2022-2023 Computer Specifications

All UH students majoring in Computer Information Systems in the College of Technology are required to have a laptop computer that meets specifications established at the time the student declares CIS as their major. If a student purchases a laptop according to these specifications, the student should not have to replace the hardware (due to obsolescence) before completing the degree plan in four years. However, the software must most likely be upgraded while pursuing the CIS degree.

The computer will be used in CIS classes and for assignments outside of class. We recommend that new or transfer students purchase laptops in mid-June or early July of the year they enter UH to allow adequate time to order and receive the laptop before classes begin. Waiting to purchase until mid-summer enables students to acquire laptops with the latest technological advances.

Required laptop specifications for students entering UH in the 2023-2024 academic year as Computer Information Systems majors will be posted in the spring of 2023.

Required Laptop Configurations

Three hardware configurations are provided for laptop computers running Microsoft Windows OS: minimum, recommended, and best. One configuration is provided for Apple Mac laptop computers.

Notes on Purchase of a Laptop

The information provided below will guide you to purchase a laptop with enough capability. We cannot review individual systems, provide guidance on preferred manufacturers or vendors, or tell whether a specific model will work. If the laptop meets or exceeds the specifications below, there should be minimal issues.

Microsoft Windows Laptop Computer – Minimum, Recommended, and Best Hardware Specifications

Minimum Hardware Specifications

- It must be a laptop computer.
- Intel Core i5 or i7 Quad-core processor (Intel 11th Generation or newer, minimum 1.9 gigahertz) or AMD Ryzen 5 or 7 Quad-core (AMD 5000 or 6000 series Ryzen or newer, minimum 1.9 gigahertz)
- 24 GB RAM (DDR4 SDRAM or newer).
- 500 GB SSD.
- Integrated Graphics card or Dedicated Graphics card.
- 13" – 15'' screen (minimum resolution of 1920 x 1080)
- IEEE 802.11 wireless capability (ac, g, or n are the most used).
- HDMI output (integrated or through an adapter)
- A webcam (integrated or external).
- A headset microphone (handy if the class or office hours are delivered via web conferencing tools)
- Four-year warranty with support (a warranty that provides on-site services provides better continuity of use than a warranty that requires the device to be shipped for service)
- 1 GB minimum USB Flash Drive (thumb drive, memory stick, etc.).
- Minimum 3 hours battery life.

Recommended Hardware Specifications

- It must be a laptop computer.
- Intel Core i7 Quad-core processor (Intel 11th Generation Core i7 or newer, minimum 2.3 gigahertz) or AMD Ryzen 5 or 7 Quad-core (AMD 5000 or 6000 series Ryzen or newer, minimum 2.3 gigahertz).
- 32 GB RAM (DDR4 SDRAM or newer).
- 500 GB SSD.
- Dedicated Graphics card (minimum 2GB GDDR5 or GDDR6)
- 14" – 15'' screen (minimum resolution of 1920 x 1080)
- IEEE 802.11 wireless capability (ac, g, or n are the most used).
- HDMI output (integrated or through an adapter)
- An integrated webcam.
- A headset microphone (handy if the class or office hours are delivered via web conferencing tools)
- Four-year warranty with support (a warranty that provides on-site services provides better continuity of use than a warranty that requires the device to be shipped for service)
- 1 GB minimum USB Flash Drive (thumb drive, memory stick, etc.).
- Minimum 4 hours battery life.

Best Hardware Specifications

- It must be a laptop computer.

- Intel Core i7 Quad-core processor (Intel 11th Generation Core i7 or newer, minimum 2.9 gigahertz) or Intel Core i9 Six-core processor (Intel 11th Generation Core i9 or newer, minimum 2.9 gigahertz) or AMD Ryzen 7 or 9 Hexa-core (AMD 6000 series Ryzen or newer, minimum 2.9 gigahertz).
- 32 GB RAM (DDR4 SDRAM or newer).
- 500 GB SSD.
- Dedicated Graphics card (minimum 4GB GDDR5 or GDDR6)
- 14" – 15'' screen (or larger, minimum resolution of 1920 x 1080)
- IEEE 802.11 wireless capability (ac, g, or n are the most used).
- HDMI output (integrate or through an adapter)
- An integrated webcam.
- A headset microphone (handy if the class or office hours are delivered via web conferencing tools)
- Four-year warranty with support (a warranty that provides on-site services provides better continuity of use than a warranty that requires the device to be shipped for service)
- 1 GB minimum USB Flash Drive (thumb drive, memory stick, etc.).
- Minimum 5 hours battery life.

Required Software Specifications for Microsoft Windows Laptop Computers

Students are responsible for installing needed software on their laptops. Generally, there is good information about installing software that can be found online. Neither College of Technology (CoT) IT staff nor the CIS faculty is responsible for software installation. You, as a CIS major, are responsible for performing software installation. However, in some classes, faculty will provide documentation about installation or direct students to online information.

Operating System: Windows 12 or higher. For security reasons, we encourage students always to run the latest operating system version.

Office Productivity Software: Microsoft Office. All students, once enrolled, have access to Microsoft Office 365, where Word, Excel, and PowerPoint can be run through a browser regardless of the machine's OS. To meet requirements in some CIS courses, students will also need to download, install, and run desktop versions of these tools, as well as Microsoft Access.

DevOps Tools: Microsoft Visio and Microsoft Project. All CIS students, once enrolled, have access to Microsoft Visio and Microsoft Project through Microsoft Azure DevOps Tools.

Antivirus software: Students must have anti-virus software installed on their computers. Windows Defender comes with Microsoft Windows and provides the necessary protection.

Virtualization Software: VMware Workstation Pro 16 (a license is available to students enrolled in specific CIS courses where it is required)

Apple Mac Computers

College of Technology computing laboratories on UH Main Campus, open-access and those used for in-class instruction, are populated with computers that run Microsoft Windows OS and a variety of software for that environment. Thus, the Computer Information Systems curriculum is compatible with computers in the College of Technology computing laboratories. Because modern software often exists in versions compatible with both Microsoft Windows OS and Mac OS, students may prefer to purchase and use Apple Mac hardware and compatible software for their CIS courses. While the Computer Information Systems faculty neither recommend nor universally prefer one hardware/OS platform, many faculty members do develop their instructional material with the College of Technology computer laboratories in mind. Faculty members are not required or expected to create classroom materials in support of student use of an OS or other software that is different from what is maintained in the College of Technology computing laboratories.

However, some students already have Apple Mac computers or wish to purchase one. If you choose to use a Mac, it must meet the minimum specifications below.

Apple Mac Minimum Hardware Requirements

- It is an Apple Mac laptop, i.e., a MacBook Pro or MacBook Air computer.
- M2 or M1Pro processor (or better; faster processor speeds are recommended.)
- 24 GB RAM (32 GB is encouraged, as budget permits)
- 500 GB SSD.
- Minimum screen size of 13.3 in.
- IEEE 802.11 wireless capability (ac, g, or n are the most used, a and b are not supported).
- HDMI output (integrated or through an adapter)
- An integrated webcam.
- A headset microphone (handy if the class or office hours are delivered via web conferencing tools)
- Four-year warranty with support (a warranty that provides on-site services provides better continuity of use than a warranty that requires the device to be shipped for service)
- 1 GB minimum USB Flash Drive (thumb drive, memory stick, etc.)

Required Software Specifications for Apple Mac Computers

Students are responsible for installing needed software on their laptops. Generally, there is good information about installing software that can be found online. Neither College of Technology (CoT) IT staff nor the CIS faculty is responsible for software installation. You, as a CIS major, are responsible for performing software installation. However, in some classes, faculty will provide documentation about installation or direct students to online information.

Operating System: macOS 12 Monterey or later. For security reasons, we encourage students always run the latest version of the Operating System.

Office Productivity Software: Microsoft Office. All students, once enrolled, have access to Microsoft Office 365, where Word, Excel, and PowerPoint can be run through a browser regardless of the machine's OS. To meet requirements in some CIS courses, students will also

need to download, install, and run desktop versions of these tools, as well as Microsoft Access. To run MS Access on a Mac, you must set up and run a virtual machine (VM)[1] running Windows 10, and then install and run MS Access on the VM.

DevOps Tools: Microsoft Visio and Microsoft Project. All CIS students, once enrolled, have access to Microsoft Visio and Microsoft Project through Microsoft Azure DevOps Tools. MS Visio and MS Project run on Windows. Students choosing an Apple Mac computer can run Lucid Chart for diagrams and export their work to MS Visio format. To run MS Project on a Mac, you must set up and run a virtual machine (VM)[1] running Windows 10, and then install and run MS Project on the VM.

Antivirus software: Students must have anti-virus software installed on their computers. Several antivirus programs are available for macOS; students should use one they prefer.

Virtualization Software: VMware Fusion 11.5 for Mac (a license is available <u>only</u> to students enrolled in specific CIS courses where it is required). If you have an M1/2, you may have to use the TechReview version of VMWare Fusion.

[1] CoT will not provide remotely accessible Windows virtual machines. To run a Windows virtual machine, students should purchase a Parallels software license (purchase cost – 1-year subscription Student Edition $40) or use the free UTM software.

Data Backup

Regardless of what hardware and OS you run on your laptop, students are strongly encouraged to have a method for backing up data on their computer at regular intervals.

Enrolled UH 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 on the webpage listed below:

https://uh.edu/infotech/services/office365/onedrive-business/

We cannot over-emphasize the importance of regular backups of important documents and keeping your backup in a separate location from your laptop. Should your laptop be lost, stolen, or damaged, you will still have your essential documents on your external data source, which could then be used on another computer until yours is replaced or repaired. **Many computer vendors offer accidental damage and theft insurance. You should consider this option carefully when you purchase your computer.** <u>Lost, stolen, or damaged laptops are not acceptable excuses for missing assignments.</u>

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 buying a printer, remember to factor the cost of toner or ink into the total cost of ownership.