Course Materials

This course relies heavily on open educational resources and other free resources available on the Internet and from other sources. As such, there is no required book for the class, but useful options for those interested in using purchased, rented, or borrowed books may be suggested in class. There are however required course materials needed to support the projects and learning activities assigned in the class. These required materials are outlined below. If you have any questions, feel free to ask your instructor, teaching assistant, or knowledgeable classmate for guidance.

Please read this list thoroughly as you may already have some of the required items and only need to add missing items to complete your inventory of supplies for the course. These items may be acquired separately or may be available bundled together in kits.

Required

- Raspberry Pi 4, 3B+, or 3. (Raspberry Pi Zero W may suffice but limits your ability to connect peripherals and may require additional work such as soldering on headers. Some sellers offer a Zero W with pre-soldered headers but these still have limited ability to connect to peripherals.)
- 2.5a or 3a power supply/AC adapter with USB-C (Pi 4) or micro USB (Pi 3B+, 3, Zero W) connector to power the Pi. (Some phone chargers will work, but you need to make sure they provide at least 2.5 amperes to make sure the Pi does not “brown-out” under heavy load.)
- 16GB or greater Class 10 microSD card. (8GB may work but might require re-imaging or file cleanup if working on multiple projects with large or lots of files.)
- microSD card reader. (Your computer may already have one of these built-in or you may have an external one. This is necessary for headless setups when you do not have an extra USB keyboard, USB mouse, and a HDMI enabled monitor or TV. The department does have some of these that can be used on campus.)
- A variety of resistors. (These are to reduce the current flowing to some devices such as LEDs to avoid burning them out and most general packs/kits have a variety of useful ones.)
- A couple LEDs. (Color is not that important but a couple green and red ones would be good to have. Color-changing RGB ones are not required but are fun to work with.)
- Push buttons. (You can get away with the tiny ones that come in a lot of kits, but the ones that have pop-on caps or traditional arcade style buttons will be better for projects. Arcade buttons are very nice to have but make sure they come with the micro-switches so you can solder wire to them or connect them with alligator clips.
- Female-to-female or female-to-alligator clip jumper wires. (Many kits only come with male-to-male wires or might also include male-to-female jumper wires but these will require the use of a breadboard/prototyping board which will limit you in some projects. You at least need some way to convert the male pins on the Pi to something you can connect LEDs and buttons to.)

Optional (Not required but nice to have especially for troubleshooting.)

- Electrical tape. (This is to hold together loose connections or insulate connections from accidental short circuits.)
- Raspberry Pi case. (This is just to protect the Pi.)
- Ethernet/Cat5+ cable. (This is useful for quickly connecting your Pi to a router and getting an automatic connection or for direct connections to your main computer.)

  Not Required/Optional (Despite what you may read on the Internet the following items are not required but you may find them useful especially if you are following some tutorials on the Web.)
- USB mouse and keyboard. (This is only necessary if you are not doing a headless setup/configuring the microSD card before you put it in the Pi. If you are using the NOOBS install process you will need the mouse and keyboard.)
- HDMI cable/HDMI enabled monitor or TV. (Again, this is only required if you are not doing a headless setup such as the NOOBS install process.)
- Breadboard/Prototyping board. (A lot of tutorials show circuit layouts using these, but they are effectively just like several multi-outlet extensions for jumper wires. You can use female-to-female or alligator clip wires instead. You can also solder your wires/components together.)
- Ribbon cable and breadboard connector. (Some kits have this to enable you to quickly breakout all the pins from the Pi to connectors on a breadboard.)