



indian society of lighting engineers



BUREAU OF ENERGY EFFICIENCY



and

Lighting Research Center Rensselaer

are organising two intensive Courses
on

Lighting Technologies and Applications

Chennai 6th and 7th December, 2010

Mumbai 9th and 10th December, 2010

ISLE is joining hands with BEE and the Lighting Research Centre, the foremost lighting institution in the world, to conduct two lighting courses in Chennai and Mumbai.

The course in Chennai will be on December 6 and 7 and in Mumbai on December 9 and 10. The focus of the courses will be slightly different with the Chennai course aimed at lighting engineers and other lighting professionals while the course in Mumbai will be aimed at architects, designers and lighting professionals.

Both courses will focus on lighting technologies, human factors, and the appropriate application of lighting. The courses will be designed to increase the participants' knowledge and awareness of energy-efficient lighting technologies, lighting application, and design strategies.

The three member LRC faculty will present an interactive course including lectures, hands-on demonstrations of lighting technologies, workshop sessions, and other information covering lighting for various settings. A lighting manual will be developed summarising the information provided in the courses and giving participants a variety of tools to assist them to better select and apply lighting systems. The LRC will award continuing education credits and provide a continuing education certificate to each attendee of the courses.

Lighting Research Center (LRC)

The Lighting Research Center (LRC) is the world's largest university based research and education institution dedicated to lighting. It employs an expert staff of more than thirty five researchers, educators, designers, and scientists dedicated to "advancing the effective use of light and thereby creating a legacy of positive change for society and the environment." The LRC is part of Rensselaer Polytechnic Institute, the oldest technical university in the United States located in Troy, New York.

The LRC's staff includes some of the world's leading vision and lighting scientists, engineers, physicists, designers, and energy-efficiency experts, who have been studying lighting for much of their careers. Their research has led to unique and innovative solutions that improve the visibility, efficiency, comfort, and safety of lighting installations.

Faculty:

Russ Leslie, AIA, FIES, LC



Professor and Associate Director Lighting Research Center (LRC)

Professor Leslie is an expert on energy efficient lighting, architectural lighting design and day lighting. He is a practicing architect, has authored Lighting Pattern Books for Home and Outdoor Lighting and published more than fifty papers on various areas of lighting.

Daniel Frering, LC



Adjunct Assistant Professor Manager of Education (LRC)

Daniel Frering is an Adjunct Assistant Professor and the Manager of Education for the LRC. He teaches courses and seminars in lighting technology, day lighting, control systems, lighting applications and economic analysis. His current research includes photo voltaic outdoor lighting systems and energy efficient lighting for commercial buildings.

Yiting Zhu, Ph.D.



Senior Research Specialist Technical Director of Product Testing Programs (LRC)

Dr Zhu provides technical oversight to the product testing programs of LRC. She is an expert in optical design software and has modelled and designed many optical systems for LED luminaires. Dr Zhu conducts research projects and has published many research papers of energy efficient and LED lighting technologies.

Chennai Course:

The Language of Lighting – Nearly every field or profession has a language that is unique to its own practitioners. The field of lighting is no exception to this. Designers, specifiers, and manufacturers within the lighting industry use unique terms and concepts, which have evolved into professional usage over a period of time and have been officially defined by professional bodies. These terms represent important concepts in the practice of lighting. Presenters will review these important terms and concepts to assist seminar participants to better understand the field of lighting.

Lighting Technology – Presenters will review the latest and most efficient lamp, luminaire, ballast, and control technologies typically used in commercial settings. Participants will be taught how to evaluate these technologies for quality, energy efficiency, and compatibility. Information will also be provided on new and emerging energy efficient lighting technologies such as light emitting diodes (LEDs). The objectives of this course section are to assist the participants to:

- understand the operating characteristics of various technologies commonly used in the lighting industry
- be able to compare these technologies and evaluate factors that will effect their performance
- be able to select among available lighting technologies to choose those that best meet an identified lighting need.

Lighting Audit, Evaluation, and Economic Analysis – This session will include information on how to conduct a thorough and consistent audit and evaluation of existing lighting conditions in a facility to identify opportunities for energy savings as well as improvements in the visual environment. Topics covered will include lighting measurement, illuminance and luminance assessment, occupant surveying, economic analysis, and other factors important to consider when conducting a lighting assessment.

Human Factors in Lighting – This session will include lectures and demonstration sessions covering an explanation of the human eye, lighting's impact on human vision, the effects of aging on vision and how to use lighting to accommodate the visual needs of older adults, lighting and task performance, and other human factors issues in lighting design. Information will be presented to help participants be able to:

- Analyze the visual requirements of a visual task, identify the aspects of lighting important for its performance, and make appropriate lighting recommendations
- Recognize and predict lighting conditions likely to cause discomfort, generate specific impressions, and/or modify behavior
- Understand the visual needs of the elderly and partially sighted

Light and Color – This session will include information on light and color including correlated color temperature of light sources, color rendering metrics, spectrum, color and the human visual system, and other application issues dealing with light and color.

Lighting Calculation – This session will cover both point and lumen method calculations including calculation of coefficient of utilization (CU), light loss factors, and so on to assist in the design and specification of lighting equipment for interior spaces.

Daylighting Calculation and Analysis – This session will provide information on daylighting design and the calculation of daylight levels to assist in effective design of daylight buildings and evaluate options to improve daylight access and penetration in buildings; understand the impact of building site, building configuration, window and skylight configuration, materials, and glazing type on daylight penetration.

Lighting Design and Application – Presenters will review recommended practices and important issues in lighting application and design for commercial and industrial, interior and exterior settings. This will include a discussion of determining when it makes sense to retrofit an existing lighting installation versus a redesign and installation of a new system. This session will address important considerations in lighting design, and the design process for both interior and exterior applications. Content will include such issues as client requirements, human needs, architecture, energy-efficiency, technology and daylight integration, lighting control, and life-cycle costs. This session will be designed to allow participants to:

- understand the lighting requirements of interior and exterior spaces, including appropriate siting of lighting equipment and daylight availability analysis
- establish appropriate lighting criteria for efficient space utilization, task performance, and energy utilization
- develop designed illumination and lighting control systems, including fixture selection and design, and light source selection

Presenters will also review how to use new lighting technologies, equipment, and application techniques that have been proven effective in saving energy and maintaining acceptable lighting conditions.

Lessons Learned in Lighting Applications – Presenters will review case studies of lighting from a variety of commercial, residential, and industrial settings using the LRC's DELTA Portfolios and other available tools. Presenters will “take participants through” example settings explaining which technologies performed well in various applications and which did not. They will also review the various considerations that went into each lighting design.

for Chennai Course contact : Mr. R. Balasubramanian
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Mumbai Course:

The Language of Lighting – Nearly every field or profession has a language that is unique to its own practitioners. The field of lighting is no exception to this. Designers, specifiers, and manufacturers within the lighting industry use unique terms and concepts, which have evolved into professional usage over a period of time and have been officially defined by professional bodies. These terms represent important concepts in the practice of lighting. Presenters will review these important terms and concepts to assist seminar participants to better understand the field of lighting.

Lighting Technology – Presenters will review the latest and most efficient lamp, luminaire, ballast, and control technologies typically used in commercial settings. Participants will be taught how to evaluate these technologies for quality, energy efficiency, and compatibility. Information will also be provided on new and emerging energy efficient lighting technologies such as light emitting diodes (LEDs). The objectives of this course section are to assist the participants to:

- understand the operating characteristics of various technologies commonly used in the lighting industry
- be able to compare these technologies and evaluate factors that will effect their performance
- be able to select among available lighting technologies to choose those that best meet an identified lighting need.

Lighting Quality – This session will include information on lighting quality factors that should be considered when developing a lighting design. Factors discussed will include illuminance, luminance, glare, illuminance and luminance uniformity, color appearance and color contrast, aesthetics, appearance of the space and luminaires, daylight integration and control, light distribution, modeling of faces and objects, and other factors that need to be addressed in lighting design development.

Lighting Design and Application – Presenters will review recommended practices and important issues in lighting application and design for commercial and industrial, interior and exterior settings. This will include a discussion of determining when it makes sense to retrofit an existing lighting installation versus a redesign and installation of a new system. This session will address important considerations in lighting design, and the design process for both interior and exterior applications. Content will include such issues as client requirements, human needs, architecture, energy-efficiency, technology and daylight integration, lighting control, and life-cycle costs. This session will be designed to allow participants to:

- understand the lighting requirements of interior and exterior spaces, including appropriate siting of lighting equipment and daylight availability analysis;
- establish appropriate lighting criteria for efficient space utilization, task performance, and energy utilization; and
- develop designed illumination and lighting control systems, including fixture selection and design, and light source selection.

Presenters will also review how to use new lighting technologies, equipment, and application techniques that have been proven effective in saving energy and maintaining acceptable lighting conditions.

Human Factors in Lighting – This session will include lectures and demonstration sessions covering an explanation of the human eye, lighting's impact on human vision, the effects of aging on vision and how to use lighting to accommodate the visual needs of older adults, lighting and task performance, and other human factors issues in lighting design. Information will be presented to help participants be able to:

- Analyze the visual requirements of a visual task, identify the aspects of lighting important for its performance, and make appropriate lighting recommendations
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Light and Color– This session will include information on light and color including correlated color temperature of light sources, color rendering metrics, spectrum, color and the human visual system, and other application issues dealing with light and color.

Effective Daylighting of Buildings – This session will provide information on daylighting design to assist in effective design of daylight buildings. This session will include information to help architects and engineers to:

- Effectively design and evaluate options to improve daylight access and penetration in buildings; understand the impact of building site, building configuration, window and skylight configuration, materials, and glazing type on daylight penetration;
- Design effective sun control systems to minimize glare and heat gain in daylighted spaces;
- Understand the economic impacts of various daylighting options and the costs and benefits of each; analyse the impact of various daylighting options on building costs, energy use, and indoor environmental quality; and
- Objectively quantify the financial and human benefits of daylighting for building owners and developers; effectively communicate the value of daylighting to building owners, developers, and other decision-makers.

Lessons Learned in Lighting Applications – Presenters will review case studies of lighting from a variety of commercial, residential, and industrial settings using the LRC's DELTA Portfolios and other available tools. Presenters will "take participants through" example settings explaining which technologies performed well in various applications and which did not. They will also review the various considerations that went into each lighting design.

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