Dream Home Assignment

**Google SketchUp**

The time has come to apply what you’ve learned about the basics of 3D Modelling, as well as the basics of SketchUp, to your very first 3D Modelling project – The Tiny Home.

Even though, by this point, you’ve already watched the 4 “Getting Started with SketchUp” training videos, make sure that you continue to refer back to them if you happen to forget one of the basic modelling functions (this is sure to happen, since modelling is a complex process). Also, make sure to seek out more advanced tutorials that will help you with your specific modelling goals for this project. SketchUp is an extremely established and popular modelling program, so you will have no trouble finding lots of resources.

Alright, so on to the assignment!

**Step 1: Planning Your Dream Home**

Prior to modelling your home in SketchUp, you must figure out what it’s going to look like!

1. The best place to start is by looking at different floor plans online, to get a sense of different styles and dimensions. Take a look at some of the house plans on these sites. In the search parameters (that should pop up right on the home screen) specify an area of 400-800 square feet.
   1. [www.floorplans.com](http://www.floorplans.com)
   2. [www.eplans.com](http://www.eplans.com)
   3. [www.homeplans.com](http://www.homeplans.com)
2. Using the floor plans you browsed for inspiration, sketch out the floor plan for your own Tiny Home on the graph paper provided in class. Use a 1:2 ratio (meaning that 1 square = 2 feet). Make your dimensions realistic. **This means the entire house = between 400-800 square feet!**
3. When sketching, think about any “extra features” you might want to add, like a garage, shed, deck, balcony, patio or pool. Include these in your sketch.
4. If you plan on making a 2-storey house, sketch the first-floor plan on one side of your graph paper, and the second-floor plan on the other side.

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**Step 2: Building Your Tiny Home**

Following your floor plan, use Sketchup to bring your home to life! Here are the components your tiny home MUST have:

* Grouping, Components, and Layers (see Appendix A for building instructions)
  + Each floor is on its own layer. **A new layer should be made for:**
    - Foundation
    - First Floor
    - Ceiling
    - Second Floor
    - Roof
  + Each **separate part of the house** is turned into a **component OR group**. Examples:
    - Staircase = component
    - Door = component
    - Window = component
    - Entire first floor = group
    - Deck = group
    - Custom furniture = group or component
* Realistic dimensions
  + Entire house = between **400-800 square feet**
  + Door frames = **2.5-3’ wide**
  + Foundation/floors/ceilings = **1’ high if no deck, 3-4’ if deck**
    - Foundation & ceiling (if applicable) = **no top face**
  + Wall thickness = **4”**
* **Multiple rooms** with doors, windows, and realistic dimensions
  + Kitchen, living room, 2 bedrooms, 1 bathroom, and any other rooms you wish
  + You must build AT LEAST 1 **original** door, 1 **original** window, and some sort of exterior space
* **Materials** and textiles
  + Exterior paint, window and landscaping materials/Interior paint, window and flooring materials
* **Furnishings** inside and out
  + Use 3D Warehouse (but **keep your file size low** – no individual piece should be >1 MB)
  + If time permits, create an original piece of furniture

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**Step 3: Exporting Your Dream Home**

Once you’ve completed your dream home, you must hand it in in two different ways:

1. A .skp (SketchUp) file
2. A Collection of Rendered Images
   1. Exterior View
      1. Front ISO
      2. Back ISO
      3. Left ISO
      4. Right ISO

Create a folder inside your 3D Modelling folder. Name it “loginname\_DreamHome.” Place your .skp file inside and also create a folder called “DreamHomeImages” inside the “loginname\_DreamHome” folder. Inside the “DreamHomeImages” folder, place the images listed above.

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APPENDIX A

**Layers:** Keep each floor of your house on a separate layer. This is VERY IMPORTANT, so that you are able to easily work with the separate floors of your house. Here’s how to work with layers:

1. Go to Window>Default Tray> Layers to make sure that Layers are turned on. Your Default Tray should not appear on the screen (if it was not on the screen already).
2. Inside the Default Tray, select the Layers drop-down menu. You will see that you have only 1 layer right now – “Layer0.”
3. To add layers, click the “+” button, and to remove them once selected, click the “-“ button. To select a layer click the radio button next to the layer’s name. Only one layer may be selected at a time (since, in SketchUp you can work with layers that are not selected, in addition to those that are selected).
4. Make sure to name your layers intuitively to make navigation easier (ex. “1stFloor,” “2ndFloor,” “Roof”). You cannot rename Layer0 – thus, just leave Sophie on this layer, and nothing else ☺
5. Turn on/off each layer’s visibility by checking/unchecking the “Visibility” box beside the layer name.

**Groups & Components:**

It is very important to group the polygons that make up parts of your model together, and ultimately, to group the objects that make up each floor together. This will prevent your geometry from merging together so that you can edit it later.

***Making Groups:***

* Making a group allows you to group geometry together so that it does not merge with other geometry and so that it can, thus, be manipulated without affecting its surrounding geometry in any way. Unlike components, groups create unique entities. Making a component allows you to group objects/geometry so that they do not merge with other objects/geometry in your model. To make a group, select the separate geometry/object(s) > right-click > Make Group. If you like to make changes to a group later on, simply double click on the group to enter into “group edit mode.” If you want to merge groups together, or add geometry to the group: select the group > right-click >Explode.

***Making Components:***

* Components are “instanced,” or, “linked.” This means that if you make a change to 1 component, that same change will be applied to all other copies of that component. Therefore it is a good idea, for example, to make doors and windows components to maintain consistency within your design. To make a component, select the geometry/object(s) > right-click > Make Component. If you would like to make changes to a single component (i.e. you don’t want the changes to be applied to all instances of that component), select the component > right-click > Make Unique. If you want to merge components together, or add geometry to the component: select the group > right-click >Explode.

Apply groups and components to your tiny home model in the following ways:

1. Objects – once you’ve finished creating some built-in shelving, furniture, doors, windows, decks, pools, staircases, fencing, etc., group all the separate pieces together before placing it up against another part of your model. If you plan on reusing an object, make it into a component to reduce your work load.
2. Floors – once you’ve finished editing a floor and are ready to stack it atop another to create your house, make sure to group everything on this floor (including the floor, walls, building features, and furniture). Do this for each level of your house (foundation, first floor, second floor, roof). This will prevent the floors from merging together when you add upper levels.

**Navigation:** As your model becomes more and more complex, navigating your 3D space will also become more and more complex. Here are some key tips for navigating, and photographing your dream home:

1. Constraint Shortcut Keys: To position the floors and objects within your home, select the object you wish to position with the Move Tool, then click the Up (blue), Right (red), or Left (green) keys on your keyboard to lock the movement to a particular direction.
2. Zoom Extents: If you get lost within your model, use the Zoom Extents Tool (a magnifying glass with arrows pointing away from it) to reset your view.
3. Section Plane: Select the Section Plane tool to create a horizontal or vertical cross-section (or, cut) in your model. This will allow you to cut away parts of your walls or floors to get an inside view of your model. Don’t worry – this is not permanent. It is just a temporary trick to help you model! Here’s how to use the Section Plane Tool:
   1. Apply the Section Plane by clicking on the screen once the desired position (horizontal or vertical) has been achieved.
   2. Select the Move Tool, then click on the Section Plane to move it up/down/forwards/backwards to determine how much of your model is cut.
   3. Click once on the screen to end your selection.
   4. To remove the Section Planes from sight, click View>Section Planes to uncheck it. To remove the Section Cuts from sight, click View>Section Cuts to uncheck it.
   5. To permanently remove Section Planes once you are finished with them (this is a good idea – otherwise you could end up with a bunch of Section Planes, which will make your life confusing), simply click on them with the Selection Arrow (they will turn blue) and press the Delete key.
   6. Note: You may have as many Section Planes at one time, as you like ☺
4. Walk View: To walk through your model like a regular human being would walk through a house, simply select the Walk Tool (it looks like a pair of footprints).

* Click + Drag = walk
* Ctrl = run
* Shift = move vertically or sideways
* Alt = disable collision detection (i.e. walk through walls)

**Tips & Tricks:** It is always a good idea to…

* Build objects, like doors, windows, and stairs separately from the house so that they can easily be grouped together (by triple-clicking, then right-clicking) as either groups or components.
* Save and save often! Every 5 minutes, or so.
* Back your work up onto a flash-drive.
* Save a new copy of your work in the middle/at the end of each class so that if you find a problem in your model that if, later on, you don’t know how to fix, you can always go back to a previously saved version and pick up from there.