ENGINEERING STUDENTS' SOCIETY

University of Victoria Engineering

What Computer Should I Buy?

Revision History

Date	Author	Summary
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1 Introduction

The purpose of this document is to advise an incoming engineering student of characteristics of certain computers, and help them in their decision when buying one. This document is in no way an official statement of the University of Victoria, the University of Victoria Faculty of Engineering or any affiliate. This document is solely the opinion of the writers, based on personal experience and knowledge.

2 Main

Let's get started. First of all, there is no right answer to the question, "What computer should I buy?" It breaks down to a series of needs, desires and compromises, which I will discuss in brief below. You will have to make a decision; we will not make it for you. The most important thing is to get a computer that you would enjoy using (because you are going to be using it a lot).

There are ALWAYS student deals on laptops over the summer, Apple, Dell and etc. are very aware that students going to University in September need laptops.

If you do not understand something in this document: Please, Google it.

2.1 Laptop/Desktop/Netbook

We highly recommend a laptop. Desktops are not portable, need we say more? Netbooks, while light and cheap, have very little screen space, and are difficult to use for extended periods of time. We only recommend going the netbook route if you already own a desktop computer that you use at home/residence. It is commonly said, "Productivity is proportional to screen space (more on this later)."

2.2 Tablets

Tablets such as the Apple iPad, Samsung Series 7 Slate, and the Microsoft Surface Pro are becoming more and more popular in education. Some engineering students bring them to class instead of their larger laptops with reasonable success. The best success will come from having a tablet with an active digitizer. What is an active digitizer? It's a device that looks just like a normal pen, but it will allow you to take much more accurate notes than something like an iPad. The Surface Pro runs a full Windows operating system which will also allow you install other engineering software on it. The other major upside to a Windows tablet is the ability to use OneNote to take notes and do assignments on. Through SkyDrive, Microsoft gives you access to all your OneNote, Word, Excel, etc. documents online to be viewed and even partially edited from any machine.

2.3 Lifetime

Any computer is dated the minute you buy it; most computers are completely obsolete after 5 years. By this logic, you will hopefully own your computer for your entire engineering degree. Buying top of the line now does ensure to some extent that your computer takes longer to become obsolete. The opposite is also true; a cheap laptop may need to be replaced in 2-3 years.

2.4 Cost vs Quality

You get what you pay for. In terms of hardware, software, support, and everything else this concept remains true. Sub $700 laptops usually include smaller capacity batteries and less efficient processors in order to keep the price down. This usually has a very adverse effect on performance, even in day to day tasks. The build quality of the case is also a very important consideration since this machine will be in transit a lot. The Authors believe that a good price range is approximately $1500. Remember, this is an investment for the next 5 years.

2.5 Size

If you elect to consider a laptop, we must consider the size. Common sizes seen on campus are 13" and 15", any bigger, and it is much too heavy, any smaller and you cannot see everything on the screen.Weight is also an important factor; choose a lighter (likely smaller) computer if you will want to take it to class every day. Hauling a very heavy computer to class/school every day will become very tiring.

2.6 Operating System (OS) – (OS X (Mac)/Windows/Linux)

In the end, it does not matter*really*; you will be able to run almost anything you need with any operating system. No matter which operating system you choose, you will have to download/install programs and change settings to run the different programs required in engineering. It is very common for engineering students to have at least 2 operating systems on their laptops (Windows/Linux or OS X/Windows).

Things to consider:

Mac (OS X) (CEng / SEng)	Windows (Any Department)	Linux (CEng / SEng)
Ups • Recommended Programming Environment: Apps/Games • Longer Typical Lifetime • Logical Hotkeys (saves so much time) • Very Good Touchpad (laptops)	Ups • Recommended Programming Environment: Embedded • Can use all Engineering Programs without any additional work • No need to learn a new OS • Cheaper • Can still play most games at reduced settings	Ups • Recommended Programming Environment: Games • Cheapest • Advanced Control
Downs • Poor programming environment (embedded) • More expensive • Have to learn the new OS (learning curve is very low) • Must install Windows for engineering programs • Not for gaming	Downs • Poor programming environment (apps) • Must install additional programs for remote access to university computers	Downs • No MS Office • Must install windows for engineering programs • Difficult to find a fully compatible laptop

2.7 Engineering Software Programs

Most mechanical and electrical engineering programs AutoCAD, PSpice, Solidworks and most industry programs run on Windows only. However, this should not dissuade you from considering a MacBook. All these can be used in the University computer labs. Furthermore, Mac users can run Bootcamp (a preinstalled program) to partition (divide) their hard drive and install Windows on it.

Another option is to run a virtual machine via VMWare (http://www.vmware.com/products/fusion/overview.html) or Parallels (http://www.parallels.com/ca/) on your Mac.

This effectively runs an entire Windows computer as a program inside your Mac. The performance on any newer MacBook model is more than sufficient to run engineering programs without issue.

Most engineering programs for computer and software engineering will run on Linux/Windows/Mac. For many, the Windows version will require the installation of Linux based tools which is difficult and error prone. You should look for a computer that can run a Linux operating system well.

2.8 Gaming

If you, like the rest of us, enjoy gaming. The power of your laptop may be a huge consideration. Most good gaming platforms are heavy and not portable but that does not stop many engineering students.

2.9 Extra Displays

Students who have one cannot stress enough how much they enjoy having a second external display. Not only does it ring true with the 'More screen space equals more productivity,' but also it allows you to have a smaller laptop while still maintaining a large amount of screen real-estate. You can have your assignment, assignment questions, reference material, Facebook and iTunes all open at the same time. No need to Alt-Tab over, minimize or anything. Please strongly consider this! Once you have a second display, you will not go back. It's like finally taking those training wheels off!

3 Recommendations

If you made it this far, congratulations! Here are some student suggestions for laptops, based on opinion and personal use only. For power, battery life and product quality here are our top suggestions as of June 2014:

3.1 Biomedical / Electrical / Computer (with a hardware preference)

Consider a Windows machine. The programs you will need to use for 99% of your classes will ONLY run on Windows and it's what you'll be using in industry.

3.2 Computer (with a software preference) / Software

Consider an Apple Machine. A Linux machine will also work. For 99% of your classes, you'll need access to a proper terminal.

3.3 Civil / Mechanical

Windows laptop but strongly recommend both a travelling laptop and a decent PC. Your software will be AutoCad, SolidWorks and modelling programs that require decent Video Cards and processors.

3.4 General Recommendations of Computers

Windows:

- Lenovo ThinkPad

- Dell XPS 15" ($1600+)

- Dell XPS 13" ($1300+)

- Surface Pro 3 ($1300+ get the keyboard cover, it's a game changer)

Apple:

-MacBook Air 13' (~$1100)

- MacBook Pro 13' (~$1200)

- MacBook Pro Retina 13' (~$1350)

- MacBook Pro Retina 15' (~$2000)

Note: These are only the base model prices, it is recommended to upgrade the RAM.

Linux:

- Something with an Intel chipset, stay away from Sony, HP