

# Course Outline

## CPTe 254 Unix

### Fall 2006

### Preliminary

Professor: Perry Willard Munger III Ph. D.  
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Email: [wmunger@southern.edu](mailto:wmunger@southern.edu)  
Office Hours: See <https://cs.southern.edu/wmunger>  
Credits: 3 hours  
Prerequisite: CPTe 254  
Time & Place: 9:00 MWF HSC 115 Lab HSC 332

#### Description:

Installation and management of UNIX operating systems in the business environment. Use of common UNIX tools for support and administration. Comparison of common UNIX variants.

#### Required Textbooks:

Linux Administration Handbook Second Edition by Nemeth et. al. Prentice Hall  
ISBN 0-13-14004-9 © 2006

Rute User's Tutorial and Exposition (version 1.0.0) by Paul Seer available at  
<http://rute.2038bug.com/index.html.gz>

Dive Into Python by Mark Pilgrim available at <http://www.diveintopython.org/>

#### Recommended Textbooks:

wxPython in Action by Rappin & Dunn Manning Press 2006 ISBN 1-932394-62-1

Beginning Python From Novice to Professional by Hetland Apress 2005 ISBN 978-1-59059-519-0

#### Other Sources of Information:

1. LFS manual
2. BLFS manual
3. Man pages
4. Info pages
5. Securing Debian Manual
6. [http://en.wikipedia.org/wiki/Main\\_Page](http://en.wikipedia.org/wiki/Main_Page)
7. Google.com

Course Goals: The goal of this course is familiarize the student with Unix and the Unix operating system such that the student will be able to install, maintain, and improve a Unix system of computers. To accomplish this goal the student will install and setup several different Unix system as well as connect Windows boxes to their systems. Unix administration requires an unique type of programming abilities the student will learn wxPython. WxPython is a complete scripting/programming language gaining usage in the Linux community.

Requirements:

- Install a minimal Ubuntu System

- Setup the following servers

  - DNS

  - DHCP

  - Cron job

  - Firewall & network

  - Thin Client → Linux and Windows based

  - Backup system

  - VPN

  - SAMBA

  - Printer

  - Virtual server

- Compile the kernel

- Write 10 assigned python/wxPython programs

- Write one major wxPython administrative tool for Linux and poster for presenting at the departmental poster session.

Classes discussion will include:

  - of the various part of the Unix operating system,

  - the various servers, pitfalls in installation,

  - Python programming,

  - Unix system programming, and

student questions.

The student will have

read the assigned material

before class and be ready for a quiz.

On days when there are no quizzes points may be given for attendance. Those late will not be allowed to take quizzes.

Complete the required lab when due

Full credit for each lab will be given on completion at the end of week assigned.

Labs can be complete ahead of assigned time. Labs complete after the end of assigned week but before the completion of the 13<sup>th</sup> week will receive half credit. Each lab worth 30 points.

Complete and turn in programming assignment by due date

Late programming assignments will receive half credit.

Grading:

|                            |     |
|----------------------------|-----|
| Major programming projects | 200 |
| Two Test                   | 300 |
| Programming Assignments    | 200 |
| Lab Assignment             | 200 |
| Quizzes & Attendance       | 100 |

Topics:

1. Unix/Linux Introduction
2. Install
  1. Hardware
  2. PC Hardware
  3. File system
  4. Boot up & shut down
  5. adding a disk
  6. virtualization
  7. Building from source
3. Shell programming
  1. Rute 4-9
4. Network Management
  1. IP & network fundlementals
  2. iptables
  3. routing
  4. DNS

5. DHCP
6. Hardening
7. VPN & OpenVPN
8. Security
5. Files & file sharing
  1. NFS
  2. Samba
6. System Management
  1. X windows
  2. Printing
  3. Policy
  4. Software Configuration & Management
  5. Syslog & log
  6. Backups
  7. cron
  8. SysVinit
  9. PAM/LDAP
7. Web Hosting
8. Email
9. Thin Clients
10. Python
  1. Software development
  2. list & tuples
  3. strings
  4. Dictionaries
  5. Conditionals, loops, & other statements
  6. abstraction
  7. exceptions
  8. methods, properties, and iterators
  9. modules and name space
  10. files and database support
  11. wxPython
    1. basics
    2. event-driven environments
    3. PyCrust
    4. Boa
    5. Basic controls
    6. widgets
    7. dialogs
    8. menus

9. sizers
10. images
11. list controls
12. grids
13. tree controls
14. printing

#### ADDITIONAL INFORMATION:

1. In keeping with University policy, any student with a disability who needs academic accommodation for testing, note taking, reading, classroom seating, etc., is to call Learning Success Services. Mr. Roberts, the Disability Services Coordinator, will conduct an interview and, if appropriate, provide a letter for you to bring to me. I will review the letter with you and discuss the accommodations in relation to this course. Academic accommodations are available only as recommended by Disability Services at LSS. Call 236-2838 or stop by the LSS office in Lynn Wood Hall, room 314 to arrange an appointment this week. Requests for academic accommodations are to be made during the first three weeks of the semester, except in unusual circumstances. No retroactive accommodations will be provided. The LSS website contains information of value to all students: <http://lss.southern.edu>.

2. It is your responsibility as a student to be as pro-active as possible regarding scheduled absences. Note that attendance is counted as a component of your grade.

3. Late work is not recommended, as the material covered in this class is cumulative. Assignments turned in late may be penalized up to 50%.

4. A small amount of extra credit may be given for attendance at (or later viewing of) School of Computing lectures.

5. This document should be viewed as preliminary may be revised as necessary by the professor.

Schedule: Preliminary

Week:

| <i>Beginning</i> | <i>Monday<br/>9:00 AM</i>                                     | <i>Wednesday<br/>9:00 AM</i> | <i>Wednesday Afternoon<br/>2:00 PM</i> |
|------------------|---|------------------------------|--|
| Aug. 31          |   |                              |  |
| Sept. 3          | Introduction  | LAU 1 & 2                    | Installed Ubuntu Server                |
| 10               | Setup wxPython & Boa<br>DIP1 & 2                              | LAU 3&4                      | Install Ubuntu Full GUI                |
| 17               | Native Data types<br>Introspection<br>DIP 3&4                 | LAU 5-7                      | Samba                                  |
| 24               | OO, Exceptions, &<br>File Handling<br>DIP 5 & 6               | LAU 8-10                     | Databases MySQL, SQLite,<br>Postgress  |
| Oct. 1           | Regual Expressions,<br>Html, & XML<br>processing<br>DIP 7 - 9 | LAU 11-12                    | Cron Jobs                              |
| 8                | Scripts & streams<br>DIP 10                                   | LAU 13-14                    | DNS                                    |
| 15               | Unit Testing  | LAU 15-16                    | DHCP/LDAP                              |
| 22               | Boa & wxWidgets   | LAU 17-18                    |  |
| 29               | System design   | LAU 19-21                    | VPN                                    |
| Nov. 5           |   | LAU 22,23,26                 | Backup                                 |
| 12               |   | Thanksgiving                 | Thanksgiving                           |
| 19               |   | LAU 30                       | firewall                               |
| 26               |   | iptables                     |  |
| Dec. 3           |   | iptables                     | Compile kernel                         |
| 10               |   |                              | Gentoo                                 |
| 16               |   |                              |  |