## Professor

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## Required Text(s)

Sobell, M. (2012). *Practical Guide to Linux Commands, Editors, and Shell Programming, 3/E*. Prentice Hall. ISBN-10: 013308504X • ISBN-13: 9780133085044

## Required Materials

Tophat Student Course Subscription (http://www.tophat.com) Course Code: 822631

## Course Description

This three (3) credit hour Intro to Linux course (CRN #2902) is intended to provide the student with the basic introduction to the Linux family of operating systems. The Linux environment, basic commands, file system, processes, utilities, system structures and scripting are explored. This course is not for Linux system programming (although Python & Bash Programming are introduced), nor Linux system administration.

## Prerequisites

None

## Computer Requirements

For out-of-class laboratory exercises, it is recommended that the student setup their own functioning Linux distribution/fork such as Ubuntu, Debian, etc. I would highly recommend that the student setup their Linux distribution on a portable virtual machine (i.e. VM on a portable hard drive) for better experiences in in-class lab exercises. In addition, the student will gain familiarity with custom distros used in the digital forensics and information assurance community such as SIFT and Kali Linux.

The College of Science maintains agreements with various software publishers to provide software for its computer labs as well as for its faculty, staff, and students. Students currently enrolled in COS courses are eligible to receive, via the COS Software Store, a variety of software applications at no cost for use in their academic endeavors. This includes many of the same applications used in COS courses (including the virtual platforms used in this course). All students currently enrolled in COS courses are eligible for the program, regardless of his/her major, as long as he/she is currently enrolled in at least one COS course. http://www.marshall.edu/cos/software.

Students will need to create Tophat user account and purchase a Tophat subscription plan for use within this course. Subscription plans vary from 4 month access, semester access, to lifetime access. Tophat will be used to track attendance, class quizzes, reviews, etc. The course code for this course is 822631 and the course homepage is https://app.tophat.com/e/822631. Tophat can be used from either a PC or via the Android/iOS app on a mobile device.

Students will receive emails via Marshall email (Please setup your Marshall account if you have not done so). E-mail will be used to make any general announcements, last minute changes, etc. It is mandatory that you monitor both your email at least once a day. PLEASE ONLY USE MY MARSHALL EMAIL ADDRESS FOR QUICK CORRESPONDENCE. Messages left on MUOnline or any other social media or email service may result in delayed responses.

Course content (labs, slides, exams, etc) will be distributed via MUOnline as they become available. You can log into the course homepage at the following address: www.marshall.edu/muonline

## Course Objectives/Outcomes

This course places heavy focus on learning functionality of the Linux Operating System.
In this course, learning outcomes are gauged as followed:

| Course Student Learning Outcome | How Practiced in This Class | How Assessed in This Course |
|---|---|---|
| ▪ Use basic Linux commands and utilities from the command-line | ▪ Discussion, in-class hands-on labs, in-class discussion/lecture | ▪ In-class instructor demonstrations/Labs 2.1 & 3.1<br>▪ Exams 1 & 2 |
| ▪ Organize files in the Linux file system | ▪ Discussion, in-class hands-on labs, in-class discussion/lecture | ▪ In-class instructor demonstrations/Lab 4.1<br>▪ Exams 1 & 2 |
| ▪ Create and edit files in the Linux file system | ▪ Discussion, in-class hands-on labs, in-class discussion/lecture | ▪ In-class instructor demonstrations/Lab 4.2<br>▪ Exams 1 & 2 |
| ▪ Manage processes in the Linux file system | ▪ Discussion, in-class hands-on labs, in-class discussion/lecture | ▪ In-class instructor demonstrations/Lab 4.2<br>▪ Exams 1 & 2 |
| ▪ Install and execute applications in the Linux command environment | ▪ Discussion, in-class hands-on labs, in-class discussion/lecture | ▪ In-class instructor demonstrations/Lab A.1<br>▪ Exams 1 & 2 |
| ▪ Be able to write basic Linux shell (bash) scripts | ▪ Discussion, in-class hands-on labs, in-class discussion/lecture | ▪ In-class instructor demonstrations/Labs 5.1, 8.1, & A.2<br>▪ Exam 2 |
| ▪ Be able to write and execute Python 2.x scripts | ▪ Discussion, in-class hands-on labs, in-class discussion/lecture | ▪ In-class instructor demonstrations/Lab A.3<br>▪ Exam 2 |
| ▪ Learn functionality of Linux within the digital forensics discipline | ▪ Discussion, in-class hands-on labs, in-class discussion/lecture | ▪ In-class instructor demonstrations<br>▪ Exam 2 |
| ▪ Learn functionality of Linux within the information security discipline | ▪ Discussion, in-class hands-on labs, in-class discussion/lecture | ▪ In-class instructor demonstrations<br>▪ Exam 2 |

A variety of methods will be used to evaluate learning of each of the above outcomes. These include: classroom discussion, in-class case studies and exercises, exams, and in-class and out-of-class labs.

This Intro to Linux course will meet every Monday, Wednesday, and Friday (MWF) from 10:00-10:50AM in Weisberg Applied Engineering Complex (WAEC) Room 1232 (Digital Forensics Laboratory).

## Project Submission Guidelines

The course includes a number of lab-based projects. All assignments are due on their due date and must be submitted through via MUOnline (unless otherwise noted by the instructor). NO LATE ASSIGNMENTS WILL BE ACCEPTED. Please do not procrastinate in working on your lab assignments or trying to submit through MUOnline as many others have done in the past. If you wait until the last night to start on the project or the last minute to submit, chances are, you will fail.

All electronic submissions MUST follow this file naming convention:
*DFIA261_LastName_FirstInitial_Assignment Name.doc ("DFIA261_brunty_j_LAB2.1.txt")*

Assignments must be submitted in the format specified by the instructor for a given assignment. I WILL NOT accept projects submitted in non-approved formats or naming conventions. Assignments & projects must convey information in a clear, concise, and technical matter; hence obvious grammatical mistakes will be deducted. Labs will be available for download & submitted via MUOnline unless otherwise noted by the instructor.
All course assignments will:
1) Be completed on time
2) Meet guidelines and scoring rubrics for the assignment

## University Policies

By enrolling in this course, you agree to the University Policies listed below. Please read the full text of each policy be going to www.marshall.edu/academic-affairs and clicking on "Marshall University Policies." Or, you can access the policies directly by going to http://www.marshall.edu/academic-affairs/?page_id=802
*Academic Dishonesty/Excused Absence Policy for Undergraduates/Computing Services Acceptable Use/ Inclement Weather/ Dead Week/ Students with Disabilities/ Academic Forgiveness/ Academic Probation and Suspension/ Academic Rights and Responsibilities of Students/ Affirmative Action/ Sexual Harassment*

## Professionalism/Attendance Policy

This class is predominately lab and task based, with much of our time devoted to class time computer work and hands-on tutorials with forensic tools and other utilities that may only available in the laboratory environment. With that said, any missed classes will result in lost points (5 pts per class), put the student behind, and make it difficult to pick up with the next class lessons. Attendance is tracked and maintained electronically via Tophat. In the event that you MUST miss class, it is the student's responsibility to meet with the professor to discuss absences due to illness or other reasons. Any excused absences must adhere to the University's excused absence policy. In this course you will be treated as professionals and will be expected to behave and perform as such. As professionals, you will be expected to attend class, be on time, complete all of your assignments, meet deadlines, ask questions when you don't understand, and participate. Your classroom language and demeanor should also be professional. Also, please set your mobile devices to "Vibrate Only" mode (or turn it off) during class.

## Instructor Contact & Social Media Policy

You are welcome to follow me on Twitter (@joshbrunty) and/or join my network on LinkedIn. You can also follow our department through our MU Digital Forensics or MU Forensics Facebook group pages. For class-related questions, however, please email me (no DM's, Snaps, etc.). You are also encouraged to stop by my office. Please note, however, that I rarely answer or walk you through lab-related questions via email. In these circumstances, you are encouraged to stop by my office during posted office hours and/or make an appointment.

## Grading Policy

Student materials and grades will be returned as soon as graded to the student and can be viewed via MUOnline. Should you wish to appeal a grade, test question, etc, you need to follow this procedure. You should send an email via MUOnline to the Graduate Assistant and CC me. The title of the email must read "GRADE APPEAL – Assignment Name" (i.e. Lab 8.1, Exam 1, etc). The body of the email must include the question, question number, your answer, and why you think you deserve credit. For tests and quizzes in MUOnline, this should be done immediately after completion, before you leave class. You can copy and paste this information to make things simple. I will get back to you as soon as possible.

Final letter grades will be based on the following scale:

| | |
|---|---|
| 90-100 | **A** |
| 80-89 | **B** |
| 70-79 | **C** |
| 60-69 | **D** |
| 0-59 | **F** |

Percentage of grades will be distributed as follows:

| | |
|---|---|
| Lab Exercises | 40% |
| Exams 1 & 2 | 40% |
| Attendance/In-Class Labs (Point value varies- 5 pts per class) | 20% |

**Example:**

| | |
|---|---|
| Laboratory Exercises (76%) | x .40 = 30.4 |
| Exams 1 & 2 (92%) | x .40 = 36.8 |
| Attendance/Participation (83%) | x .20 = 16.6 |
| | ---------- |
| | (83.8% = 84% B) |

**Lab Exercises (40%)**
There are a total of ten (10) laboratory exercises that are to be completed and submitted MUOnline. This consists of seven (7) chapter laboratory exercises and three (3) applied lab exercises (Lab A.1-3). The applied lab exercises will be done in-class within groups, but submitted individually like all other labs. The due dates for each lab exercise can be found in MUOnline and in the course schedule below. The Lab exercises themselves and instructions on how to complete them can be found within the assignment posted in MUOnline. Each step is generally worth 5 points, but can vary based upon the complexity of the step and/or specifications of the lab exercise. Point value varies based on the number of steps in each lab. The total points possible can be found posted with each assignment.

**Exams 1 & 2 (40%)**
There are a total of two (2) exams administered during the semester (please see syllabus for exam date). Each of these exams will be worth 100 points. An in-class review and study guide will be given in advance of each exam.

**Attendance/In-Class Labs (20%)**
Attendance will be taken each day via Tophat. It is the student's responsibility to make sure that their attendance is logged. Tardiness to class will result in loss of points for that particular class session. Each class will be worth five (5) pts. and will be calculated as a score at the end of the semester. Generally, this can range in the ballpark of 25 class meetings but can vary due to weather, cancelled classes, etc. Any in-class quizzes given by the instructor via Tophat will also factor into this percentage calculation.

| TOPIC | Marshall University Dates/ Important Dates | WEEK |
|---|---|---|
| **NOTE:** The following outline delineates the tentative class schedule with topics to be addressed during the course. Please note this is a tentative schedule and it may change upon class progress: | | |
| Chapter 0 (Introduction to Linux) | | Jan 9-13 |
| Chapter 1 (Welcome to Linux & Mac OSX) | ✓ Jan 16 (Monday)- MLK Day- No Class | Jan 16-20 |
| Chapter 2 (Getting Started) | | Jan 23-27 |
| Chapter 3 (The Utilities) | | Jan 30-Feb 3 |
| Chapter 4 (The Filesystem) | | Feb 6-10 |
| Chapter 5 (The Shell) | | Feb 13-17 |
| Intro to GREP Part 1 | | Feb 20-24 |
| Intro to GREP Part 2<br>Exam #1 Review | ✓ Friday March 3 @ 11:59PM- Labs 2.1, 3.1, 4.1, 4.2, & A.1 DUE via MUOnline | Feb 27-Mar 3 |
| Exam #1<br>Chapter 8 (The Bash Shell) | ✓ Exam #1 (Mar 6) | Mar 6-10 |
| Chapter 8 (The Bash Shell) Cont. | ✓ Friday Mar 17 @ 11:59PM- Applied In-Class Lab #2 (Bash Scripting) DUE via MUOnline<br>✓ Mar 17 (Friday)- Last day to drop a full semester individual course | Mar 13-17 |
| No Class | ✓ Mar 20-24- Spring Break | Mar 20-24 |
| Chapter 12 (The Python Programming Language) | | Mar 27-31 |
| Chapter 12 (The Python Programming Language) Cont. | ✓ Friday Apr 7 @ 11:59PM- Labs 5.1, 5.2, 8.1, 8.2, A.2, & A.3 DUE via MUOnline | Apr 3-7 |
| Linux in Information Assurance | | Apr 10-14 |
| No Class | ✓ Apr 17-21- Professor out for OSAC Meeting | Apr 17-21 |
| Linux in Digital Forensics<br>Exam #2 Review | ✓ "Dead Week" | Apr 24-28 |
| Exam #2 (Final Exam) | ✓ Exam #2 (Final Exam) | May 1-5 |

***Syllabus meets requirements set forth by MUBOG Policy AA-14***