Northern Virginia Community College

RECOMMENDED COMPUTER SPECIFICATIONS FOR STUDENTS IN GENERAL STUDIES AND STANDARD USE IN MOST ACADEMIC PROGRAMS (*PROGRAMS WITH SPECIAL REQUIREMENT FOLLOW*)

MAY 2020

NOVA is committed to preparing students for today's workforce and recognizes computers to be an extension of the learning tools needed to be globally competitive. To attend NOVA, students are expected to have a laptop (or a desktop with webcam and microphone) that meets the minimum requirements for their major and internet access at home or through a mobile device hot spot.

NOTE: Chromebooks and iPads are useful but <u>not</u> sufficient to replace a laptop. They will not run all the software typically needed at NOVA.

WINDOWS

Feature	Minimum Recommended (Requires Separate Green Screen for Zoom Virtual Background Use)	Preferred	Rationale for Recommendation
Processor	Intel Core i3 (Windows) Starting at $300 to $400	Intel Core i5 (Windows) Starting at $550.00 to $850.00	The latest Windows operating systems and applications written for it will require advanced processors to be used effectively.
Memory	4GB	8GB	Memory demands for Windows will require at least 4 gigabytes (GB) of memory.
Hard disk	128 GB SATA	256 GB SATA or SSD	This allows for storing of files from classes on the computer. A backup solution is also recommended for storage. SSD will provide a faster overall system.
Optical drive	DVD+/-RW(burns/reads CDs and DVDs)	DVD+/-RW(burns/reads CDs and DVDs)	Recordable DVDs are more capable for backing up and transporting today's larger computer files. May not be a necessity depending on field of study but can be helpful.

Feature	Minimum Recommended	Preferred	Rationale for Recommendation
Wireless Networking	802.11ac	802.11ac	This will allow machines to operate on the 5GHz wireless frequencies that provide increased throughput and roaming performance over some previously installed wireless adapters.
Bluetooth	Bluetooth 4.1	Bluetooth 4.1	Provides for greater accessory attachment
Video RAM	512 MB	1 GB	Windows will require a more powerful graphics card.
WebCam and Microphone	Required	Required	Required to use online proctoring, attend ZOOM or collaboration sessions and have people see you.
USB	Type A 2.0	Type A 3.0 / Type C	Allows access to other devices such as external hard drives, older keyboards & mice, USB thumb drives.
Video Output	Video out: HDMI or DisplayPort	Video out: HDMI or DisplayPort	Provide the ability to connect to an additional monitor for a bigger screen.
Operating system	Windows 10 or Mac OS 10.6* or Higher	Windows 10 or Mac OS 10.6* or Higher	Windows is the preferred operating system on campus for students

*If you wish to use an Apple machine, extra steps and cost may be necessary to install Windows alongside the Mac OS as some applications do not have an Mac OS counterpart. |
| **Battery** | 6 Cell Battery | 9 Cell Battery | 9 cell batteries provide optimum life for the laptop when students are in classes for long periods of time |
| **Software** | Microsoft Office or Office365 | Microsoft Office, Anti-Virus Software | Every laptop should have anti-virus software for |

Feature	Minimum Recommended	Preferred	Rationale for Recommendation
	,Anti-Virus Software		protection in addition to all the latest security patches. Microsoft Office365 available at no cost from VCCS Canvas Portal
Warranty	1 Year Limited Warranty	3 Year Warranty with Complete Care ($359 additional)	The warranty will cover the hardware in the laptop for 3 years in the case of any problems. Complete care / accidental coverage covers accidental damage as well as defective parts.

MACS

Feature	Minimum Recommended	Preferred (if applicable)	Rationale for Recommendation
Processor	Intel Core i3 (Mac) Starting at $999.00	Intel Core i5 (Mac) Starting at $1299.00	The latest Windows operating systems and applications written for it will require advanced processors to be used effectively.
Memory	8GB	16 GB	Memory demands for running MAC OS and Windows will require at least 8 gigabytes (GB) of memory.
Hard disk	128 GB SSD	256 GB SSD	This allows for storing of files from classes on the computer. A backup solution is also recommended for storage.
Wireless Networking	802.11ac	802.11ac	This will allow machines to operate on the 5GHz wireless frequencies that provide increased throughput and roaming performance over some previously installed wireless adapters.
Bluetooth	Bluetooth 4.1	Bluetooth 4.1	Provides for greater accessory attachment

Video RAM	512 MB	1 GB	Windows will require a more powerful graphics card.
WebCam and Microphone	Required	Required	Required to use online proctoring, attend ZOOM or collaboration sessions and have people see you.
USB	Type A 2.0	Type A 3.0 / Type C	Allows access to other devices such as external hard drives, older keyboards & mice, USB thumb drives.
Video Output	Video out: HDMI or DisplayPort	Video out: HDMI or DisplayPort	Provide the ability to connect to an additional monitor for a bigger screen.
Operating system	Mac OS 10.6* or Higher and Windows 10	Mac OS 10.6* or Higher and Windows 10	Windows is the preferred operating system for most students *If you wish to use an Apple machine, extra steps and cost may be necessary to install Windows alongside the Mac OS as some applications do not have a Mac OS counterpart.
Software	Microsoft Office or Office365, Anti-Virus Software	Microsoft Office, Anti-Virus Software	Every laptop should have anti-virus software for protection in addition to all the latest security patches. Microsoft Office 365 available at no cost from VCCS Canvas Portal
Warranty	1 Year Limited Warranty	3 Year Warranty with Complete Care ($300 Additional)	The warranty will cover the hardware in the laptop for 3 years in the case of any problems. Complete care covers accidental damage as well as defective parts.

Northern Virginia Community College

RECOMMENDED COMPUTER SPECIFICATIONS FOR STUDENTS IN IET/CAD/EGR/GIS

May 2020

NOVA is committed to preparing students for today's workforce and recognizes computers to be an extension of the learning tools needed to be globally competitive. To attend NOVA, students are expected to have a laptop (or a desktop with webcam and microphone) that meets the minimum requirements for their major and internet access at home or through a mobile device hot spot.

NOTE: Chromebooks and iPads are useful but <u>not</u> sufficient to replace a laptop. They will not run all the software typically needed at NOVA.

WINDOWS

Feature	Minimum Recommended	Preferred (if applicable)	Rationale for Recommendation
Processor	Intel Core i5 (Windows) Windows Starting at $550.00 to $850.00	Intel Core i7 (Windows) Windows Starting at $900.00 to $1100	The latest Windows operating systems and applications written for it will require advanced processors to be used effectively.
Memory	8GB	16GB	Memory demands for Windows will require at least 4 gigabytes (GB) of memory.
Hard disk	256 GB SSD	512 GB SSD	This allows for storing of files from classes on the computer. A backup solution is also recommended for storage. SSD Drives will provide the fastest systems.
Optical drive	DVD+/- RW(burns/reads CDs and DVDs)	DVD+/- RW(burns/reads CDs and DVDs)	Recordable DVDs are more capable for backing up and transporting today's larger computer files. May not be a necessity depending on field of study but can be helpful.
Wireless Networking	802.11ac	802.11ac	This will allow machines to operate on the 5GHz wireless frequencies that provide

Feature	Minimum Recommended	Preferred (if applicable)	Rationale for Recommendation
			increased throughput and roaming performance over some previously installed wireless adapters.
Bluetooth	Bluetooth 4.1	Bluetooth 4.1	Provides for greater accessory attachment
Video RAM	512 MB	1 GB	Windows will require a more powerful graphics card.
WebCam and Microphone	Required	Required	Required to use online proctoring, attend ZOOM or collaboration sessions and have people see you.
USB	Type A 2.0	Type A 3.0 / Type C	Allows access to other devices such as external hard drives, older keyboards & mice, USB thumb drives.
Video Output	Video out: HDMI or DisplayPort	Video out: HDMI or DisplayPort	Provide the ability to connect to an additional monitor for a bigger screen.
Operating system	Windows 10	Windows 10	Windows is the preferred operating system on campus for students
Battery	6 Cell Battery	9 Cell Battery	9 cell batteries provide optimum life for the laptop when students are in classes for long periods of time (Not applicable on a MAC)
Software	Microsoft Office or Office 365, Anti-Virus Software	Microsoft Office, Anti-Virus Software	Every laptop should have anti-virus software for protection in addition to all the latest security patches. Microsoft Office 365 available at no cost from VCCS Canvas Portal
Warranty	1 Year Limited Warranty	3 Year Warranty with Complete Care	The warranty will cover the hardware in the laptop for 3 years in the case of any

Feature	Minimum Recommended	Preferred (if applicable)	Rationale for Recommendation
		($359 Additional)	problems. Complete care covers accidental damage as well as defective parts.

RECOMMENDED SPECIFICATIONS FOR MUSIC/IET/CAD/EGR

NOTE: MACS are not recommended for GIS. GIS Software does not work well outside a Windows enrvironment.

MAC

Feature	Minimum Recommended	Preferred (if applicable)	Rationale for Recommendation
Processor	Intel Core i5 (Mac) Starting at $1099.00	Intel Core i7 (Mac) Starting at $1649.00	The latest Windows operating systems and applications written for it will require advanced processors to be used effectively.
Memory	8GB	16GB	Memory demands for Windows will require at least 4 gigabytes (GB) of memory.
Hard disk	256 GB SSD	512 GB SSD	This allows for storing of files from classes on the computer. A backup solution is also recommended for storage.
Wireless Networking	802.11ac	802.11ac	This will allow machines to operate on the 5GHz wireless frequencies that provide increased throughput and roaming performance over some previously installed wireless adapters.
Bluetooth	Bluetooth 4.1	Bluetooth 4.1	Provides for greater accessory attachment
Video RAM	512 MB	1 GB	Windows will require a more powerful graphics card.

Feature	Minimum Recommended	Preferred (if applicable)	Rationale for Recommendation
WebCam and Microphone	Required	Required	Required to use online proctoring, attend ZOOM or collaboration sessions and have people see you.
USB	Type A 2.0	Type A 3.0 / Type C	Allows access to other devices such as external hard drives, older keyboards & mice, USB thumb drives.
Video Output	Video out: HDMI or DisplayPort	Video out: HDMI or DisplayPort	Provide the ability to connect to an additional monitor for a bigger screen.
Operating system	Mac OS 10.6* or Higher	Mac OS 10.6* or Higher	If you wish to use an Apple machine for IET/CAD/ENG you will need to have Windows available, extra steps and cost may be necessary to install Windows alongside the Mac OS as some applications do not have an Mac OS counterpart.
Software	Microsoft Office or Office365, Anti-Virus Software	Microsoft Office, Anti-Virus Software	Every laptop should have anti-virus software for protection in addition to all the latest security patches. Microsoft Office365 available at no cost from VCCS Canvas Portal
Warranty	1 Year Limited Warranty	3 Year Warranty with Complete Care ($300 Additional)	The warranty will cover the hardware in the laptop for 3 years in the case of any problems. Complete care covers accidental damage as well as defective parts.

THINGS TO CONSIDER WHEN BUYING A STUDENT LAPTOP COMPUTER
May 2020

Introduction

Intel doesn't make life easier by having several types of processors with multiple speeds and capabilities within those types. Simply stated, you want at least a quad-core processor, meaning newer i5 and i7 processors. The four-digit number that is often listed after the i5 or i7 gives you an idea what generation the chip is, how fast it is compared against others of its class, and other performance info. In general, the higher the number, the better. Intel's latest i5, i7, and i9 processors are into the ninth generation (9000-series) now and come with eight cores of processing power. Unless you're a hardcore gaming fan with a trust fund to burn, that's probably overkill. For more on **Intel's processors, see its site**. If you're looking in the lower price ranges, you may also encounter Windows-based laptops with Intel's i3 (dual core processors) or AMD's Ryzen™ and Athlon™ processors, which can be a tad cheaper.

Graphics chipsets are even more cryptic than computer processors. As with most things, they scale features and performance with price. A more powerful chipset will obviously process graphic info faster and at higher frame rates, but the truth is, unless you're majoring in something like art, design, film, engineering, architecture, or game development, you won't need to spend too much time worrying over graphic chipsets. In most cases, you won't find a computer with a speedy CPU paired with an anemic GPU anyway. So, for most uses, don't sweat this one. Rule of thumb: if it has an nVidia GeForce or AMD Radeon Pro chipset, it's typically better than a standard Intel built-in graphics chipset.

Today, most computers use a **solid-state drive (SSD)**, which is like a higher-storage, built-in flash drive. In theory, it better protects, and accesses stored data because it has no moving parts, like SATA hard disk drives do. Computers with SSDs boot faster, run cooler and quieter, and are simply superior in durability and performance. The tradeoff is that SSDs cost more and therefore tend to have smaller capacities than their older SATA hard drive cousins. In an age of cloud computing (Google Drive, OneDrive, Dropbox, etc.), more of us store our data in the cloud, so more info is offloaded from your local computer to remote storage, which makes a smaller SSD less of an issue. That noted, you may need to lean larger if you're doing film editing, CAD work, or something similar that demands managing huge data files.

It's nice to have an Ethernet port for connecting by cable to a wired computer network if Wi-Fi is spotty. Several USB ports are helpful if you're connecting to a flash drive and a number of wired peripherals such as a separate keyboard, an old printer, or a wired mouse. USB-C is the dominant format of USB now, but having an older USB-A port or two is nice for backward compatibility.

What's no longer essential is a CD-ROM, DVD-ROM, or Blu-Ray optical drive, since they've given way to Wi-Fi and streaming over fast networks. That said, check with your course departments at the college you'll attend to ensure no one is demanding you use an optical drive for anything. You may still find them useful, and are often included on laptops. It should not rule out a laptop if it does not have one.

Online college students take note

Most students don't use a second monitor when on campus, but if you're an online student who is working most often from a home office, having a second monitor attached to your laptop with its existing screen is easier on the eyes and gives more display space to manage windows. This is especially helpful if you want to take notes on one screen and watch an online class in another.

Of course, you'll need a webcam for interacting online, but almost all laptop computers today have one. Also, you may need to pay more attention to graphics chipsets since webinars and online video will become a way of life. A better graphic chipset will ensure smoother video playback and no skipped frames right as your prof is divulging the secrets of the universe.

Notes: The hardware requirements listed above are **general** recommendations for most courses. Some requirements may vary – check your course syllabi for special hardware or software requirements. Lower versions of some software may continue to work but reduced functions or compatibility with other software.

Chromebooks – sold under a number of different manufacturers and sometimes called *Chrome Laptops* are **not recommended**. These computers are for running web-based applications **only**. Some classes may require specialized or locally installed software that will be incompatible with Chromebooks. The Canvas LMS does support Chromebooks in general, but some class related activities may not.

* Reliable High-Speed Internet access is required for all online course and many supplemental tools for face to face courses. Dial-up access is not adequate for many applications. Cellular hot-spots are acceptable depending on type and connection speed – consult your data plan for possible costs.
** Some application functions and services may not be compatible with all mobile devices.

Other Software Requirements
- **Browser:** Firefox (Latest), or Chrome (latest), Edge (Windows 10), Safari 12+. Canvas Browser Compatibility Page. If you have software problems with Edge or Safari, try Firefox and Chrome. Some digital resources work better with those browsers.
Some applications such as Navigate do NOT support Edge or Safari. Firefox and /or Chrome are strongly recommended.
- **Microsoft Office 365** (available from the VCCS for Students) *Google Docs is supported but may require extra steps.

Virus/ Spyware Information
Due to all the infected files with worms and computer virus on the Internet, we encourage students to run antivirus software. It is important that you make sure you run updates on a regular basis to prevent viruses from infecting your computer.

Students, faculty, and staff can now download a Microsoft AntiVirus security product for use on their personal computers at no cost from Microsoft.