Introduction for Avionics

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# Software

## Team Programs

### Microsoft Teams

**Purpose:** Communication for OLVT

**Setup:** Have Microsoft Account

**Download:** [Microsoft Teams](https://www.microsoft.com/en-us/microsoft-teams/group-chat-software)

1. Download and sign into Teams with your VT email
2. Join General and avionics sub-team channels
3. Make sure to have notification enabled
4. Please check at least once per day

**Why is this important?**

We use teams as a communication platform for the team as a whole under the general channel and then divide into sub-team channels.

Please PM me (Rob Siegfried) when you are done so I can add you to our other programs later.

### GitHub and GitHub Desktop

**Use:** Version Control and File Sharing

**Setup:**

1. Goto [GitHub.com](https://github.com)
2. Make an account using your VT email
3. PM team lead on Microsoft Teams with your email to get added to the organization
4. Accept your invitation to the GitHub organization

**Download:** [GitHub Desktop](https://desktop.github.com/)

1. Login using your account
2. Navigate to the in the list on the right side of the window, select the Avionics Education Repository
3. Clone the Avionics Education Repo to your system,   
   **all repos will be made in the /documents/GitHub**
   1. You can also clone any of the other repos to take a look at past and current rocket development
4. Our lessons will now be downloaded to your system in the directory /documents/GitHub/Avionics-Education
5. Feel free to start lesson 1 GitHub Tutorial

**Why is this important?**

GitHub allows our team to work on the same files and keep an updated version that everyone has access to. This avoids conflicts and confusion around members having different versions of design files.

## CAD Programs

### Solid Works

**Setup:**

**Download:**

**Why is this important?**

### Fusion 360

**Setup:**

1. Make an account on [Autodesk.com](https://www.autodesk.com/campaigns/education/fusion-360) with your VT Email
2. You will have to submit proof that you’re a student
3. Wait for a verification from Autodesk

**Download:** [Fusion 360](https://www.autodesk.com/education/edu-software/overview?sorting=featured&filters=individual) from Autodesk

1. Login and make sure that your installation is active
2. Test it out by uploading some CAD Files from the GitHub

**Why is this important?**

Fusion is a CAD modeling software that you can use to make models for our parts of the rocket. Our main use will be to make the layout of the electronics bay and model our electronics sled.

### FreeCAD

**Setup:** No account needed. This is an open-source CAD software, this means it will always be available and free to use and modify.

**Download:** [FreeCAD](https://www.freecad.org/downloads.php)

1. Get Started Right away no account needed or activation
2. Test it out by opening some CAD Files from the GitHub

**Why is this important?**

Having an open-source version of CAD software is a great option to have since we know that it will always be available and at no cost to the end user.

## Electronics Programs

### Tinker CAD

**Setup:** Use your Autodesk account that was set up for Fusion 360.

**Access:** Goto [Tinker CAD](https://www.tinkercad.com/dashboard)

1. Click the Create button and select circuit
2. Create your first design and save it (doesn’t have to be working)

**Why is this important?**

We will use Tinker CAD circuit designs to emulate using Arduinos and making basic circuits that we will later make on real Arduinos.

### Arduino IDE

**Setup:** Ideally have an Arduino or equivalent board

**Download:** [Arduino IDE](https://www.arduino.cc/en/software)

1. Download the MSI installer
2. Follow directions
3. Open Arduino IDE
4. Select the tools tab in the top banner
5. Go to boards
6. Under Arduino AVR select your board
7. Under Ports select the active one
8. You can now experiment with the sketches (example programs) under the files tab

**Why is this important?**

Arduino IDE is the coding interface we will be using to code our Arduinos in order to get them to interact with our sensors and other components.

### VS Code

**Setup:** Have a Microsoft account

**Download:** [VS Code](https://code.visualstudio.com/download)

**Why is this important?**

### Fritzing

**Setup:**

**Download:**

**Why is this important?**

### KiCad

**Setup:**

**Download:**

**Why is this important?**

### Easy EDA

**Setup:**

**Download:**

**Why is this important?**

## FAQ’s

1. **Why do we want multiple CAD software installed?** 
   1. Learning how to adapt and use multiple CAD software will help you learn the principles of design and how to adapt to different programs, depending on your situation there might be versions that are best suited to your needs.

**Setup:**

**Download:**

**Why is this important?**