Lesson 1 – Light – Transcripts

* Let’s talk about our first lesson, let’s talk about light.
* Light, I everywhere around us…. until it obviously isn’t.
* Light or visible light is the small section of the electromagnetic spectrum that we, with the human eye can perceive.
* It’s literally what allows us to see.
* The main source of light for us is obviously the sun, however in photography we often make do with other sources - we use a flash or a bulb.
* There are many properties of light, that if you were doing a scientific study of it need to be addressed. However, and you should, you should follow up with some of the links provided in the **appendix with this** video.
* However, for us the two main ones that we care about are Intensity and Colors. Let’s quickly talk about Colors.

Lesson 1.1 – Colors – Transcripts

* Colors are extremely important to us as humans. We associate color with a whole variety of things and how we perceive and react to our world. We know when to stop and go at an intersection because a light turns “Red” or “Green”. We know what’s good for us, what to eat, what we like, and colors play a very important role in our psyche.
* It’s crucial for us to understand that the color associated with an object is really the spectrum of light hat the object does not absorb and echoes back at us.
* An object is white if it reflects a majority of the light that falls on it. This paper for instance is white, because it reflects most of the color back to us.
* This lens cap however does not reflect much light instead absorbing most of it and looks black to us. To our eyes, and our cameras that capture this reflected light.
* Colors are associated with a specific frequency of light in the spectrum and we should reserve this discussion till that point.

Lesson 1.2 – Intensity – Transcripts

* The second piece we should talk about is the intensity. The intensity is the brightness of an object.
* Similarly, it also decides how bright and vibrant, or how dark a scene is. This in turn is the final image product captured by the camera.
* A less intense scene is usually darker and duller.
* A brighter shinier object like a shiny plastic case is a little bit more vibrant as compared to say a dull yellow sheet of paper.
* This is an indication of how the colors will look in your photograph and image.

Lesson 1.3 – Perception of the World – Transcripts

* Light – It’s intensity and color are critical to our perception of the world.
* We see what is reflected off of the objects around us.
* If an object reflects mostly blue light it tends to be blue to our eyes, which in-turn means that this color, the blue pigment is really absorbing most of the other colors.
* Similarly, the red is absorbing most of the other colors other than the red.
* The crucial point here is that we only see an object if it reflects light, and we associate the color of the reflected light with an object.
* Let’s talk about the Spectrum of colors right after this.

Lesson 1.4 – Spectrum of Colors– Transcripts

* As we already mentioned before. The sun is our primary source of light.
* Sun light is also our generally accepted form of white light, but it really consists of 7 different colors of light of different frequencies and wavelengths. Most often called **VIBGYOR** – Violet Indigo Blue Green Yellow Orange and Red.
* Things that we don’t see lie beyond the end of this spectrum such as Infra-red and ultra-violet.
* The spectrum is just the light of different colors bent at different angles when passing through a medium. Most often the medium is glass in a prism or water.
* The different angles of bending happen due to the respective frequencies and wavelengths of the individual colors of light. Refer to the **appendix** for more information.
* The most spectacular example of this is that of rainbows.
* Rainbows are formed when after a rainfall the moisture in the atmosphere splits the sunlight passing through it and forms a full spectrum of its constituent colors right across the sky.

Lesson 1.4 – Spectrum of Colors Cont.– Transcripts

* We have talked about colors before but this is a good time to remind that that all objects do one of three things
* They Absorb – a majority of the color spectrum and reflect very little, they are like this lens cap – black.
* The second category does the opposite and reflects a vast majority of the color spectrum and appears white.
* The third and most common is somewhere in between. They reflect a fraction and absorb some fraction of the spectrum.
* For instance, trees, they appear green because the chlorophyll in them absorbs most light of colors other than green.
* At the same time, not all plants are exactly the same green, they reflect a different but similar set of green light, causing the idea of shades to exist.
* Our eyes and cameras can perceive his reflected spectrum and capture the resultant image on a screen which may be the image sensor in a camera or the retina in our eye.

Appendix:

* Light – Wikipedia - <https://en.wikipedia.org/wiki/Light>
* Linear Visible Spectrum – Wikipedia - <https://en.wikipedia.org/wiki/Visible_spectrum#/media/File:Linear_visible_spectrum.svg>
* Visible Spectrum – Wikipedia - <https://en.wikipedia.org/wiki/Visible_spectrum>