Architecture 545 _ Advanced Lighting Design

Credit Hours: 3 (Seminar) - The first day of class is Monday, Jan 8th, through Apr 22nd.
Time: 8:30 – 11:30. Mondays, including the Workshops' time.
Class: In-person Art & Arch. Bldg. Room 2204 & BT-Computer Lab and MIDEN_UM-VR Lab.
Laboratories: BT Computer Lab., Rm2119, Zoom Office Hours, M/Tu.: 11:30-1:00 PM
Instructor: Mojtaba Navvab, Ph.D., FIES, Email: moji@umich.edu
Pre-requisite: Graduate standing or permission of instructor

Description: Selected advanced topics in designing interior and exterior lighting and daylighting systems for buildings.

Objectives:

1) The application of the theory, principles, and lighting design techniques,
2) The development of selected advanced and more comprehensive lighting design techniques,
3) Integrate and implement this knowledge into the building design process.

Methods:

1) Seminars relating to new lighting design and real and virtual environment methods. 2) Case studies of lighting design emphasize the luminous environment's spatial aspects using computer models, digital fabrications, and virtual reality laboratories. 3) Individual or team study design, research, and application on one of the selected advanced topics using the latest computer lighting simulation and other simulation facilities such as virtual reality laboratory within UM campus used by lighting designers. The 3D Lab at the UM is a 10×10′ immersive, stereoscopic, virtual reality space that can now run environments created in the Unreal game engine or other visualization software. Simulation lighting system outputs lighting conditions within a desired luminous environment using Extended Reality (XR) systems. https://xr.engin.umich.edu/architecture-lighting-miden/ or http://websites.umich.edu/~vrl/,

"Human visual perception is said to be psychophysical because any attempt to understand it necessarily draws upon the disciplines of physics, physiology, and psychology. Thus, a perceptionist is concerned with the total visual environment as interpreted in the human mind."

Seminar Topics:

Selected advanced topics: Lighting and daylighting design and human vision, qualitative and quantitative lighting design daylighting system and energy efficiency, museum and exhibit lighting systems, computer modeling & lighting analysis, visibility requirement in lighting design, lighting design for people with low vision, virtual reality, and luminous environment. Office lighting design, lighting system design for plant growth, sports lighting system design, outdoor lighting design, fixture/luminaries design, digital fabrication, Industrial lighting system design and application, and human perception of color and brightness.