

## Photometry Lab

Photometric studies (also sometimes referred to as "layouts" or "point by points") are often used to simulate lighting designs for projects before they are built or renovated. This enables architects, lighting designers, and engineers to determine whether a proposed lighting setup will deliver the amount of light intended. They will also be able to determine the contrast ratio between light and dark areas. The Lab includes several equipments which are as follows:

### 1. Equipments of Labs

**a. Goniophotometer System:** A **Goniophotometer** is a device used for measurement of the light emitted from an object at different angles. The use of goniophotometers has been increasing in recent years with the introduction of LED-light sources, which are mostly directed light sources, where the spatial distribution of light is not homogeneous. Due to strict regulations, the spatial distribution of light is of high importance to automotive lighting and its design.



**b. Integrating Sphere System:** The integrating sphere is as diffuser which preserves power but destroy spatial information. It is typically used with some light source and a detector for optical power measurement.



**c. Reflectance and Transmittance Measurement Equipment:** The system is designed for measurement of reflection and diffuse reflection at directional light incidences, for measurement of reflectance of mirrors, for measurement of transmittance and diffuse transmittance and diffuse transmittance at directed light transmittance.





**d. Profile Projector:** The profile projector projects and magnified profile image of an area or feature of a work piece on to a screen, most commonly using diasopic illumination. Dimension can be measured directly on the screen or compared to a standard reference at the correct magnification.

**2. Function of Lab:** The lab is capable to perform following functions:

- Measurement of spatial intensity distribution of the lamps, which include: lighting and light signaling devices (like headlamps, fog lamps, stop lamps, direction indicators, reversing lamps etc.).
- Retro-reflection measurement of reflex reflectors, tapes, markings etc.
- Measurement of luminous flux and luminous efficiency of bulbs (incandescent, metal halide, HID, LED etc.).
- Lighting Installation- and Headlamp Leveling Device test.
- High Security Registration Plate (HSRP) Testing.
- Measurement of lifetime of the bulbs and lamps.
- Dimensional measurement of bulbs.
- Water-tightness tests on lamps.
- Measurements of glare characteristics of lamps.
- Measurement of reflectivity, absorbency and transmittance of several materials.
- Tests on lamp receptacles under controlled conditions (voltage, temperature, humidity).
- Colorimetric measurements on lamps, lamp covers and various industrial products (plastics, textiles, etc.).
- Weather resistance testing (accelerated weathering vis-à-vis solar radiations).
- LED measurement.
- UV & IR measurement.