

Laptop Recommendations (July 2019)

We recommend gaming class laptops for our program. You can consider [Dell Gaming Laptops](#), [Dell Alienware Laptops](#), [Lenovo Gaming Laptops](#), [HP Gaming Laptops](#). Choose a particular 15” or 17” model and customize it according to your budget and our recommendations (Intel Core i7-8700 series or better processor, 8 GB 1 DIMM memory or more, a SSD, an IPS monitor). It is highly recommended to purchase a laptop with a dedicated video card to take advantage of processing dedicated graphic cards do when running modeling software.

Note that while regular Dell educational discounts give you 5-10% off, Dell's weekly discounts can be up to 40% off. Weekly discounts start on Monday and are valid until Friday morning – 6:00 am. They are available here: <https://www.dell.com/en-ca/shop/deals/gaming-laptop-deals>.

When you buy a laptop from one of the top brands, consider purchasing a 3-Year extended warranty (for some models this is the default option). The Accidental Damage Protection option provides comprehensive coverage.

Other reputable manufacturers such as ASUS, Acer, MSI, and Gigabyte offer laptops that can be cheaper than major brands. However, their warranty and support services may not be as good; the length of the warranty is usually for 1 year only.

There are many similar gaming-class laptops with specifications that are suitable for architectural design work. You can find one with a good discount at online computer stores such as www.canadacomputers.com, www.tigerdirect.ca, www.newegg.ca and www.microsoft.com/en-ca.

If you prefer MacBooks, then any of the newer [MacBook Pro with Retina Display](#) laptops with 15” or 17” screen will meet your needs. To run Microsoft Windows applications, you will need a valid, licensed copy of Windows 7/8/10 (x64) Professional or Home edition (free for Architectural Science students). Please note that if you wish to run Windows on a Mac as a virtual machine, you will also need to purchase [Parallels](#) software separately.

If you choose MacBook Pro, consider purchasing their “AppleCare Protection Plan” to extend your warranty period (up to 3 years).

You can purchase MacBooks on Ryerson's Apple for Higher Education Store Web site (<https://www.apple.com/ca/shop/goto/home>) to benefit from educational discounts. Also, you will get the discount if you show your Ryerson student card at any Apple store.

Recommended laptop specifications:

Performance

Features	Main Parameters	Recommendations/Examples
<p>Processor / CPU</p>	<p>Processor Family & Model: Specified implemented technology</p>	<p>Go to http://www.notebookcheck.net/Mobile-Processors-Benchmarklist.2436.0.html to compare the performance of various mobile processors.</p> <p>Recommended:</p> <ul style="list-style-type: none"> - Processors with benchmark results better than Intel Core i7-87xxH/HQ <p>Acceptable:</p> <ul style="list-style-type: none"> - Processors with benchmark results around Intel Core i7-7700HQ <p>Not acceptable:</p> <ul style="list-style-type: none"> - Intel Core i5, i3, Atom, Celeron series - Low power Ultrabook i7 processors. - Warning: it is easy to mistake the low power dual core i7 from the more powerful, recommended quad core i7 above. Avoid processors which have a “u” at the end of their name (such as i7 7600u)
<p>Memory / RAM</p>	<p>Size: As architectural related software systems process a lot of information, amount of memory determines speed of operations. Basically having more memory is better.</p>	<p>Recommended: 16 GB or more</p> <p>Acceptable: 8 GB</p> <p>Not acceptable: Anything less than 8 GB</p>

	<p>Expandability: Is it possible to add more memory in the future?</p>	<p>If you choose a laptop with 8 GB of RAM only, check that it has a free memory slot to upgrade it to 16 GB RAM in the future.</p>
<p>Graphics Card / Graphics Controller / Video Card</p>	<p>OpenGL and DirectX support: Graphic applications are built on two “foundations”: OpenGL and DirectX. OpenGL is more oriented to professional applications; DirectX is more oriented to games.</p>	<p>Choose a laptop with a graphics card that supports OpenGL</p>
	<p>Type of video memory: There are 2 technologies. Cheaper graphics cards share memory space with the computer’s main memory (RAM); discrete/professional graphics cards have their own dedicated memory.</p>	<p>Choose a laptop with dedicated video memory. If graphics memory is described as “shared” or “dynamically allocated”, then the laptop won’t make a good choice.</p>
	<p>Manufacturer: The Graphics Card market is a dedicated market and the lead manufacturers usually offer better products</p>	<p>Look for NVidia or ATI/AMD-based video card. Intel is not well known as a graphics video card manufacturer. Don’t buy a laptop if it has only one graphics card and the card is from Intel.</p>
	<p>Family of Graphics Card: Usually graphics cards from the same family share the same technological platform</p>	<p>Go to http://www.notebookcheck.net/Mobile-Graphics-Cards-Benchmark-List.844.0.html to compare performance of particular graphics cards. Enable both “Cinebench R15 OpenGL 64Bit” and “Cinebench R11.5 OpenGL” tests as OpenGL support is critical.</p>
	<p>Size of Video Memory: Generally, the larger the video memory, the faster the graphics processing speed</p>	<p>Recommended: 3 GB or more Acceptable: 2 GB</p>
	<p>Size: How much data you can store on your HDD</p>	<p>500 GB or more is a better choice. Hard drive sizes of 250 GB may be adequate during your first year, but you will find it to be too small in the upper years.</p>
<p>Hard Drive / HDD</p>		

	<p>Rotation Speed (RPM): Closely relates to data access time. Higher/faster is better.</p>	<p>Recommended: SSD Drive Acceptable: 7200 RPM/5400 RPM HDD</p>
	<p>Technology: Solid State Drive technology is becoming more mainstream; this is a faster alternative to traditional Hard Drives.</p>	<p>Solid State Drive (SSD) provides a very short boot up time, they are on average 10+ times faster than a regular (spinning disk) hard drive.</p>
<p>Operating System / OS</p>	<p>The OS is set of programs that your computer uses to perform basic functions, such as start-up, running applications, and controlling components and peripherals on your computer.</p> <p>A 64-bit OS will effectively manage more than 2 GB of RAM.</p>	<p>Recommended:</p> <ul style="list-style-type: none"> - Windows 10 Pro 64-bit <p>Acceptable:</p> <ul style="list-style-type: none"> - Windows 10 64-bit - Windows 8.1 64-bit <p>Acceptable:</p> <ul style="list-style-type: none"> - Mac OS X (you will need to buy and install Windows as a second OS) <p>Not acceptable:</p> <ul style="list-style-type: none"> - Linux, iOS, Android, Chrome OS

Usability/Health

Features	Main Parameters	Recommendations/Examples
Display	Screen size	<p>Recommended: 17" (but heavy), 15" Not a good choice: 13" or less</p>
	<p>Screen Type: Technology of screen matrix</p>	<p>Recommended: - Matte screen (usually IPS panel) Not recommended for persons with vision-related problems: - Glass/glossy screens in bright lightning conditions</p>
Weight	Weight	<p>Most powerful laptops can be quite heavy; they can weigh more than 8 lb. Manufacturers often label such laptops as</p>

		<p>“Mobile Desktops” or “Mobile Workstations”. It may be challenging and inconvenient to carry a heavy laptop when commuting to/from school. Lightweight laptops (ultrabooks) are more expensive than laptops with the same performance that are not optimized for weight.</p>
<p>Warranty</p>	<p>Additional Warranty: Many laptop manufacturers offer various upgrades/extensions to their standard warranty</p>	<p>Recommended: Purchase “3 year extended warranty” if the standard warranty on your laptop is 1 year. If you think that over time your laptop might incur accidental physical damage (i.e. cracks from drops or liquid spill), we recommend purchasing “Accidental damage warranty” coverage as well.</p>

References

Laptop reviews and various performance ratings are available here:

<http://www.notebookcheck.net/FAQ-Tips-Technics.123.0.html>

CPU, Video and other performance ratings are available here:

<http://www.cpubenchmark.net>