

Recommended Computer Hardware for Students in Civil, Environmental and Geological Engineering Programs

Undergraduate students are not required to purchase computers as computer labs are provided by the Department of Civil and Environmental Engineering (CEE) the Faculty of Engineering (FOE). CEE provides access to the [Departmental labs](#) and FOE provides access to general use [public computer labs](#).

However, we *recommend* each student purchases a mid-range laptop with the processing power, memory, storage space and display resolution to support moderate 3D graphics work. In addition, students will want to ensure they have warranty protection for their purchase. We recommend you spend \$2,000 - \$2500 for a laptop with the *minimum* specifications & warranty.

NOTE: When buying hardware/software, verify you apply the appropriate educational discounts. The [Waterloo Store](#) may have deeper educational discounts for the product you're looking for. You may contact them at wstore@uwaterloo.ca

1. Mandatory Minimum Laptop Requirements

Hardware component	Specification	Comments
Processor	Intel Core i5 or AMD Ryzen 5	Minimum 4 cores, 8 threads.
Display	1920 x 1080 pixels resolution minimum	15-inch screen is preferable.
Memory	16 GB RAM minimum	RAM = Random Access Memory
Storage	256-500GB M.2 style SSD storage drive minimum	SSD = Solid State Drive Anything smaller or slower than this will not be sufficient.
Network	Wi-Fi 5 (aka 802.11ac) minimum, 2x2 fine or Wi-Fi 6 (802.11ax)	Wireless '802.11ax' type is more future proof
Video card	2GB minimum - dedicated memory	Discrete (not integrated) graphics are preferable. NVIDIA/AMD recommended.
Ethernet port or adapter	10/100/1000BASE-T Gigabit Ethernet	Required for classroom use.
Webcam	HD Webcam built-in	Required for classroom use.

Some examples of laptop models meeting the above requirements:

Make	Models	Website
IBM/Lenovo	ThinkPad Series	https://www.lenovo.com/ca/en/thinkpad
Dell	XPS Series	https://www.dell.com/en-ca/shop/dell-laptops/sf/xps-laptops
Asus	Asus ZenBook 15 Series	https://www.amazon.ca/Asus-Ultra-Slim-i7-10510U-Innovative-UX534FTC-XH77/dp/B07YZ1WR6H
Microsoft	Surface Series	https://www.microsoft.com/en-ca/surface

2. Recommended Supplementary Purchases

Hardware component	Specification	Comments
Extended Warranty (Highly recommended)	3 year minimum	A recommended part of any laptop purchase, which ensures a greater return on investment. Accidental upgrade to warranty is advisable if it fits your budget.
Mouse	Ergonomic if possible	Subjective; should be comfortable for you. A mouse can provide better control and in some ways is superior to a standard track pad.
Wireless Keyboard		Provides additional comfort and flexibility.
Separate Screen	Larger resolution display screen (24-27inch)	A recommended purchase for professional work. Can be budgeted under \$200.
Portable Monitor	ASUS MB MB169B+ 15.6" LED-Lit Monitor	Make sure connectivity is compatible with your laptop
Headset	USB/Bluetooth with mic	Subjective; should be comfortable for you.
USB 3.0 Flash Drive, or Thunderbolt/USB external Hard Drive	32 GB or better	See section 6 on Data Security for more information. Note: A USB <i>Flash Drive</i> is not adequate as a primary means of backup.
Stylus	Wacom Graphics Tablet recommended unless you have a pen-enabled laptop	https://www.amazon.ca/Wacom-Wireless-Software-Included-CTL4100WLK0/dp/B079J2FSQ7
Laptop Stand	Prevents overheating and lengthens laptop life	https://www.amazon.ca/AmazonBasics-Ventilated-Adjustable-Laptop-Stand/dp/B00WRDS8H0

NOTE: Your individual computer needs will vary. You may choose to purchase additional supporting equipment such as a backup hard drive, a small desktop printer, docking station, etc.

3. Software

- **Windows 10 (Microsoft)**

Windows 10 is provided free of charge to UW students. Activate your account at: <http://uwaterloo.onthehub.com/> using your WatIAM username and password

- **Office 365**

Office 365 is provided free of charge to UW students for Microsoft platforms. Activate your account at <https://uwaterloo.ca/office-365/> using your WatIAM username and password

- **AutoDESK**

AutoDESK is available free of charge to UW students for Microsoft platforms. Activate your account at <https://www.autodesk.com/education/free-software/featured>

- **Azure for Education**

Students receive developer tools from Microsoft at no cost. This includes software such as Project, Visio and operating systems. For access sign in here: <https://azureforeducation.microsoft.com/devtools>

4. Data security

Students are responsible for their own data security. Back up often, and to different media; reduce data loss. Flash memory (USB Keys) has a finite number of program-erase cycles; please don't use it as your only backup medium. USB drives are a better for back up.

We also encourage students to take advantage of the secure network storage space provided by Engineering – the [N: Drive](#). Microsoft's [OneDrive](#) is also available for storage.

5. Technical Support

- **CEE**

[Civil and Environmental Engineering Computing](#) (CEEC) is available to consult with students. CEEC provides general support for Windows platforms. Application-level support for course software is not provided, students should seek support from an instructing faculty member.

More information on the location of helpdesks and contact information is available [online](#).

6. Financial support

Ontario Student Loans now provide support for purchasing a computer. See “How student loans are determined” at: <http://osap.gov.on.ca/>

7. Questions

[Contact us](#).