Materials Tutorial - Blender

Updated July 2022

Instructions:

Students are to showcase they're able to add a variety of textures / materials to their 3D objects, including the addition of a background.

Step 1:

Prior to adding any materials to their projects, students will need to open a new 'General' project, and delete the current Cube on the scene. Once completed and left with an empty project, students will need to add the following Mesh's:

- 1) Plane
- 2) Cube
- 3) Cylinder
- 4) Sphere
- 5) Torus
 - a) Prior to movement or placement of Torus, conduct the following property changes:
 - i) Minor Segments will change from 12 to 24
 - ii) Minor Radius will change from .25 to .40
- 6) Monkey Head
- 7) Go to 'Render Properties' and select ensure that both 'Viewpoint Denoising' and 'Screen Space Reflections' are turned on.

The scene should be set up like so:



<u>Step 2:</u>

Now that your objects are placed, you're ready to add some materials.

- Click on the cube, and press the 'Material Properties' located on the bottom right hand corner. **Refer to the Properties Image if necessary**
 - Press 'New' and note the 'Material 1' is now viewable.
 - Change the colour (Example: Green)
 - Change the 'roughness' from .500 to 1.00.
 - This cube is now 'Matte' and void of any shine
 - You can see this by toggling the 'Rendered' and 'Solid' Viewport on the top right hand corner of the 3D viewport.

<u>Step 3</u>

- Select the Cylinder

- We will do the opposite to the cylinder, as we did to the cube!
 - Create a new Material
 - Note: Using the same material as another object will affect both objects! If you're needing a different material than another object, always be sure to press 'New Material'.
 - Give the cylinder a colour (Example: Red)
 - Make the roughness 0.00 instead of .0500
 - You will notice in the 'Rendered' Viewpoint that the cylinder is now very shiny.

<u>Step 4</u>

- Select the Sphere

- Right click on the sphere and select 'Shade Smooth'. This will make the ridgidy sphere look smooth!
- Create a new Material
- Alter the 'Metallic' from 0.00 to 1.00
 - Note: In regards to... reality, an object is either Metallic, or it is not.
 Therefore, adding Metallic should typically only be either 0.00 or 1.00.
 There is no 'inbetween'.
 - Another Note: If you change the 'Roughness' to 0.00 you will get something mirror-like! This is not necessary, just pointing it out :)
- You will notice that the sphere is now very shiny!

<u>Step 5</u>

- Select the Torus (or donut!)
 - Right click the Torus and select 'Shade Smooth'.
 - Add a new Material to the Torus

- Select a colour of your choice
- Go down to Emission and take it from Black to White
 - Note: Emission just means that the object is now emitting something (in this case, light!)
 - Make the emission colour a faded yellow!
- Change the Emission Strength from 1.0 to 20.00
- Notice now that the Donut is like a lightbulb, but not quite!
- Go to your 'Render Properties' and select 'Bloom'. You can change the Threshold setting, as well as the radius of the light being cast. Don't go too overboard, but play around with it.

<u>Step 6</u>

- Select the Monkey Which is named Suzanne?
 - Right click the monkey and select 'Shade Smooth'
 - Go to the Modifier Properties, create a new modifier and then change the colour (Example: Purple)
 - You're then going to select the 'Wrench' or 'Modifier Properties'
 - Inside of modifier properties, you will select 'Add Modifier', and then select 'Subdivision Surface'. You will notice that your monkey now becomes a bit thinner, a little smoother... overall a better monkey.
 - Note: Do not change any Subdivision Modifier options beyond 2... You have been warned.
 - You will want to go back to Material, and scroll down until you see Settings (Pictured Right)
 - Ensure that you have changed the 'Blend Mode' to Alpha Blend
 - Ensure that Backface Culling is selected
 - Select 'Show Backface' as well as 'Screen Space Refraction'.
 - Go back to Render Properties and change the Sampling rate of the viewport to '256'
 - By the time we're done, our Render
 Properties should look something like what is pictured on the right —>
- By now, your Monkey should be looking quite like glass!



✓ Sampling		
Render	64	
Viewport	256	
	Viewport Denoising	
> Ambient Occlusion		
V 🗹 Bloom		
Threshold	4.157	
Knee	0.500	
Radius	5.413	
Color		
Intensity	0.031	
Clamp	0.000	
> Depth of Field		
> Subsurface Scattering		
∨ 🗹 Screen Space Reflec	tions	
Refraction		
Half Res Trace		
Trace Precision	0.250	
Max Roughness	0.500	
Thickness	0.2 m	
Edge Fading	0.075	
Clamp	10.000	

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After all the steps are completed, your scene should look like this! :D

Well done, you're now ready to move onto the next step! Shaders!

