



PAD_Passive design & Daylighting in buildings

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Credits: 4

Timetable:

50 hours in 6 weeks: from the 19th of September to the 25th of October 2011
Monday (09:00-13:00) – Tuesday (09:00-13:00 – 14:00-16:00)

Language

English

Prerequisites

None specific. It is however suggested that students with some interest in passive building design and the opportunities for developing not just technical but also poetic solutions, would derive the most benefit from this course.

Training Objectives

As we advance in to the 21st century it is becoming increasingly apparent that energy scarcity will prove to be one of the defining characteristics of the age. If the 20th century was characterized by seemingly endless sources of cheap energy the 21st will be determined by energy scarcity and the anxiety associated with it.

Given that buildings use approximately 40% of the world's energy, architects obviously have a large role to play in addressing this crisis. To date however most meaningful discussion about energy use in buildings has been dominated by a pre-occupation of engineering efficiency rather than energy effectiveness, which leaves the architects feeling like servants to systems engineers.

This course will seek to define an alternate approach, one that puts the architect at the centre of a debate which is fundamentally cultural. Through focused presentations, broad class discussions and two design projects, students will be introduced to the idea that by incorporating passive design strategies in to the DNA of a building leads to solutions that can express the values and hopes of the society that creates them.

Course Program

Through the study of existing buildings, and the design of new structures, students will be given the opportunity to extend and deepen their knowledge of Passive Design strategies for architects, with a particular view on daylighting design. Topics covered will include the management of daylight, optimizing solar access through building planning and orientation, orientation to wind, designing for temperature and the seasons and, most importantly, the impact on building form of all of these strategies.

Didactic Methods

The course material will be delivered through a combination of lectures assisted by slides, seminar discussions and individual discussions. Student work will act as the starting point for class discussions, and students will be encouraged to participate in critical discussion of their peer's work. Two small design projects will be developed using conventional two dimensional representations as well as through the use of three dimensional physical models. Projects should be developed alone or in couples.

Learning Assessment Procedures

Students will be assessed through a review of design projects and class presentations.

Reference Texts (*available both in our Dept Library or as "selected parts" for the registrants*)

- Brown G. Z., Dekay Mark, *Sun, Wind & Light: Architectural Design Strategies*, John Wiley & Sons, 2000
- Tanizaki Jun'ichiro, *Libro d'ombra*, Bompiani, 2000
- Tanizaki Jun'ichiro, *In Praise of Shadows*, Leetes Island Books, 1977
- Heschong Lisa, *Thermal Delight in Architecture*, MIT Press, 1979
- Steen Eiler Rasmussen, *Architetture e città*, Mazzotta, 1973

- Steen Eiler Rasmussen, *Experiencing Architecture*, The MIT Press 2nd Edition
- AAVV, *The Structure of Light: Richard Kelly and the Illumination of Modern Architecture*, Yale University Press, 2011
- Plummer Henry, *The Architecture of Natural Light*, Monacelli Press, 2009

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