



Summer 2010

Interior Architectural Lighting Workshop for Designers #1
Faculty of Architecture and Planning, Thammasat University

Background:

Nowadays it is undeniable that a fast growth of our country economics leads to the need of design profession for its constant growing of building sectors. Lighting design is one profession offerings not only the aesthetic design but also has an impact on the building energy usage and human visual quality. The knowledge is needed for a good lighting design which can lead to the sustainability of our society. There are many designers and people in the design profession who interested in this field. Hence, to answer those demands both on the business-side and service-side and help increase the capability and knowledge in lighting design, APTU has introduced **Interior Architectural Lighting Workshop for Designers**. This program helps advancing the knowledge in interior architectural lighting and also leads to the development in continuing study which can serve as professional development credits in the future.

Class types:

Lecture and Workshop taught in Thai language

All class handouts/powerpoints will be in English language based

Course Description:

This course introduces the concepts of interior architectural lighting and provides designers with a working knowledge of quantitative, qualitative and aesthetic aspects of lighting design. The course focuses on both aesthetic and technical aspects of lighting design.

Course Goals:

- Gain a working vocabulary and familiarity with history, theory and concept in interior architectural lighting design
- Understand the use of light sources/luminaires in spaces
- Understand and able to calculate the appropriate lighting in spaces
- Able to apply light sources and fundamental design criteria to illuminate objects/spaces in buildings for a variety of lighting applications
- Conduct appropriate and accurate analyses of lighting systems to meet design criteria
- Select and apply lighting techniques for lighting design
- Prepare a lighting design portfolio documenting your work and ready for web publication

Sessions: 3 hours a week for 8 weeks and 2 times per year

Expected Audiences: Beginner**, Intermediate and Advance

**Beginners must take two basic classes before the course start

Eligibility: Study or graduate in Architecture/ Interior Architecture/ Interior Design or related fields. (Interview or questionnaires applied)

Focuses: Design and Measurements in Lighting Design

Class Syllabus

Duration: 24th April 2010 – 26th June 2010

Class Meeting: Saturday 9:00-12.00, Room 415, Faculty of Architecture and Urban Planning, Thammasat University Rangsit Campus

Instructors: Dr. Pimonmart Wankanapon, Penn State U. (Arch. Eng. Lighting)

pimonmart@ap.tu.ac.th

Kantharat Kusump, Parsons (Lighting Design)

kantharat@ap.tu.ac.th

Dr. Jatuwat Varodompun, LEED AP, Michigan U. (Architecture)

jatuwat@ap.tu.ac.th

Guest Lecturers: Lek Supanijwong, Parsons (Lighting Design)

Luma Design Studio

Lek@c-plighting.com

Tippaya Prasertsuk, Bartlett (Lighting)

Be-Lit co., Ltd.

info@be-lit.com

Required Texts:

- IESNA: “**Lighting Handbook**”, 9th edition, Illuminating Engineering Society of North America, 2000.
- Murdoch, J: “**Illumination Engineering**”, Macmillan, 1985.
- Baker, N., Fanchiotti, A., and Steemers, K.: “**Daylighting in Architecture**”, James and James, London, 1993.
- Related journal articles from the journal of Lighting Research and Technology, Leukos, and other related fields
- Lecture notes and presentations
- Related websites in lighting industry

Expectations for attendants:

- Teamwork, management and preparation of class projects
- Present group projects to class
- Read materials as assigned prior and after the class
- Complete individual portfolio
- Help each other to conduct experiments and work critics

Outline Content:

Adjustment class - Basic I**

Adjustment class - Basic II**

**Only for beginners

1. Lighting Theory and Calculations
2. Lighting Design Process
3. Lighting Design Concept & Visualization (Hand)

4. Daylighting and 3D Visualization
5. LEEDS and Energy Conservation
6. Lighting Design by Professional I
7. Lighting Design by Professional II
8. Interior lighting project

Materials needed:

- Own a personal computer (PC/Mac) which can install the free-commercial lighting program package, you will need it for the homework
- Digital Cameras with exposure and aperture adjustment is preferable but not required

Final Project:

- The final project and its presentation in class is the group lighting design project for a commercial window display (scale model). Choices are available to select during class. This model and its presentation in Room 415 are due in class on the final day of class. Instructors and guest lecturers will be the critics.

Class Schedule:

Week	Date	Lecture Topics	Instructor
B	24-Apr-10	**Basic I	Dr.Pimonmart
B	1-May-10	**Basic II	Dr.Pimonmart
1	8-May-10	Lighting Theory and Calculations	Dr.Pimonmart
2	15-May-10	Lighting Design Process	Kantharat Kusump
3	22-May-10	Lighting Design Concept & Visualization (Hand)	Kantharat Kusump
4	29-May-10	Daylighting and 3D Visualization	Dr.Pimonmart
5	5-Jun-10	LEEDS and Energy Conservation - *group project assigned*	Dr.Jatuwat
6	12-Jun-10	Lighting Design by Professional I	Lek Supanijwong
7	19-Jun-10	Lighting Design by Professional II	Tippaya Prasertsuk
8	26-Jun-10	Interior Lighting Design Project	Dr.Pimonmart, Kantharat Kusump, Lek Supanijwong, Tippaya Prasertsuk

**Beginners must take two adjustment classes before the course start

Contents:

1. **Basic I-Dr.Pimonmart WEEK B1 – SATURDAY 24 APRIL, 2010
 - o Introduction to Lighting Design and Applications
 - o Visual Psychology and Color Theory
 - o Human Vision

- Physics of Light

2. **Basic II-Dr.Pimonmart WEEK B2 – SATURDAY 1 MAY, 2010

- Light sources/ Luminaires
 - Incandescent, Fluorescent, HID, Induction Lamps
 - Luminaires and Luminaires Photometry/Type of Luminaires Categories
 - New generation light sources, LEDs
- Basic Lighting Vocabulary

3. Lighting Theory and Calculations-Dr.Pimonmart

WEEK 1 – SATURDAY 8 MAY, 2010

- History of Lighting
- Lighting Theory
 - Units & Important Vocabulary and Descriptions
- Lighting Quality and Human Performance
- Lighting Calculation
 - Basic Hand Calculations
 - Advance Calculations using Excel and Programming
- Test of Working Knowledge in Lighting Calculations

4. Lighting Design Process- A. Kantharat

WEEK 2 – SATURDAY 15 MAY, 2010

- Lighting Design Process
 - Design
 - Design Development
 - Construction Drawings
 - Product Specifications
 - Product Catalogue Selection

5. Lighting Design Concept & Visualization (Hand) – A.Kantharat

WEEK 3 – SATURDAY 22 MAY, 2010

- Lighting Applications
- Space Analysis
- 3D visualization using Different Tools
 - Hand-on Sketching/ Design / Analysis
 - Planning for Simulation

6. Daylighting and 3D Visualization- Dr.Pimonmart

WEEK 4 – SATURDAY 29 MAY, 2010

- Introduction to Daylighting
 - Top-Lighting
 - Side-Lighting
 - Windows Design and Calculations
 - Shading Design and Calculations
- 3D visualization using Computer Programs
- Computer Simulations

7. LEEDS and Energy Conservation- Dr. Jatuwat

WEEK 5 – SATURDAY 5 JUN, 2010

- Introduction to LEEDS
- LEEDS and Lighting
- Lighting Standards
 - IESNA and ASHRAE Standards
 - CA24 and other Standards
 - Standards from other countries

******Group Lighting Project Assigned******

8. Lighting Design by Professional I- Lek Supanijwong

WEEK 6 – SATURDAY 12 JUN, 2010

- Lighting Design Showcase
 - Case studies/ Tricks of the trade
 - Lighting Products Specifications
- Lighting Design Project Critic I

9. Lighting Design by Professional II-Tippaya Prasertsuk

WEEK 7– SATURDAY 19 JUN, 2010

- Lighting Design Showcase
 - Case studies/ Tricks of the trade
 - Tender and Constructions
- Lighting Design Project Critic II

10. Interior Lighting Design Project- All

WEEK 8– SATURDAY 26 JUN, 2010

- Final Design Presentation and Critics from Lighting Professionals and Instructors – group presentation
- Lighting Portfolio – individual

Remarks - Lighting Design Projects both groups and individual will be displayed on the website WWW.AP.TU.AC.TH/LIGHTS after the workshops.