# Detailed Lesson Plan - Photography 101 - The Science and Art of Light and Cameras

**Lesson 4: DSLR Basics**

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1. **Objectives:**

### At the end of this lesson the student will be able to express an understanding of:

* + Using a Camera Simulator
  + Focal Lengths and Field of View
    - Camerasim Focal Length Exercise
  + ISO
    - Camerasim ISO Exercise
  + Shutter Speed
    - Camerasim Shutter Speed Exercise
  + Aperture
    - Camerasim Aperture Exercise

#### Subject Matter:

1. **Materials:** Visual aids (Hand drawn image diagrams), camera video, activity building using an online camera simulator.
2. **References:** 
   * Camera Simulator: <http://camerasim.com/apps/original-camerasim/web/>
   * F-Stop, Shutter, and ISO Explained: <https://www.youtube.com/watch?v=kD8nXGt91yo>
   * Camera Lens: <https://www.thespruce.com/what-to-know-about-camera-lenses-2688631>
   * ISO: <http://www.brighthub.com/multimedia/photography/articles/72927.aspx>
3. **Values:** Develop a clear understanding the DSLR camera options presented to a user, how to use them, and use them in conjunction.

#### Procedure

1. **Learning Activities:**
   1. **Focal Lengths and Field of View**
      1. Understand focal lengths and field of view.
      2. Understand the relation between the two.
      3. Understand what each represent.
      4. Work on an activity with the camera simulator to understand the behavior and relation.

#### ISO

* + 1. Understanding ISO.
    2. Understanding the relationship between image lighting and exposure to the ISO number.
    3. Using camera simulator to understand and demonstrate the difference in the quality and lighting of the image based on ISO numbers.

#### Shutter Speed:

* + 1. Understanding what a shutter is.
    2. Understanding shutter speed.
    3. Understanding how shutter speed impacts the behavior of the subjects in the photographs.
    4. Use camera simulator to quantify the changes in the photographs based on the shutter speed.
  1. **Aperture**
     1. Understanding Aperture of a lens.
     2. Understanding the relationship between light exposure and aperture.
     3. Understanding the relation between a larger and smaller F-Stop number and depth of field.
     4. Simulating different apertures with a camera simulator to practice different camera behavior.

#### Evaluation and Assignment:

1. Being online this class is relatively reliant on the student’s zeal. However, the following assignment pieces are recommended.
   1. Each individual function is associated with an activity on the CameraSim web interface.
   2. These are crucial to the students understanding of the material.