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Promoting Energy Efficient Lighting Education in Nepal and Bhutan
(ELNAB)

Short Term Training Course Module
of
Fundamental of Illumination Engineering and Design

Objective:

- To introduce to lighting basic, basic measurement and introduce lighting design concept and impart the skills necessary for implementing indoor and outdoor lighting.
- To design efficient illumination for indoor and outdoor application (Simple exercise) using ReLux/DiLux.

Target Audience: Technicians and Engineering Students

Course Content:

1. **Introduction to illumination engineering:**
   Light sources and working principle. Electrical and optical characteristics of various light sources. Lab exercise: Demonstration of light sources and measurement of electrical parameters
2. **Lighting units and measurement:**
   Introduction to basic lighting units - Illuminance, luminance, CT and CRI. Lab exercise: Illumination measurement
3. **Lighting requirements:**
   Lighting requirements for indoor and outdoor applications. Luminaire function, mechanical and thermal properties and material selection. Light reflectance and glare. Luminaire placement and schematic layout.
4. **Lighting ballast:**
   Working of ballast and driver for luminaires. Electrical characteristics and efficiency of driver circuit. Lab exercise: Analysis of driver electrical characteristic.
5. **Lighting applications and management:**
   Application of indoor and outdoor lighting, application of LED in developed and developing country and economic analysis and case studies. Use of renewable energy in lighting application. Cost estimation of lighting system –initial and running cost and economic benefits. Maintenance and troubleshooting of lighting system. Concept of recycling and disposal.Lab exercise: Troubleshooting light source
6. **Lighting Design and Simulation:**
   Summary on lighting design using computer software Lighting design project works for interior and exterior lighting applications (complex designs also considering daylight)