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

**Lesson 3: Cameras**

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1. **Objectives:**

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

* + Cameras
  + Film and Sensors
  + Camera Lens
  + Camera Activities

#### Subject Matter:

1. **Materials:** Visual aids (Hand drawn image diagrams), camera video, activity building a camera obscura.
2. **References:** 
   * Demystifying Pixels - <https://www.techhive.com/article/2052159/demystifying-digital-camera-sensors-once-and-for-all.html>
   * Camera Obscura National Geographic - <https://youtu.be/gvzpu0Q9RTU>
   * Camera – Wikipedia - <https://en.wikipedia.org/wiki/Camera>
     + Settings for the camera for a capture of the image from the camera obscura - F-3.5, ISO 1600, Time – 15 seconds.
3. **Values:** Develop a clear understanding of camera construction and it’s constituent parts.

#### Procedure

1. **Learning Activities:**
   1. **Cameras**
      1. Explanation of what cameras are available today.
      2. What is a DSLR?
      3. Film or Image Sensor.

#### Film and Sensors

* + 1. Understanding the difference between films and sensors.
    2. Understanding image sensors.
    3. Different types of sensors.
    4. Understanding image pixels and camera classifications.

#### Camera Lens:

* + 1. Understanding camera lenses and their classification types.
    2. Understanding focal length and field of view.
  1. **Activities**
     1. Create a makeshift lens with a jar with water, calculate it’s focal length.
     2. Observe rainbow colors.
     3. Build camera obscura to observe pinhole camera photography.

#### Evaluation and Assignment:

1. Being online this class is relatively reliant on the student’s zeal. However, the following assignment pieces are recommended.
   1. Create camera obscura based on the video by National Geographic ® and observe a pinhole camera image.