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# Utilizing Tinkercad

Introduction:

Tinkercad is a user-friendly, web-based application that empowers both beginners and experienced users to create 3D designs and electronic circuits with ease. It serves as an excellent introduction to computer-aided design (CAD) and electronics, making these complex topics accessible to a wide audience.

Applications:

1. **3D Modeling:** Tinkercad allows users to design 3D objects for 3D printing, including prototypes, toys, architectural models, and decorative items.
2. **Electronics Design:** With a library of electronic components, Tinkercad enables users to create and simulate electronic circuits, making it a valuable tool for students and hobbyists learning about electronics.
3. **Education:** Tinkercad is widely used in schools to introduce students to CAD and electronics in an engaging and accessible manner. It helps teach valuable skills in a fun way.
4. **Prototyping:** Designers and engineers use Tinkercad to quickly prototype concepts before moving on to more advanced CAD software, saving time and resources.
5. **Hobby Projects:** Tinkercad is a fantastic platform for makers and DIY enthusiasts to bring their creative ideas to life, from customizing existing designs to inventing new gadgets.

(REQUIRED) Getting Started:

1. Create an Account

* Go to this [link](https://www.tinkercad.com/)
* If you don’t already have an account click on "Sign Up" to create a new account. In our case you can create a “Personal Account”. You can sign up with your email or use a Google or Facebook account, (your UW Email will work perfectly fine).

1. Explore the Tinkercad Dashboard

* After logging in, you'll land on your Tinkercad dashboard. Take a moment to familiarize yourself with the layout.
* You'll see options for 3D Designs and Circuits. Click on either one to get started based on your interest.

1. Start a 3D Design Project

* If you want to create 3D models:
* Click on "Create New Design."
* You'll be taken to the Tinkercad 3D editor. On the right, you'll see a toolbox with shapes and tools.
* Click and drag shapes onto the workplane (the grid area) to create your 3D model.
* Use the tools to manipulate, resize, and rotate objects. You can also change their colors.
* Experiment with combining shapes to make more complex designs.
* Save your project by clicking on "File" > "Save."

# Utilizing Tinkercad (cont.)

1. Start a Circuit Project

* If you're interested in electronics and circuits:
* Click on "Create New Circuit."
* You'll enter the Tinkercad Circuits editor, which provides a virtual breadboard for designing circuits.
* Drag and drop components from the component library onto the workspace. Connect them by drawing wires.
* Use the "Code" option to program microcontrollers like Arduino.
* Simulate your circuit to see how it works.
* Save your circuit by clicking on "File" > "Save."

1. Explore and Learn

* Tinkercad offers a range of tutorials and lessons. To access them, click on the "Learn" tab in the dashboard.
* Tinkercad's tutorials cover various topics, from basic navigation to complex design and circuitry.

# Introductory Modules

Navigation:

1. From the main Tinkercad page go to the top and click the “Resources” drop down menu
2. Click on “Learning Center”
3. In our case we will be focusing on the circuit simulation aspect that Tinkercad offers so navigate down to the “Learn Circuits” header and select “View All”

Modules to Do:

* (REQUIRED) First familiarize yourself with these modules…
  + How to run a simulation
  + Edit components
  + Wire components
  + Add components
  + Introducing the breadboard
  + Ohm’s Law
  + Series and Parallel Circuits
* (RECOMMENDED) Feel free to work on the Micro:bit modules
* (RECOMMENDED) Supplement your learning with either of these YouTube playlists
  + [Autodesk Tinkercad](https://youtube.com/playlist?list=PLV6cmKvnKRs5geApVORPW79U6s3wpa0Ht&si=Cu4dVKSppD7iBKyz)
  + [Education is Life](https://youtube.com/playlist?list=PLVTsfY7Kr9qhkfmq85MH2xObFIELuq_Vo&si=fBwP9UvxfzyE11jL)