



Learn to 3D Print: SketchUp

SketchUp Make is a popular 3D modeling software, available for free download at sketchup.com. The version of SketchUp we are using is the free SketchUp Make, but there is also a pro version for purchase at \$590. SketchUp Make is available on the Library's computers.

Tools:

-  **3D Text** – Creates 3D text that can be added to surfaces to be printed.
-  **3D Warehouse** – Not a tool per se, but can select pre-designed models from SketchUp's own 3D Warehouse instead of creating your own.
-  **Arc** – Allows you to draw arcs from point to point. **Shortcut = A**
-  **Circle** – This tool allows you to create a circle by clicking a starting point and moving the mouse to a desired end point. **Shortcut = C**
-  **Erase** – It does what the name suggests, it erases lines and objects. **Shortcut = E**
-  **Freehand**: Lets you draw more naturally, not in a predetermined shape.
-  **Follow Me** – Allows you to continue a face along a path, such as around a corner or up an edge.
-  **Line** – The line tool allows you to draw lines by selecting a starting point and dragging the mouse to where you want the line to end. The line is completed by clicking your mouse button. **Shortcut = L**
-  **Move** – This helpful tool allows you to move, stretch or copy various faces of an object. **Shortcut = M**
-  **Offset**: Create copies of lines at a uniform distance from originals. **Shortcut = F**
-  **Orbit** – Allows you to navigate around your 3D environment. Hold the mouse cursor to use.
-  **Paint**- Allows you to apply a color or texture to an object. **Shortcut = B**
-  **Pan** – Allows you to pan left and right or up and down. **Shortcut = H**
-  **Polygon** – This tool allows you to create a Polygon by clicking a starting point and moving the mouse to a desired end point. You can even pick how many sides.
-  **Push/Pull** – Allows you to create 3D objects by clicking on a shape face and pushing or pulling. **Shortcut = P**
-  **Rectangle** – This tool allows you to create a rectangle by clicking a starting point and moving the mouse to a desired end point. **Shortcut = R**
-  **Rotate** – Allows you to rotate an object. **Shortcut = Q**
-  **Scale** – Allows you to scale and stretch an object. **Shortcut = S**
-  **Select**- Allows you to select items or areas by clicking or clicking and highlighting, often used for deleting unnecessary objects. **Shortcut = Spacebar**
-  **Tape Measure Tool** – Creates a measurable guide line. **Shortcut = T**
-  **Text** - Allows you to label things.
-  **Zoom**- Moves the camera view in or out. To use, spin the **mouse cursor**.

Note we will not be reviewing every tool in the class, so explore on your own!

Tips for Building:

Copying an Object: Once you have an object selected, use the **move tool** and click on that object. You can hold the CTRL key and by dragging with the mouse you can make a copy.

Instructor: Using the **“Window”** tab, select **“Instructor.”** The **“Instructor”** tool gives you an animated window that explains what every tool you select does and how to use it.

Large Tool Set: SketchUp includes a lot of different tools and it helps to put these tools in one spot. Right click on the top menu bar, then select **“Large Tool Set”** to have all off the tools available on the left side of the screen.

Measurements: You can also make each line or object as long as you want with **Measurements**, which is located in the bottom right corner of the screen. After you have put a line in place, hit **Backspace** on the keyboard and type in the measurement you want. For example, enter 7', 7' to make a 7' square.

Shortcuts: While you can click on the icon for the tool you want, most tools also have a shortcut, which is listed in the **Tools** section.

Snapping: To help with your designs, SketchUp will snap to certain things, making it easier to make straight lines. Examples of this are the **axis**, which are red, green, and blue. Snapping also occurs in other places, such as **endpoints**, **midpoints**, and **edge points**.

Spacebar: SketchUp keeps the tool you have selected until you change it. However, this can lead to accidentally adding or taking away more than you want. To easily back out of a tool, press the **Spacebar**. This will bring up the select tool.

Undo: Should you want to undo something you have done, open the **Edit Tab** and select **Undo**. You can also hit **Escape** should you start an edit and want to undo it right away.

Tips for Printing:

Grouping: Before you 3D print, make sure your item is grouped together. First, select your finished design, then right click and select **Make Group**. This will make the section one item and the 3D printing software will recognize it that way.

Walls: If you have an exposed wall in a print, make sure to add some thickness (3D shape) to it with **Push/Pull**, otherwise it might not build well.

Links

<http://www.sketchup.com/learn>

Lynda.com in our database (free with your Library Card), just search **“SketchUp”**