

Solid-State Lighting  
**LED Lighting Institute**  
 Inorganic and Organic LEDs

**Day 1**

Time	Topic
8:00 AM	<b>Arrival, Registration, and Continental Breakfast</b>
8:30 AM	<b>Welcome and Introductions</b> <b>Review of Lighting Terminology and Economics</b> – a review of important terms and metrics in the field of lighting. <b>Introduction to Solid-state Lighting</b> – LED and OLED technology operation and applications
<b>Lunch</b>	
	<b>Thermal Analysis and Management of LEDs</b> – an overview of thermal analysis, modes of heat transfer, effects of heat management strategies on LED junction temperature, and best practices in the design of heat sinks. <b>Parallel Lab Demonstrations I</b> – participants rotate through different demonstrations that include flicker and stroboscopic effects, color rendering, and other relevant SSL topics. <b>Introduction to 3D Printing Opportunities for SSL Products</b> – an overview of additive manufacturing methods and their potential for adding value to SSL products.
5:30 PM	<b>Adjourn</b>

**Day 2**

Time	Topic
8:00 AM	<b>Arrival, Continental Breakfast</b>
8:30 AM	<b>Photometry and Colorimetry of LEDs</b> – through lecture and demonstrations, participants will learn metrics and testing methods to characterize the photometric and spectral characteristics of LEDs and SSL systems. <b>Electrical Characteristics of LEDs</b> – through lecture and demonstrations, participants will learn the fundamental voltage-current characteristics of LEDs and drivers, dimming control techniques, trade-offs of different LED circuit configurations, and recommendations for choosing LED drivers for different requirements. <b>Research Updates I</b> – an overview of recent or ongoing research at the LRC in areas of light and health, horticulture, outdoor lighting, application benefit metrics, and other relevant topics
<b>Lunch</b>	
	<b>Parallel Lab Demonstrations II</b> – participants rotate through different demonstrations that include LED thermal measurements, LED secondary optics, and overview of PoE and other networked lighting systems. <b>Research Updates II</b> – second research topic <b>Introduction to Hands-on Session on Day 3</b> – participants choose one of the two sessions
5:30 PM	<b>Adjourn</b>

**Day 3**

Time	Topic		
8:00 AM	<b>Arrival, Continental Breakfast</b>		
8:30 AM	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; vertical-align: top;"> <b>Concurrent Hands-on Session 1: Develop and characterize an LED solution including 3D printed components</b>             Participants in this session design and put together LED based accent illumination solutions for retail or museum applications and compare photometric, colorimetric, thermal, and energy performance.         </td> <td style="width: 50%; vertical-align: top;"> <b>Concurrent Hands-on Session 2: Comparison of networked lighting controls for LED lighting systems.</b>             Participants in this session compare physical differences of networked lighting control systems (PoE, wired, wireless) and test for energy and dimming properties. Discussions will include issues with installation, commissioning, and system maintenance.         </td> </tr> </table>	<b>Concurrent Hands-on Session 1: Develop and characterize an LED solution including 3D printed components</b>  Participants in this session design and put together LED based accent illumination solutions for retail or museum applications and compare photometric, colorimetric, thermal, and energy performance.	<b>Concurrent Hands-on Session 2: Comparison of networked lighting controls for LED lighting systems.</b>  Participants in this session compare physical differences of networked lighting control systems (PoE, wired, wireless) and test for energy and dimming properties. Discussions will include issues with installation, commissioning, and system maintenance.
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<b>Lunch</b>			
	Concurrent Hands-on Sessions continue  <b>Group Presentations and Discussion of Solutions</b> – participants in both sessions present to the class the lessons learned in their groups <b>Research Updates III</b> – third research topic Final questions and answers		
3:30 PM	<b>Adjourn</b>		