Computer Hardware Upgrades

What hardware should you have for your lab or computer? What are some of the best practices for storing information on your computer? Learn about these topics and more in this chapter.

- Workstation Refresh Program
- Hardware Upgrades: RAM and SSD
- Memory Upgrade Compatibility
- Check your AppleCare Status
- Student Computer Recommendations

Workstation Refresh Program

Details on the workstation refresh program can be found at Workstation Refresh Program. For additional assistance, email mlml-helpdesktech@sjsu.edu.

Budget User Windows Laptop:
Dell Latitude 3420

$801

- Intel Core i5-1135G7 quad-core CPU
- 8GB RAM
- Nvidia GeForce MX450 graphics processor
- 256GB SSD
- 14" 1366x768 screen
- 41 watt-hour battery

Power User Windows Laptop:
Dell latitude 7430
$1246

- Intel Core i5-1245U 10-core CPU
- 16GB RAM
- Intel Iris XE graphics
- 256GB SSD
- 14" 1920x1080 screen
- 58 watt-hour battery

Standard Windows Desktop:
Dell OptiPlex 7090 Small-form-factor
$944

- Intel Core i7-10700 8-core processor
- 16GB RAM
- AMD Radeon 550 graphics processor
- 256GB SSD

Standard Monitor:
Dell P2422H

- 24" 1920x1080 monitor

MacBook Air:
MacBook Air
$1099

- Apple M2 8-core processor
- 8GB RAM
- 256GB SSD
- 13" 2560x1664 screen
- 53 watt-hour battery

Standard User MacBook Pro:
14" MacBook Pro
$1849

- Apple M1 Pro 8-core processor
- 16GB RAM
- 512GB SSD
- 14" 3024x1964 120hz screen
- 70 watt-hour battery

Power User MacBook Pro:
16" MacBook Pro$3399

- Apple M10 Max 10-core processor
- 64GB RAM
- 1TB SSD
- 16" 3456x2234 120hz screen
- 100 watt-hour battery

Mac Desktop:
Mac mini
$829

- Apple M1 8-core processor
- 16GB RAM
- 256GB SSD

Hardware Upgrades: RAM and SSD

Memory Upgrades

RAM: Random Access Memory

- Upgrading your RAM is the easiest way to get your computer running quicker and smoother. Your computer should have at least 8GB RAM to perform well with modern operating systems and programs.
- **Mac Upgrades:**
  - The RAM on most newer Macs cannot be upgraded. Below is a list of Macs which **cannot** be upgraded:
    - Mac mini (2014, 2020 and newer)
    - MacBook Pro (Late 2012 and newer)
    - MacBook Air (all models)
    - MacBook 12" (all models)
    - iMac (some 21" models 2015-2020, all models 2021 and newer)
  - To check whether your Mac can be upgraded, enter your serial number into Everymac.com's serial lookup tool.
  - How to upgrade your Mac's RAM
  - How to determine how much RAM you need: check your Activity Monitor for Memory Used to determine how much RAM you need.
- **PC Upgrades:**
  - How to Install RAM on your PC

    - How to determine how much RAM you need: check your memory usage and determine how much RAM you'll need.
- Newegg Memory Configurator - Choose the right RAM for your computer

SSD Upgrades

- A Solid-state-drive (SSD) is a storage device for your computer. It is much faster than a hard disk drive (HDD), which was traditionally used for storage in computers. It has no moving parts and its information is stored in microchips.
- Upgrading your computer from a HDD to a SSD will greatly increase the speed. More specifically, loading times and transfer times will speed up. (Copying and moving files).
- Crucial SSD Upgrade Tool - helps determine which upgrade you need.
- **Mac Upgrades:**
    - The storage drive on most newer Macs cannot be upgraded. Below is a list of Macs which **cannot** be upgraded:
        - Mac mini (2018 and newer)
        - MacBook Pro (2016 and newer
        - MacBook Air (2018 and newer)
        - MacBook 12" (all models)
        - iMac (2021 and newer)
    - To check whether your Mac can be upgraded, enter your serial number into Everymac.com's serial lookup tool.
    - Determine which SSD is compatible with your system with the Crucial link above or here. Find your Mac model and check out the buying options for SSD upgrades.
    - To learn about SSD Upgrades for Macs click here.
- **PC Upgrades:**
    - To determine what kind of drive your computer has click here.
    - Use the Crucial link above for buying options.

Memory Upgrade Compatibility

Many online vendors have tools you can use to identify and purchase a memory upgrade for your computer. Both Crucial and NewEgg.com have reliable and easy to use tool that helps find memory that is compatible with your computer.

PC Part Picker is also a great way to judge compatibility of components for any given hardware. Especially when putting together a new PC.

(Be sure to check how many memory slots your computer has and the max capacity of each slot before ordering)

Crucial Memory

NewEgg.com Memory Configurator

PC part Picker

Check your AppleCare Status

You can quickly and easily check to see whether your Mac is still covered under your AppleCare warranty at Apple's Support website: https://checkcoverage.apple.com/

Student Computer Recommendations

Choosing a new computer is an important decision, and we would like to provide recommendations for minimum system requirements that might help you get the most out of your new computer.

Please checkout our KB page for upgrading hardware in your computer to see if minor upgrades could save you the cost of buying a new computer.

Minimum System Requirements

RAM (Random Access Memory)

- At least **8GB** of RAM is recommended
- It is important to have an adequate amount of RAM, because this allows you to run multiple programs and have multiple browser tabs open at the same time without bogging down your computer.
- If you foresee yourself working with more complicated software and having to multitask frequently, you may want to consider purchasing a computer with **16GB** of RAM

Internal Storage

- We recommend at least **512GB** of internal storage
- This will give you enough local storage for the operating system, software programs, data files, pictures, etc.
- In addition, we highly recommend that you backup your computer. For different methods and best practices, visit our Computer Backup KB Page

CPU (Internal Central Processing Unit)

- We recommend having at least a **quad-core** processor
- Although there is a tradeoff between energy efficiency, a quad-core processor allows you to multitask and run several programs at the same time without slowing you down

Internal Drive

- Ensure that the device you are purchasing has a **solid-state-drive (SSD)**
- Having an **SSD** will greatly increase your computer's loading and transfer speeds
- Additionally, if your current device has a hard disk drive, you may be able to upgrade it to a SSD. Check out our Hardware Upgrades KB page to learn more!