

Linux 101  
Getting Started with Linux

Lesson Plan

A student with no prior knowledge of Linux learns the basics about Linux operating systems.

Lesson Objectives

At the end of the class, the student will:

* Know what Linux is.
* Understand the basic philosophy behind Linux operating systems (OS) and where to research and find the right distribution (distro) for their needs.
* Be able to download a Linux OS .iso file, burn it to a DVD, and run a live boot disc.

Lesson Prep Work

(30 min, at a minimum, prior to student arrival)

* get in early to test for technology failure, because it will happen :-)
* pre-boot example Linux OSes to classroom computers (see Appendix)
* print handouts

Lesson Prerequisites

* Computer basics
* Basic understanding of the function of a computer operating system

Lesson Outline

The lesson is completed in one (90) minute class session.

*(5) minute Introduction*

* Introduce instructor, students.
  + Ask students at introduction: What do you think of when you hear the word “Linux”? Who has an older machine that isn’t running very well but you just can’t bear to get rid of?
* Let students know it’s okay to take phone calls, but ask them to put their phone on vibrate and answer calls outside the classroom.
* Inform students that they can sit back and watch if the class is too advanced.
* Inform students they can go to the bathroom, they don’t need permission.
* Show order in which class will happen. Explain scope of class.

*(80) Activities*

Introducing Linux

* (10) Activity: Students play with Linux OSes
  + Ask students to observe the environment in front of them.
    - What looks the same?
    - What looks different?
  + Instructor asks students to play with the functionality of the OSes. Ask students to determine how to do the following tasks and report back to the larger group if it was any harder/easier/different doing these tasks in Linux than on a Windows or Mac computer. What’s the same? What’s different?
    - Find a Word Processor and type “Green Bean Casserole”. Make your text bold, size 18 font, and center it on the page.
    - Open your browser and Google a recipe for Green Bean Casserole. Copy and paste a recipe into the document you just created.
    - Save the document to the desktop.
    - Close out of all your windows. Delete the file you just saved.
    - Find a YouTube video by your favorite musician. Now turn up the volume!
    - Search the internet for “Pitbull and Duck”. Find a cute image. Awww!
    - For Advanced Students:
      * Change the background image on your desktop to your cute Pitbull and Duck picture.
      * Adjust the screen resolution.
      * Download and install Opera Web Browser.
  + Instructor walks around the room to assist students who have questions or problems.
    - *Teacher’s Tip: Encourage students to get distracted. If they see a button and they don’t know what it does, click on it! This portion is about experimenting, not accomplishing a task!*
  + Students report back to the group where they had issues if at all. What were the differences in using Linux versus an OS they are more familiar with?
* What is Linux?
  + Open Source is a development model that promotes:
    - universal access via free license to a product's design or blueprint
    - universal redistribution of that design or blueprint, including subsequent improvements to it by anyone. (source: Wikipedia [see appendix]).
    - In other words, Open Source means that the details and design of something (whether it's a program or an object) is made available to anyone who would like to use it, change it, or improve it, as long as you agree to share your changes and improvements with everyone else.
    - *Teacher’s Tip: Mention other classes that cover how to use other Open Source software. Mention Duck Duck Go and any other tool you would recommend using if students want to get away from corporate tools.*
  + Linux is based on Unix, an operating system created in the late-60s that is also the basis for OSX (Apple).
  + The important thing to know about Linux is that it is not a single operating system, but a 100s of OSes that are derived out of a common source.
    - *Tip:* If students want to know more about this, see appendix to talk about kernels.
  + A bit of History:
    - Linus Torvalds…
    - The Development…
* Why Linux?
  + Open source
    - Free of charge (mostly)
      * A common phrase in open source software is: “free as in free speech, not free beer.” In other words, while a financial investment isn’t required, users should expect to expend time and energy in learning and troubleshooting the software.
  + Customization and transparency
    - More than any other OS, Linux OSes allow you to customize.
    - Customization allows a chance to more deeply understand how one’s OS works (you’re encouraged to “look under the hood”).
  + Stable
    - Linux OSes are generally robust
    - Linux OSes are mostly free of viruses
  + Compatible
    - Because Linux is light-weight and not proprietary:
      * it can often run older versions of programs no longer supported by Windows or Macs.
      * it can often run more efficiently than new versions of Windows or OSX on older machines.
* Why *Not* Linux?
  + Direct involvement required
    - Linux OSes don’t usually come with a lot of pre-installed software, so you may need to install even basic programs (e.g. codecs to play music and video).
    - Troubleshooting is left up to the user.
      * The user plays a crucial and active role in troubleshooting.
      * *Tip:* There are many active user support forums and some distros (like Mint) offer paid support.
      * *Tip:* Google any problem you have. Or better yet, DuckDuckGo. For more on why, attend Protecting Your Privacy Online.
  + Isn’t always able to run Windows/Mac software.
  + Learning curve
    - Varies from distro to distro, but there is often a learning curve when getting started.
    - Can look and feel quite different from Windows/Mac OSes.

Distributions (“Distros”)

* *Definition*
  + Linux OS packages
    - Determines the desktop appearance, file system/management, terminal/command, software support, etc.
    - Commercial vs. Community-based
* Examples
  + Ubuntu
    - Most widely used Linux OS
    - Comes with many standard programs preinstalled
    - Large distribution = robust support
    - Regular release schedule
    - User input
    - Bug fixes
    - Standard release
  + Mint
    - Ubuntu/Debian-based
    - Enhanced usability
    - Clean, windows-like interface
    - Multi-media codecs come pre-installed
    - Regular release schedule
    - User input
    - Bug fixes
    - Large distribution = robust support
    - Paid support
    - Support forums
    - Standard release
  + Other examples of popular distros:
    - Zorin
    - PCLinuxOS
    - Debian
    - Arch
    - Slackware
* Which distro is right for me?
  + Distrowatch.com
    - Tracks every major Linux OS release (including download ranking).
    - Detailed info on each OS.
    - Links to OS downloads.
  + Things to consider when choosing a distro/OS:
    - Interface/desktop environment
    - Usability
    - Stability
    - Software selection
    - Updates
      * Many distros also offer extended support for specific releases.
  + Try a few distros before fully installing

Trial/Installation

* The easiest way to try or install Linux is to:

1. download the OS .iso file
2. burn it to a disk
3. boot the disk from your computer.
   * + *Tip:* You will need to change the boot order of your machine in the BIOS.

* What’s an .iso file?
  + It’s an image that can be booted.
  + Linux OS .iso files can be found at:
    - Distrowatch
    - Distro websites
* Making an installation disk/flash drive
  + DVD:
    - Demo: ImgBurn -> “Write Image File to Disk”
  + FlashDrive:
    - Universal USB Installer
    - UNetbootin
    - Yumi
* *Tip:* DVD .iso disks tend to have less problems.
  + Flash drives can have format issues.
  + Many Macs won’t boot from flash drives.
* *Reminder:* Try a distro before you install.
  + *Demo:* boot to CD or flash drive
* Installation:
  + Explain dual boot/partitioning
  + Some Linux distros offer installation helpers/wizards (notably Ubuntu).
  + WARNING:
    - Always back-up your computer prior to install
      * *Tip:* If you have time, show Easus. Even if you don’t, push the Backing Up Your Data class.
    - Install at your own risk
      * Seriously, it’s quite easy to erase all of your data. So, back it up!

Terminal

* Linux OSes have a command-line interface, often called a terminal.
* OSes like Ubuntu and Mint allow you to do a lot without using the terminal, but at some point all users will likely need to use the terminal.
* Don’t fear the code! Even new users can use this for basic operations.
* Super User/Root
  + Linux’s version of an Administrator, you’ll need to execute commands as the Super User or Root
    - different distros use different terms for their “administrator”
    - Activity: Search for the term for the version of Linux you are using in class
* Demo: some basic terminal commands
  + Launch a program
    - Ubuntu: just type the name of the program (e.g. firefox)
  + Install a program package
    - In order to perform any administrative tasks in the Terminal, you’ll need to start your command with “sudo.” This is short for “super user do.” You’ll then be asked
      * TIP: When installing Linux, you will be prompted to pick a sudo username and password. Take note of these credentials, as you’ll need them any time you want to perform an administrative task.
    - Ubuntu: sudo apt-get install *package name*
  + Reboot the computer
    - Ubuntu: sudo reboot
  + Activity: Search for commands for the version of Linux you are using in class.

Updates

* Standard: a fresh OS install is required to update. This means you have to back up your data or you could lose it. It takes longer to install and generally comes out less frequently.
* Rolling: similar to Windows updates, new OS releases can be implemented without requiring a clean install.
* *Tip:* Unlike Windows/OSX, updates are not as crucial for Linux, but it’s important to consider how updates are handled by specific distros.

**(5)** *Conclusion*

* Go over handout, review material, and emphasize contact info & further resources on handout.
* Any questions? Final comments?
* Remind patrons to practice; assign take-home-practice - remind them they can ask for help
* Remind to take survey.

What This Lesson Does Not Cover

* Step-by-step instructions on installing Linux.
* In-depth information on specific distros.

Appendix

* We decided to boot our primary classroom machines with Mint and Ubuntu. These are the easiest to adjust to for people primarily used to using Windows machines in the past. We do have several machines booted to other versions of Linux in the back (Fedora, Zorin, Puppy, Arch). At the end of class, we allow our students to play around on the OS that interests them, whether it’s one of the ones we used in class or one of the samples in back.
* Linux is a “kernel” that supports free and open source operating systems. A kernel is a computer program that manages input/output requests from software and translates them into data processing instructions for the central processing unit…[it] is a fundamental part of a modern computer's operating system. (source: [Wikipedia](http://en.wikipedia.org/wiki/Kernel_(computing))).
* Open Source definition found here: http://en.wikipedia.org/wiki/Open\_source