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Lighting Design Certificate

The Lighting Design Certificate program focuses on the integration and application of light in architecture. This certificate program explores **daylighting**, **electric lighting**, and **computational lighting analysis**, to teach students how to design light that reveals the architecture and supports the visual environment. Its purpose is to give students a **comprehensive lighting education** focusing on sustainable approaches to light in architecture. The core knowledge areas that are covered include conceptual design, daylighting analysis, lighting metrics, lighting technology, computer simulations, lighting integration, site studies and applied lighting design competitions.

The 21 credit certificate is designed to be completed with the Masters of Architecture degree.

CERTIFICATE REQUIREMENTS:

The Certificate can be completed within the Master of Architecture (M.Arch) professional degree program through 12 credits of core coursework and a thesis with an emphasis on lighting.

Note: To receive certificate recognition students must fill out a Certificate Completion Form prior to graduation. Check with your advisor for deadlines.

CORE COURSES:

ARCH 435 - Principles and Practices of Environmental Lighting (3) Perception-based approach to principles of natural and artificial lighting. Practical considerations of lighting involving environmental evaluations, calculations, and the use of lamps and fixtures. Sketch and model studies for applications. Impact of lighting design on energy conservation. Relation of lighting design process to architectural design concepts.
Prerequisite: either ARCH 331 or ARCH 431.

ARCH 439 - Architectural Lighting Design (3)
Concentrates on the use of electric lighting and its effective integration in architecture and the built environment. Includes site visits, demonstrations, lectures, and projects. Prerequisite: ARCH 435.

ARCH 535 - Daylighting Design Seminar (3) Focuses on theoretical and applied daylighting principles in conjunction with physical and digital analytical tools. Includes field assessment of constructed buildings and individual projects involving research and design for lighting and daylighting.

ARCH 582 Computational Lighting Design (3)
Computational Lighting Design is an innovative course that draws from recent developments in lighting simulation, visualization, per-pixel data measurement and analysis techniques. It provides the student with an understanding of the theoretical aspects of computer applications for lighting design and analysis; and the practical knowledge of tools and techniques that enhance the integration of the lighting analysis into the architectural design process.

THESIS

ARCH 700 – Master's Thesis (with emphasis in lighting) (9)

FACILITIES:

The Integrated Design Lab at the Bullitt Center The Integrated Design Lab carries out research to advance knowledge and policies that support the healthiest and highest performing buildings and cities. It measures and analyzes modeled and actual building performance data so as to influence the building industry's understanding of how to radically improve the design and operation performance of buildings. Our performance research includes energy efficiency, daylighting, electric lighting, occupant energy use behavior, human health and productivity in buildings, and advanced building management systems.

Heliodon The heliodon is used to examine how the direct rays of the sun interact with an architect's building design. It is comprised of a tilting/rotating table (the earth) and a stationary 1000 watt theatrical light source (the sun). The table can be adjusted to represent the latitude, tilted to simulate any month of the year, and rotated to analyze any time of day.
When a physical model is tested on the heliodon it is typically rotated through the sun angles present on June 21st, September 21st, and December 21st. This yields the sun pattern data for the highest, average, and lowest sun angles for the chosen location. The primary tool for recording these tests is a digital video camera. When mounted to a model, it will record the movement of direct sun patterns entering the space throughout the day. Typically these studies seek to examine shading devices that eliminate direct sun from areas where visual tasks are critical. Direct sun can cause problems of heat gain and debilitating glare. The heliodon takes the guesswork out of complex sun-angle geometry and often will provide surprising results.

Overcast Sky Simulator Testing for the overcast condition occurs in a mirror-box artificial sky. The mirror-box overcast sky simulates a dome of light that provides diffuse light equally from all sides. Scale models placed in the overcast sky box simulate daylighting during Seattle's most prevalent weather condition. Data from the overcast sky is collected using photocells, while photographs convey the "look and feel" of the space.

Digital Commons The Digital Commons classroom, located in the basement of Gould Hall (room 007), is commonly used for Computational Lighting Analysis courses. Equipped with much of the latest software, Dell computers, two projection screens, and a teaching computer station, the classroom is setup to facilitate learning through the digital environment. The greater area of the Digital Commons also provides Mac computers, scanners, printers, a help desk, and areas for study.

FREQUENTLY ASKED QUESTIONS:

Can I combine this with other certificate programs?
Yes. As long as your coursework satisfies the requirements for the Certificate in Design Computing, we don't care if it fits other certificates too, but check with your advisor to make sure.

Does the Certificate appear on my UW transcript?
No. However, many employers recognize the value of the skills covered by the Certificate when included on your résumé, and the department records Certificate holders on its website.

Can an undergraduate earn the Certificate?
Not at this time.

Would getting the Certificate while an M.Arch. student shorten time spent in the MS program?
The University permits up to 12 credits to be shared between the MARCH and MS programs (thesis credits cannot be shared, however). What about independent studies and 498s?
Maybe. This is a rapidly evolving area of course and technical development and we are aware of that. If you are concerned, check with an advisor to find out if a particular Arch 498 or 600, will count towards the Certificate.

TO ENROLL IN THE CERTIFICATE PROGRAM:

Contact Certificate Program Coordinator, Chris Meek, cmeek@uw.edu

FOR MORE INFORMATION:

Contact Graduate Program Adviser, Claudine Manio, claudine@uw.edu