



# Computer Hardware/Software for Students in Architectural Engineering

As a student in the Architectural Engineering program at the University of Waterloo (UW), you will use computers in several lecture courses and in the design studio. Each student workstation includes locked storage for a laptop. Because you will be moving between the studio, the library, and classrooms, and traveling on work terms, you must have a laptop. This is an essential tool for your academic studies.

In addition to your own equipment, 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](#). The first formal teaching that involves computers begins in the first term. Each student needs 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; bear in mind prices and models can change.

**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](mailto:wstore@uwaterloo.ca).

## 1. Mandatory Minimum Laptop Requirements

Hardware component	Specification	Comments
<b>Processor</b>	Intel Core i7 or AMD Ryzen 7	Minimum 6 cores, 8 threads
<b>Display</b>	1920 x 1080 pixels resolution minimum	15-inch screen is preferable
<b>Memory</b>	16 GB RAM minimum	RAM = Random Access Memory
<b>Storage</b>	512 GB M.2 style SSD storage drive minimum	SSD = Solid State Drive. Anything smaller or slower than this will not be sufficient
<b>Network</b>	Wi-Fi 5 (aka 802.11ac) minimum, 2x2 fine or Wi-Fi 6 (802.11ax)	Wireless '802.11ax' type is more future proof
<b>Video card</b>	4GB minimum 8GB recommended	Discrete (not integrated) graphics are preferable. NVIDIA/AMD and Direct X11 or above required.
<b>Ethernet port or adapter</b>	10/100/1000BASE-T Gigabit Ethernet	Required for classroom use
<b>Webcam</b>	HD Webcam built-in	Required for classroom use



Some examples of laptop models meeting the above requirements:

Make	Models	Website
IBM/Lenovo	ThinkPad P-Series or similar	<a href="#">Lenovo Canada: Mobile Workstation Laptop   ThinkPad P Series Laptops</a>
Dell	XPS Series	<a href="#">15 inch Dell XPS Laptops - Dell Laptops   Dell Canada</a>
Asus	Asus ZenBook 15 Series	<a href="#">ASUS Canada: Zenbook Pro 15 UX535   Laptops For Home</a>

**NOTE:** We do not recommend the purchase of tablet or laptop-tablet hybrids as your main device as it will not be sufficient to run programs necessary for this program.

## 2. Recommended Supplementary Purchases

Hardware component	Specification	Comments
<b>Extended Warranty (Highly recommended)</b>	3 year Lenovo \$145.00 3 year Premium Support Dell \$160.00	A recommended part of any laptop purchase, which ensures a greater return on investment
<b>Mouse</b>	Multiple buttoned mouse with scroll wheel	Having a mouse than can use macro can aid in productivity and efficiency
<b>Separate Screen</b>	Larger resolution display screen (24-27inch)	A recommended purchase for professional work. Can be budgeted under \$200
<b>Portable Monitor</b>	Make sure connectivity is compatible with your laptop	<a href="#">ASUS ZenScreen 15.6" 1080P Portable Monitor</a>
<b>USB 3.0 Flash Drive, or Thunderbolt/USB external Hard Drive</b>	32 GB or better	See section 6 on Data Security for more information. Note: A USB Flash Drive is not adequate as a primary means of backup
<b>Headset</b>	USB/Bluetooth with Mic	Subjective; should be comfortable for you
<b>Stylus</b>	Wacom Graphics Tablet recommended, unless you have a pen-enabled laptop	<a href="#">Amazon.ca: Drawing Tablet VEIKK A15 10x6 inch Graphics Pen Tablet with Battery-Free Passive Stylus and 12 Shortcut Keys (Red)</a>
<b>Laptop Stand</b>	Prevents overheating and lengthens laptop life	<a href="#">Besign LS10 Aluminum Laptop Stand</a>

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



### 3. Apple or Microsoft?

While Architectural Engineering has previously supported Apple applications, in the future we are **no longer recommending** the use of Apple-based platforms and operating systems.

### 4. Required Software

Required Software	How to obtain
Windows 10	Windows 10 is provided free of charge to UW students. <a href="#">Activate your Windows account</a> using your WatIAM username and password
Office 365	Office 365 (Word, PowerPoint, Excel and more) is provided free of charge to UW students for Microsoft platforms and can be installed on up to 5 devices. <a href="#">Activate your Office 365 account</a> using your WatIAM username and password
AutoCAD/Revit	AutoDESK is available free of charge to UW students for Microsoft platforms. <a href="#">Activate your Autodesk account</a>

### 5. Optional Software

Optional Software	How to obtain
Rhino	Rhino is available to UW students on computers in a computer lab. We offer students the opportunity to purchase a student license at a considerably discounted rate, at the beginning of the 1B academic term. It is also purchasable in the <a href="#">Waterloo Store</a>
Adobe Creative Cloud	Available in the <a href="#">Waterloo Store</a>
OneDrive	OneDrive is provided free of charge to UW students for Microsoft platforms and offers 5TB of cloud storage. <a href="#">Activate your Office 365 account</a> using your WatIAM username and password
Azure for Education	Students receive developer tools from Microsoft at no cost. This includes software such as Project, Visio and operating systems. <a href="#">Access Azure Dev Tools for Teaching</a>

**NOTE:** We strongly encourage students NOT to purchase Rhino or the Adobe Creative Cloud prior to starting Architectural Engineering in Fall. The course instructor will advise when this software becomes a requirement.

## 6. Licensing

Most professional software packages used in the program offer a free or a discounted academic license option for students. However, it is important to note that software licensing agreements and pricing change frequently and without notice. Students will be expected to acquire licenses for their software during the length of the program.

## 7. 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 do not use it as your only backup medium. USB drives are 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.

## 8. Technical Support

- **Waterloo**  
[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, but direction to the proper people for support is provided to students. CEEC provides hardware and [software support](#) for all department-level computing facilities. You can also email [civrt@uwaterloo.ca](mailto:civrt@uwaterloo.ca) for help.
- **Cambridge (Third year students only)**  
[Architecture, Computing and Media \(ACM\)](#) staff make themselves available to consult with students. ACM provides general support for Windows and Apple platforms and helps with network connectivity problems and virus/spyware removal. Application-level support for CAD modelling software is outside ACM's expertise; for this software, students should seek support from an instructing faculty member.
- [Faculty of Engineering Computing Support](#)
- [Campus-Wide Information Technology Support](#)

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

## 9. Financial support

[Ontario Student Assistance Program](#) now provides support for purchasing a computer.

## 10. Questions

Contact [archeng@uwaterloo.ca](mailto:archeng@uwaterloo.ca).