

Linux Systems Administration DeCal

Spring 2021

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Course Description:

This course will cover the basics of administering a Linux-based server environment in the manner of the EECS Instructional Servers (hivexx.cs.b.e) and the Open Computing Facility (tsunami.ocf.b.e, etc.). By the end of this course, we expect you to be completely comfortable using GNU/Linux, understand in a broad sense how the system's various parts work together, e.g. init, filesystems, services, daemons, etc., understand basic networking, have a good sense about maintaining system security, understand system administration essentials in general and have a practical taste of what sysadmins do in industry.

An important skill for system administrators is the willingness to quickly learn about new and unfamiliar technologies, so while we expect many students will be in CS, the only real prerequisite for this course is a desire to learn. We know potential students will have differing backgrounds in terms of CS and sysadmin experience, therefore, we will be teaching this course in two tracks: a beginner's track which will focus more on introducing new users to Linux, and an advanced track that will cater to students with more experience using Linux. Both tracks will get started fast and move quickly - there's a lot of material to cover.

Course Goals:

By the end of this course, you should be able to take a blank computer and turn it into a reliable general-purpose Linux server. You will also learn how to configure servers for special purposes, have a sysadmin's knowledge and understanding of services/daemons, authentication, networking, databases and other utilities as well as how to configure them to fit your needs. The most important skill you will learn is how to effectively diagnose, troubleshoot, and resolve problems that will inevitably arise in the process of using your computer.

Grading, Attendance, and Collaboration:

As with all Decals, this course will be offered only on a P/NP basis. There will be approximately 10 labs over the semester in each track. Labs will be graded on completion, due two weeks after they are released, and will be worth 1 point each. Students must complete all labs to pass the course, but will be allowed up to 2 late labs (turned in any time before the end of the semester).

While we normally mandate attendance, this will no longer be a requirement for Spring 2021 given the remote nature of the course. Nonetheless, students will be expected to view all lectures, as knowledge of their content will be assumed in lab assignments.

Students are free to work together on labs (debugging, advice, hints, clarifications, etc.), but lab submissions must be written up individually. Copying solutions is strictly prohibited.

Expected Schedule (week-by-week):

This is a lecture and lab-based course. While there are no required readings in the traditional sense, we will provide weekly resources that will be helpful towards completing lab assignments. If you choose not to use them, that's fine too- but we expect that you will need to do lots of reading anyways to research specific concepts further. Generally, each week will have one lecture and one lab related to the lecture.

Beginner Track:

1. 01/26, 01/28 - Info Session
2. 02/09 - History of UNIX, Intro to Shell, FOSS
3. 02/16 - Core Shell
4. 02/23 - Shell Scripting
5. 03/02 - Compiling, Distro, and Packaging
6. 03/09 - Networking 101
7. 03/16 - Processes
8. 03/30 - Services
9. 04/06 - Security Fundamentals
10. 04/13 - Version Control and Backups
11. 04/20 - Cloud, Containers, and Config Management

Advanced Track:

1. 01/26, 01/28 - Info Session
2. 02/11 - Advanced Introduction to UNIX
3. 02/18 - Packages
4. 02/25 - DIY Linux Pre-Install
5. 03/04 - Linux Post-Install
6. 03/11 - Networking 102
7. 03/18 - Processes and Services
8. 04/01 - Developing at Scale
9. 04/08 - Networked Services
10. 04/15 - Advanced Security
11. 04/22 - Config Management