School of CSCE
Computer Hardware/Software Specification

Operating System	Windows 10 or 11
CPU	Intel 11th or 12th Generation i5 or i7 CPU ***OR*** AMD Ryzen 5 or 7 5000 Series CPU
RAM	32 – 64 GB
Video Memory	Integrated Video Note: Some courses may require a Graphics Processing Unit (GPU) for computation intensive applications. See Page 2 for more information.
SSD or Hard Disk	1 TB NVME or SSD (Note: HDD will result in slower performance)
Monitor Size	15.6 Inch Display

Additional Note on GPUs

A Graphical Processing Unit (abbreviated GPU) is a special device in a computer that is typically dedicated to computing graphical data/instructions (though it may be used for other applications). This enables the Central Processing Unit(CPU) to process non-graphical instructions much more quickly. This is essential for applications such as **video gaming**, **modeling**, **machine learning**, **artificial intelligence**, and **video editing**.

For more information on GPUs, please visit the following link: https://docs.nvidia.com/cuda/cuda-c-programming-guide/index.html#compute-capabilities

Some of courses may require a dedicated GPU to complete coursework. Any students interested in the applications mentioned above should consider a device with a dedicated GPU.

For students interested in the computational power a GPU can provide and its usage for anything related to graphics processing and more complex operations, see below.

For students interested in gaming or software such as Matlab Simulink, IBM SPSS, VMWare applications, TensorFlow/Keras, Adobe, Solidworks:

- anything with compute capability of over **3.0** (any Nvidia Quadro, RTX, or GeForce Devices)

For more computation intensive applications such as machine learning, neural networks, or AI in general:

- A GPU with compute capability over **6.1** (**3.0** would do the work but at a slower pace) is recommended. Certain devices in Nvidia Quadro, RTX, or GeForce have 6.1 support.
- Ex: Nvidia RTX 3080 Standard (the flagship model of the 3000 series cards) has a compute capability of 8.6.

For students in the AMD Radeon platform:

- There is **no support** for AI applications well established so far (AMD is starting to put their version, but it still needs work. Not enough support as Nvidia so far). It is not recommended to use anything AMD if the student plans to go into AI fields of study, computational design, or related fields. Regarding gaming, there are plenty of options under AMD, which is their forte.

You may find the compute capabilities of any Nvidia device at the following link: https://developer.nvidia.com/cuda-gpus