

Student Laptop Quick Guide

High-powered gaming laptops are not recommended for coursework, instead, mid-range work laptops are better suited due to their battery life and durability of hardware. A good laptop will last you the **4 years** it will take in a typical coursework plan.

Laptops between **13"** and **15"** screen size should be small enough. If you are comparing different models of laptops for their battery life, be sure to note BOTH the **battery cell count** and **mAh** (milliamp hours) as the mAh is often given per cell. If these specs are not given, do not assume hours of battery life to be an accurate spec.

Mac Laptops

Macintosh laptops are the higher price option but are easier to use and integrate well with the Unix-like environments taught in coursework. These come with a command line interface that make it easier to connect to the CS machines remotely, whereas 3rd party software will be required for Windows laptops.

For Macintosh laptops, any modern **MacBook Pro** will be more than enough for CS coursework but start at **\$1100** or greater for new machines. These typically start with Intel **Core i7 7660U** processors with either integrated Intel Iris video hardware or with Radeon video hardware, both of which will be sufficient. There should be at least **8GB** of RAM in the laptop as well.



Windows Laptops

For windows laptops, an **A10-8700P** processor (or better) provides enough power for CS coursework at a lower price. AMD APUs are fairly reliable and consume less power, extending battery life. Processor clock speed isn't as important these days, but make sure the laptop has enough RAM. **8GB** should be fine for most things. Conventional hard drives will keep the cost down, and the larger capacities (some even start at **1TB**) will be helpful for CS work.

Once you've found a laptop that meets these specs, you shouldn't be spending more than about **\$500**. You can find machines at this price put together by DELL, HP, or Lenovo and typically sold on Amazon.



Linux

Dual Boot

Many of the machines in the Computer Science department run Linux. It might be useful to install Linux on your machine as **YOU** learn how to use it. There are many different distributions. A good distribution to use as a beginner would be Ubuntu MATE:

<https://ubuntu-mate.org/>

If you do this, you'll want to **dual boot** with your existing operating system. You'll need to shrink the partition the existing system is installed on:

Windows - https://docs.microsoft.com/en-us/windows-server/storage/disk-management/shrink-a-basic-volume#BKMK_WINUI

MAC - <https://www.macworld.com/article/3243205/storage/how-to-resize-disk-partition-in-macos.html>

Once you've done that, you need to create the installation media using a spare flash drive. Unetbootin is a handy utility that creates USB install media from downloaded .iso files. <https://unetbootin.github.io/>

Most Linux distributions let you install the operating system into the blank space you've just created as a part of the setup. At the end, a boot loader named GRUB will be installed. This will allow you to choose the operating system to boot when you turn on your machine. *Be sure that the installation process correctly detects your existing operating system, or it might not let you dual boot.*

Virtual Machine

If your machine has enough ram (at least 50% more ram than recommended), a much safer option will be to run Linux and your existing operating system *at the same time*. You'll need **VirtualBox** for this option:

<https://www.virtualbox.org/>

Install the program, download the .iso file like you would for dual boot, and create a new virtual machine with VirtualBox. You can tell it that the machine will be used to run Ubuntu and it will fill out the options to recommended settings for you. Then start the machine and install the operating system.

One installed, install Linux Guest Additions from the menu and follow the directions. Once you reboot, you should be able to run Linux in **seamless mode**, copy and paste between your operating systems, and more. A virtual environment is enough for most assignments.

Upgrades

When purchasing a laptop, you might have options to upgrade some of hardware:

Some laptops have a Solid-State Drive (**SSD**) which is much faster than a conventional magnetic drive, but typically has less storage. An SSD will reduce the time it takes for the laptop to start and for programs to load, however. If you get a laptop with a small SSD, be sure to *also get a large external storage device* of at least **1TB**.

8GB of **RAM** is recommended, but more RAM will allow you to have *more programs open at the same time* without a sudden reduction in system speed.

When comparing **CPUs**, compare the number of **cores** and **model numbers** of the processors, not just the clock speed (given in Ghz). *You may not see an improvement* from an expensive CPU for coursework and general use, so upgrading the CPU isn't as important.

Backups are very important with any computer system, and now the operating system makes it very easy to run backups. Be sure to budget less than \$100 for a backup drive for your machine.

External monitors make the use of a laptop at home even easier. If you opt for a higher-end monitor, e.g., 4k or dual, check your computer's specs to make sure it can drive your desired configuration.

Software

You will often not need to purchase software, especially Microsoft Office. UNM has arrangements to provide a copy to students for free.

For **Microsoft Office**, install Office 365 following the directions here: <http://it.unm.edu/software/students/index.html>



For **MATLAB**, it can be installed along with a comprehensive set of additional MATLAB packages by following the directions here: <http://it.unm.edu/download/> (Select your operating system to view the options, MATLAB is an option for all three)

