performance Policy

Attendance: Attendance is mandatory. Each three absences will result in the loss of a letter grade. Excessive absences will result in the student being dropped from the course at the professor's discretion. 'Excessive' is quantized at the professor's discretion.

It is the student's responsibility to make arrangements to make up any missed work. Missed work may only be made up if the professor allows. The schedule for any make up work will be at the instructor's discretion.

If the student knows in advance he or she may not be in lecture it is the student's responsibility to notify the professor in advance.

Attendance will be taken at each lecture. Be sure to sign in or follow the instructor's guidelines to properly record your attendance in lecture. We have noted that students that sit way in the back of the class tend to do very poorly. It is therefore the policy that students will be expected to be seated as far to the front of the class as possible. The instructor may list the student as not attending or reduce the grade of students who do not follow the policy.

*** Policy on course disruptions:** Students are expected to act in a professional and mature manner. Course disruptions, loud or disruptive behavior, intimidation, violation of the policies and procedures set down in the STCC Student Handbook, or similar problems will result in the student being removed from the lab or lecture.

Be sure to turn off all cell phones or other electronic devices before entering the lecture or lab. In many cases the professors allow cell phones during lab but not while lectures are in process. Talking or causing disruptions while lecture is in process is also considered disruptive.

At the professor's discretion he or she may attempt to correct the student's behavior or remove the student from the class.

*** Due Dates:** The student is required to pass in all assigned work by the due date. Late work is depreciated by 5% every day it is late. Solutions to the homework and labs may be distributed. Once the solution is distributed no further homework will be accepted. It is the student's responsibility to be aware of all work assigned and the due dates.

*** Quality:** Submission of poor quality work will not be accepted. Submissions which do not meet minimum documentation standards set forth in class, are incoherent, or are illegible will be returned [not graded] to the student. These cases are treated as if no work was submitted.

*** Academic Honesty:** All students are assumed to do their own work. Using other's work is permitted, under some circumstances, with proper credit to the original author(s). Academic dishonesty of any manner is not tolerated. In the event it is discovered by the professor ALL PARTIES INVOLVED receive a grade of "F" [0.0]. No distinction is made between those "cheating" and those being "cheated from". If a student believes his/her work is being borrowed without consent it is her/his responsibility to report the incident. This is the only means to escape the consequences. All incidents are examined on a case-by-case basis by the professor whose decision is final.

Exams in www.testout.com	50%
Quizzes/Attendance/Homework	30%
Final Project	20%
Total	**100%**

Notes:

The student will earn the attendance portion of the course grade by arriving on time for the class, working in a professional manner, leaving their work areas in order, and following the course rules.

A. Exams: Exams are usually written exams given in class. Take home exams or a section of an exam that has a take home component given in class may be used.

B. Quizzes: Quizzes may be given in any lecture during the semester. Quizzes may not be made up as they are also used to gauge attendance in addition to comprehension of the course material.

C. Homework: Homework will be regularly assigned. Some homework assignments require items to be submitted for grading. Others are used to reinforce the lectures by allowing the student to perform the tasks discussed in class or in the reading. It is expected that the student will have completed the reading and homework assignments by the due date. Any homework material may appear on the quizzes and exams.

Wireless Device Policy

Unless the device is being used in the class it is expected that all wireless devices (phones, tablets, etc) will be put away, sound disabled or muted, and not used during class. Use is allowed when it directly supports the learning process and allowed by the instructor. Tablets, phones, calculators with communications ability, and computers are not allowed as substitute for calculators on an exam or quiz. An inexpensive calculator like the TI-30X engineering calculator is recommended.

Students with Disabilities

In compliance with Springfield Technical Community College's policy and equal access laws, disability-related accommodations or services are available. Students who desire such services are to meet with the professor in a timely manner, preferably the first week of class, to discuss their disability-related needs. Students will not receive services until they register with the Office of Disability Services (ODS). Proper registration will enable the ODS to verify the disability and determine reasonable academic accommodations. ODS is located in Building 27 on the 2nd Floor and can be reached at 755-4785.

5. Class Organization

The course is a lecture format and online course material through www.testout.com, but, some occasional lab time may present itself if the opportunity is available or it is easier to demonstrate a concept.

Course material is presented through the online course material at www.testout.com. You must have an account and purchase a valid license code for the Linux course material (See required texts) to pass this class. There is no hard cover textbook.

6. Texts and requirements
Required Texts:

This is actually electronic courseware from www.testout.com for the Linux Certification exam. You must acquire the course material and be enrolled in the class at www.testout.com to pass this course.

www.testout.com, TestOut Linux Pro (English 4.0.0), ISBN 978-1-935080-38-1

Work is performed on the department's Linux server and in the course material on www.testout.com. Access to an internet connection is helpful. If you do not have Internet access outside of school plan on spending more time in the lab.

Electronic Books (ebooks)
Bash Guide for Beginners, Marchtelt Garrells. This is a free ebook available from the Internet or on /home2/ebooks/linux.
Advanced Bash Scripting Guide, Mendel Cooper. This is a free ebook available from the Internet or on /home2/ebooks/linux.

7. Office Hours
Office hours will be posted on 17/631 for Jeff Cooper.

8. STCC Course Schedule [may vary slightly]

Week	Chapter	Description
1		Welcome. Accessing the Linux server.
2	Module 0, 1,Handouts	Accessing the department server. The nano and vi editors
2	Module 2	Installation. Ubuntu and Centos
3	Module 3	Boot and shutdown. Accessing Windows information.
4	Module 4	User interfaces.
5	Module 5	Software installation. Scripts and ~/bin
6	Module 6	Users and groups.
7	Module 7	Disk and file systems. Removable devices.
8	Module 8	Hardware install and hardware resources. Crontab and at commands.
9	Module 9	Processes. Scripting examples.
10	Module 10	System monitoring. Scripting examples.
11	Module 11	Networking
12	Module 12	Security
13	Handouts	More commands. Monitoring the system with scripts.
14	Handouts	Project
15	Review & summary	Project