

# 2021-2022 Computer Specifications

## For the Class of 2025

Required laptop specifications for freshmen students entering the Bagley College of Engineering in the fall of 2021 have been established. Based on our years of experience with our laptop requirements, we do not recommend students purchase laptops until mid-June or early-July. This provides adequate time to order and receive the laptop.

Students who are transferring from another institution are only required to meet the computer requirements in effect at the time they were freshmen.

Requirements for 2022-2023 academic year will be posted in the summer of 2022.

## Minimum Configuration

These specifications are only for freshmen entering school during the fall 2021 semester.

Transfer students should follow the specifications in place at the time they were freshmen.

## Notes on Purchase of a Laptop

The information provided below is sufficient for you to purchase a laptop. We are not able to review individual systems, provide additional guidance on suggested vendors, or tell whether or not a specific model will work. If the laptop meets or exceeds the specifications below, there should be no issues. Please note the recommendation against purchasing Macs for engineering work. This is not bias but is based on experience. If you chose to ignore our recommendations, you do so at your own risk.

## Microsoft Windows Laptops

### Minimum Hardware Specifications

- Laptop computer
- Intel Core i5 processor or AMD Ryzen 5 (faster processing speeds are recommended)
- 16 GB RAM
- 500 GB Hard drive
- 15 in. screen
- Camera capable of supporting web conferences.
- Video screen with resolution of 1920 x 1080. Computers with 4K displays may have to be operated at a lower screen resolution to be compatible with some software used. Students planning to major in Aerospace, Biological, Biomedical, or Mechanical Engineering will make use of SolidWorks. There have been some reported issues of

graphics cards not being compatible with this program. It is possible an updated version of the program will address this issue. For now, those ASE, BE, BME, and ME affected students may want to

consult <http://www.solidworks.com/sw/support/videocardtesting.html> for a list of tested and certified graphics cards for SolidWorks.

- IEEE 802.11 wireless capability (ac, g, or n are the most commonly used, a and b are not supported).
- Ethernet (network) card. A USB-to-Ethernet adapter can be purchased if the laptop does not come with an integrated Ethernet port.
- 1 GB minimum USB Flash Drive (thumb drive, memory stick, etc.) to allow easy transfer of files between computers.

### Required Software

- Microsoft Office. All students will need access to Microsoft Office including Word, Excel and PowerPoint. Industrial and systems engineering students will also need to have Microsoft Access. Through the Microsoft Student & Teacher Advantage Program, active students are entitled to install Microsoft Office on up to five personally-owned laptop and desktop computers at no cost. For more information, visit <https://servicedesk.msstate.edu/TDClient/KB/ArticleDet?ID=1353>.
- Windows 10 or higher. As part of the MSU Microsoft EES agreement, current MSU students can download one copy of Windows 10 Education Operating System at no cost. For more information, visit <https://servicedesk.msstate.edu/TDClient/KB/ArticleDet?ID=1620>.
  - **\*\*NOTE:** Windows 10 or higher except as noted in the following:  
Students planning to major in Aerospace, Biological, Biomedical, or Mechanical Engineering will make use of SolidWorks. Current versions of Solidworks only work with Windows 10. Until Dassault Systems updates Solidworks to support Windows 11, any laptop purchased with Windows 11 needing this software will have to be downgraded. Information on obtaining Windows 10 Education can be found at <https://servicedesk.msstate.edu/TDClient/45/Portal/KB/ArticleDet?ID=1620>. Information on supported operating systems in Solidworks can be found at <https://www.solidworks.com/support/system-requirements>.
- Antivirus software. Students must have anti-virus software installed on their computers. Windows Defender, which comes with Microsoft Windows, is preferred.

### Data Backup

Students must read through the section at the end of this page on data backup and the importance of protecting your data.

## **Suggested Vendors**

Through a special partnership agreement, the Bagley College of Engineering has worked with Dell to provide discounted pricing on Dell laptops that meet or exceed the college requirements. By clicking on the link below, you will be directed to a website that will allow you to select and customize a Dell laptop. This is provided as a service to our students and prospective students. It is not required that you purchase a Dell. [Click here to access your Premier Dell.com site.](#)

Be sure to review the minimum laptop specifications. If you have questions or experience any problems with Dell's pages, please call Dell at 1.866.257.4711.

Another option for computer purchases would also be HP. Again, it is not required that you purchase a Dell or an HP computer, this is just an option that we share here as a service to our students.

## **Apple Mac Computers**

The Bagley College of Engineering encourages students think carefully before purchasing an Apple Mac computer due to the incompatibility of some required engineering software that is not available in MacOS versions. However, some students already have Apple Mac computers or wish to purchase one after considering possible software issues. If you choose to use a Mac, it must meet the minimum specifications below and note that it will be more expensive than a Windows-only machine.

Support for Macs is limited on campus. The Bagley College of Engineering will not be able to provide assistance to any student who is running a pirated, borrowed, or bootlegged copy of Windows. Please use one of the methods described in the software section below for obtaining a valid copy of Windows.

### **Apple Mac Minimum Hardware Requirements**

- MacBook Pro
- Intel Core i5 or higher. (Faster processor speeds are recommended, see note below regarding M1 processors.)
- 16 GB RAM (32 GB is encouraged as budget permits.)
- 500 GB Hard drive
- Minimum screen size of 15 in. See note under Windows machines for SolidWorks compatibility.
- Camera capable of supporting web conferences.
- IEEE 802.11 wireless capability (ac, g, or n are the most commonly used, a and b are not supported).

- Ethernet (network) card. A USB-to-Ethernet adapter can be purchased if the laptop does not come with an integrated Ethernet port.
- 1 GB minimum USB Flash Drive (thumb drive, memory stick, etc.) to allow easy transfer of files between computers.

## Required Operating System (OS)

### Apple Silicon aka M1 Processors

Apple has recently started using its own microprocessors known as Apple Silicon or M1 processors. This is a departure from the Intel processors previously used. Although Apple Silicon should be able to run apps developed based on the Intel processors, using special code within the OS, we have not been to do any extensive testing of the processors. And while we are not aware of any compatibility issues now, our experience is limited, and we cannot guarantee issues will not arise. Should you choose a Mac with these newer processors, please understand that you are doing so at your own risk and we may not be able to offer any support should you have a software issue.

macOS Big Sur (11.1) or later. For security reasons, we encourage students always run the latest version of the Operating System. Students who have an Apple Mac running macOS 10.14 or earlier should exercise caution before upgrading to macOS 10.15 or 11.1. All 32-bit apps will need to be uninstalled before upgrading and then 64-bit versions of those apps will need to be installed after upgrading. Please see <https://support.apple.com/en-us/HT208436> for more information.

## Required Software

- Microsoft Office. All students will need access to Microsoft Office including Word, Excel and PowerPoint. Industrial and systems engineering students will also need to have Microsoft Access. Through the Microsoft Student & Teacher Advantage Program, active students are entitled to install Microsoft Office on up to five personally-owned laptop and desktop computers at no cost. For more information, visit <https://servicedesk.msstate.edu/TDClient/KB/ArticleDet?ID=1353>.
- Microsoft Windows 10 Education. As part of the MSU Microsoft EES agreement, current MSU students can download one copy of Windows 10 Education Operating System at no cost. For more information, visit <https://servicedesk.msstate.edu/TDClient/KB/ArticleDet?ID=1620>.
- Antivirus software. Students must have anti-virus software installed on their computers. There are several programs available for macOS, and students should use one they prefer.
- Virtualization software (please choose only one):
  - Parallels Desktop 16 for Mac: [parallels.com](https://parallels.com)
  - VMware Fusion 12 for Mac: <http://www.vmware.com/products/fusion.html>

Although there are other dual-boot systems available (BootCamp and Virtualbox for example), our faculty have found that Parallels Desktop or VMware Fusion works best for the software we use, and they are the only systems that will be supported by the college. You can wait until you arrive on campus to purchase this software. It may not be required for your specific major, and if it is required, you may be able to delay its purchase for a few semesters.

## **Data Backup**

Students are strongly encouraged to have a method for backing up data on their computer at regular intervals.

Students can purchase an external, portable hard drive which can be used for computer backups and storage of large files. These are reasonably priced and available in various capacities. For Mac users, an external drive running the macOS built-in Time Machine is also an excellent method to protect your data.

Enrolled MSU students have access to Microsoft OneDrive with 5TB of online storage. Information for using this service and syncing with Windows and Mac PCs can be found at <https://servicedesk.msstate.edu/TDClient/KB/ArticleDet?ID=1521>.

Additionally, students may want to subscribe to an on-line service such as Backblaze, Carbonite, or others to use for automatically backing up files. Those using Apple Macs should certainly implement Time Machine, which is part of the MacOS.

We cannot over-emphasize the importance of performing regular backups of important documents and keeping your backup in a separate location from your laptop. Should your laptop be lost or damaged, you will still have your important documents on your external data source, which could then be used on another computer until yours is replaced or repaired. Lost or damaged laptops are not acceptable excuses for missing assignments.

## **Printers**

We do not set specifications for printers and there is no requirement for a student to own one. There are facilities on campus that will allow students to print, or students can purchase any printer of their choice from the multitude of vendors available. When/if purchasing a printer, remember to factor the cost of toner or ink into the total cost of ownership.