## Instructor

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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

## Recommended Texts

-Hosmer, C. (2014) Python Forensics: *A Workbench for Inventing & Sharing Digital Forensic Technology*
ISBN: 0124186769
***Handouts and additional supplementary materials are supplied by the instructor via MUOnline*

## Course Description

This three (3) credit hour Intro to Linux course (CRN #2642) 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, nor Linux system administration.

## Prerequisites

None

## Computer Requirements

This course places heavy focus on learning functionality the Linux Operating System.  For laboratory exercises, it is recommended that the student setup their own functioning Linux distribution such as Ubuntu, Fedora, 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 special distributions used in the digital forensics and information assurance community such as SIFT and Kali Linux.

All students are responsible for knowing the University Computing Services' Acceptable Use Policy available at http://www.marshall.edu/ucs/CS/accptuse.asp.

Students will receive emails via Marshall email (Please setup your Marshall account(s) 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 may result in delayed responses.

The IST department maintains agreements with various software publishers to provide software for its computer labs as well as for its faculty, staff, and students. Students enrolled in IST department courses are eligible to receive a variety of software applications at no cost for use in their academic endeavors. This includes many of the same applications used in IST courses. You can find this information and more on the IST Web site at http://www.marshall.edu/isat/software/.

## Course Objectives/Outcomes

This course is designed to apply the concepts of digital forensic analysis to that of forensic image analysis and enhancement. This course places a strong emphasis on digital forensic procedures, digital forensic tools, and legal issues relating to digital imaging and forensic video analysis. This course uses advanced forensic tools and hands on exercises to emphasize the procedures that students will utilize in the field as forensic investigators.

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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 | ▪ Completion of End-of-chapter exercises, Exams 1 & 2 |
| ▪ Organize files in the Linux file system | ▪ Discussion, in-class hands-on labs, in-class discussion/lecture | ▪ Completion of End-of-chapter exercises, Exams 1 & 2 |
| ▪ Create and edit files in the Linux file system | ▪ Discussion, in-class hands-on labs, in-class discussion/lecture | ▪ Completion of End-of-chapter exercises, Exams 1 & 2 |
| ▪ Manage processes in the Linux file system | ▪ Discussion, in-class hands-on labs, in-class discussion/lecture | ▪ Completion of End-of-chapter exercises, Exams 1 & 2 |
| ▪ Install applications in the Linux command environment | ▪ Discussion, in-class hands-on labs, in-class discussion/lecture | ▪ Completion of End-of-chapter exercises, Exams 1 & 2 |
| ▪ Be able to write basic Linux shell scripts | ▪ Discussion, in-class hands-on labs, in-class discussion/lecture | ▪ Completion of End-of-chapter exercises, Exam 2 |
| ▪ Be able to write and execute Perl and Python scripts | ▪ Discussion, in-class hands-on labs, in-class discussion/lecture | ▪ Completion End-of-chapter exercises, Exam 2 |
| ▪ Learn functionality of Linux within the digital forensics discipline | ▪ Discussion, in-class hands-on labs, in-class discussion/lecture | ▪ Out-of class lab exercise, Exam 2 |
| ▪ Learn functionality of Linux within the information security discipline | ▪ Discussion, in-class hands-on labs, in-class discussion/lecture | ▪ Out-of class lab exercise, 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 projects.

This Intro to Linux course will meet every Tuesday and Thursday (TR) from 11:00-12:15PM in Weisberg Applied Engineering Complex (WAEC) 1104 (Gaming Laboratory).  Our journey of knowledge will consist of lecture with accompanying in-class lab projects.

Evaluation of student's performance will be based on the quality of your performance on classroom projects, student participation/presentations, and exams.

Lectures and course materials will be available from MUOnline as they become available.  You can log into the course website using your 901 student number at the following address:
www.marshall.edu/muonline

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| 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 project based, with much of our time devoted to class time computer work and hands-on tutorials with forensic tools and other plugins that are only available in the laboratory environment. With that said, any missed classes will result in lost points (1 pt. per class), put the student behind, and make it difficult to pick up with the next class lessons. However, in the event that you MUST miss class, it is the student's responsibility to meet with the instructor 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. |

| Social Networking Policy |
|---|
| I often receive friend requests from students via Facebook. It is my policy however, not to accept these requests from current students. This is absolutely nothing personal, so please do not take it as such.  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 ISAT or MU Digital Forensics Facebook group pages. |

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## Inclement Weather Policy

Students can find information concerning Marshall's policy regarding inclement weather regarding inclement weather online via http://www.marshall.edu/ucomm/weather.html. Please note that a two-hour delay means that classes that begin at 10:00 a.m. begin on time. Classes that begin at 8:30 a.m. meet at 10:00 a.m. and continue for the remaining period of that class.

## Makeup Policy

The tentative dates for the exams and due dates of projects are shown in the course schedule.  If you have other plans on any of these dates, please make arrangements now to change them, or inform the instructor of your plans.  If for any unforeseen reason you must miss an exam or project due date, you must have a verifiable, well-documented excuse.  If the instructor accepts the excuse you will be given a make-up exam on the date specified.  Otherwise, you will be given a zero (0) grade for the missed exam and/or assignment.

## Academic Dishonesty Policy

As described in the Marshall University Creed, Marshall University is an "Ethical Community reflecting honesty, integrity and fairness in both academic and extracurricular activities.  "Academic Dishonesty is something that will not be tolerated as these actions are fundamentally opposed to "assuring the integrity of the curriculum through the maintenance of rigorous standards and high expectations for student learning and performance" as described in Marshall University's Statement of Philosophy.  A student, by voluntarily accepting admission to the institution or enrolling in a class or course of study offered by Marshall University accepts the academic requirements and criteria of the institution. It is the student's responsibility to be aware of policies regulating academic conduct, including the definitions of academic dishonesty, the possible sanctions and the appeal process.  For the purposes of this policy, an academic exercise is defined as any assignment, whether graded or ungraded, that is given in an academic course or must be completed toward the completion of degree or certification requirements. This includes, but is not limited to: Exams, quizzes, papers, oral presentations, data gathering and analysis, practical and creative work of any kind.

Academic Dishonesty includes cheating, fabrication and falsification of data or information, plagiarism, bribes/favors/threats, and complicity (i.e., helping or attempting someone commit an act of dishonesty). As stated in the policy, "A student, by voluntarily accepting admission to the institution or enrolling in a class or course of study offered by Marshall University accepts the academic requirements and criteria of the institution. It is the student's responsibility to be aware of policies regulating academic conduct, including the definitions of academic dishonesty, the possible sanctions and the appeal process. For the purposes of this policy, an academic exercise is defined as any assignment, whether graded or ungraded, that is given in an academic course or must be completed toward the completion of degree or certification requirements. This includes, but is not limited to: Exams, quizzes, papers, oral presentations, data gathering and analysis, practical and creative work of any kind" (MU Undergraduate Catalog). If you are found cheating on projects or plagiarizing answers from the Internet or other sources there will be no second chance. In this course, STUDENTS ARE NOT TO "COPY & PASTE" MATERIAL FROM A SOURCE INTO ANY ASSIGNMENT UNLESS SPECIFICALLY AUTHORIZED BY THE INSTRUCTOR. Your penalty is that you will receive a failing grade for the course. In those cases in which the offense is particularly flagrant or where there are other aggravating circumstances, additional, non-academic, sanctions may be pursued through the Office of Judicial Affairs. Notice of an act of academic dishonesty will be reported to the Department Chair, Dean of the College of Science, and to the Office of Academic Affairs. Please refer to the Marshall University Undergraduate Catalog for a full definition of academic dishonesty.

## Project Submission Guidelines

The course includes a number of projects and assignments. All assignments are due BY THE BEGINNING OF CLASS 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 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.

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All electronic submissions MUST follow this file naming convention:
*Ist261_LastName_FirstInitial_Assignment Name.doc ("ist261_brunty_j_chapter1exercises.doc")*

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.  Projects 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 assignments

## 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. Storage Quiz, Mid-Term, 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.

## Grading

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** |

**Example:**
End of Chapter Exercises (80%)      x .30 = 24
Exams 1 & 2 (92%)                           x .50 = 46
Attendance/In-Class Labs (83% )    x .20 = 16.6
                                                           --------------
                                                           (86.6% = 87% B)

Percentage of grades will be distributed as follows:

| | |
|---|---|
| End of Chapter Exercises | 30% |
| Exams 1 & 2 | 50% |
| Attendance/In-Class Labs (Point value varies) | 20% |

**End of Chapter Exercises (30%)**
There are a total of twelve (12) end of chapter exercises found at the end of each chapter.  These will be due at specific intervals found in the class schedule at the end of the syllabus and under "End of Chapter" section within MUOnline.  These assignments will be submitted via MUOnline.

**Exams 1 & 2 (50%)**
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 will be given in advance of each exam.

**Attendance/In-Class Lab Participation (20%)**
Attendance will be taken each day of class via a sign-in sheet.  It is the student's responsibility to make sure that the sheet is signed.  Each class will be worth one (1) pt. and will be calculated as a score at the end of the semester.  Any in-class quizzes or labs given by the instructor will also factor into this percentage calculation.

| CLASS SCHEDULE | Marshall University Dates/ Important Dates | WEEK |
|---|---|---|
| **NOTE:** When projects are assigned for a week, the due date will be reflected within the posted assignment via MUOnline. It is expected of the student to submit the project to MUOnline prior to the due date/cutoff time (which is usually the beginning of class). Failure to do so will result in a zero for the project. Please see the instructor if extenuating circumstances exist that may merit an extension or modification of the assignment. Late, incomplete or poorly organized assignments will result in point deductions. 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: | | |
| **Week 1** Chapter 0 (Introduction to Linux) | ✓ August 28, Friday Last day to add a class | Aug 24-28 |
| **Week 2** Chapter 1 (Welcome to Linux and Mac OSX) | ✓ August 31, Monday "W" period begins | Aug 31- Sept 4 |
| **Week 3** Chapter 2 (Getting Started) | ✓ September 7, Monday-Labor Day - University Closed | Sept 7-11 |
| **Week 4** Chapter 3 (The Utilities) | | Sept 14-18 |
| **Week 5** Chapter 4 (The Filesystem) | ✓ End of Chapter Exercises Due (Chapter 1-4) Friday 9/25 @ 11:59PM via MUOnline | Sept 21-25 |
| **Week 6** Chapter 5 (The Shell) | | Sept 28- Oct 2 |
| **Week 7** Exam #1 Chapter 6 (The vim Editor) | ✓ Exam 1- Monday, 10/5 @ 11:00AM | Oct 5-9 |
| **Week 8** Chapter 7 (The emacs Editor) | | Oct 12-16 |
| **Week 9** Chapter 8 (The Bash Shell) | ✓ End of Chapter Exercises Due (Chapter 5-8) Friday 10/23 @ 11:59PM via MUOnline | Oct 19-23 |
| **Week 10** Chapter 9 (The TC Shell) | ✓ October 30, Friday- Last day to drop a full semester individual course | Oct 26-30 |
| **Week 11** Chapter 10 (Programming Bash) | ✓ November 2, Monday December 6, Friday- Complete withdrawals only from the University | Nov 2-6 |
| **Week 12** Chapter 11 (The PERL Programming Language) | | Nov 9-13 |
| **Week 13** Chapter 12 (The Python Programming Language) | ✓ End of Chapter Exercises Due (Chapters 9-12) Friday 11/20 @ 11:59PM via | Nov 16-20 |

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| | MUOnline | |
|---|---|---|
| **Week 14**<br>No Class | ✓ Thanksgiving/Fall Break - Classes Dismissed | Nov 23-27 |
| **Week 15**<br>Linux in Digital Forensics & Information Assurance (DFIA) | ✓ "Dead Week" | Nov 30- Dec 4 |
| **Week 16**<br>Exam #2 | Exam #2 (Final Exam)- Thursday December 10th (10:15AM-12:15PM) | Dec 7-11 |

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