METHODS AND TOOLS FOR EFFICIENT LIGHTING DESIGN WORKSHOP

April 13 and 14, 2012
1. A NEW APPROACH TO LIGHTING:

DAYLIGHT & ENERGY EFFICIENCY
III. STRATEGIES SOURCES, & FIXTURES
UHM GOALS

- 30% energy reduction by 2012
- 50% energy reduction by 2015
- 55% from renewable by 2020
- Energy and Water Self-sufficient by 2050

Goals provided by Sustainable Campus UK
IV. CONTROLS
DAYLIGHT & ELECTRIC LIGHT
**HDR Imaging and Glare Analysis**

The document is one out of a series of three tutorials that introduce the reader to high dynamic range (HDR) imaging, photography, and how to analyze an HDR photo or simulation for potential glare.

The tutorials can be downloaded from the C/SCI website.

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**In This Tutorial**

- Download Photosphere Software
- Set Up Camera
- Select a Scene
- Capture Luminance Reading
- Take Photo Series
- Make an HDR Photo
- Calibrate Camera
- Save the Image for Glare Analysis
- More available tools

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**Photosphere**

Download and install a copy of Photosphere, a software designed to easily create HDR images from multiple images. [www.anyhere.com](http://www.anyhere.com)

Link named:

- Download a copy of Photosphere

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**Setting Up**

What you need:

- Digital Camera w/Manual Settings
  - Aperture
  - Shutter Speed
  - Exposure Value
- Mac Computer
- Luminance Meter (+ Tripod)

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**Aperture**

Controls the amount of light reaching the image sensor. In combination with variation of shutter speed, the aperture size will regulate the image sensor's degree of exposure to light.

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**Shutter Speed**

The effective length of time a shutter is open or duration of light reaching the image sensor. The longer the shutter is open, the more light reaches the image sensor.

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**Exposure Value**
1. How much light will be admitted to the film by the combination of lens aperture and shutter speed.
2. How much exposure is required by the combination of subject luminance (e.g., how bright it is) and film speed.

**Set Aperture**
Take a photo at each EV to capture a full range of light.

**Upload Photos**
Save the photos in an easy to locate folder.

**Double click the folder name to load the photos.**

**Select the photos needed to make an HDR photo.**
Select File then Make HDR

Select the below HDR settings.

Photosphere HDR settings explained.

The HDR photo will appear.

Pick a spot in the actual space to calibrate with the Luminance Meter.

Record the cd/m²

Pick the same spot in the photo.
Select Calibration from the Apply Menu.

Enter the cd/m² value from the Luminance Meter.

Select the calibration factor for your camera. Press OK.

Save the HDR Image.

Save the HDR Image as an .hdr file extension.