

48-692 Shaping Light

Light is one of the critical aspects of valued architectural spaces, influencing ambiance, the overall atmosphere, and occupant perception, whether positively or negatively. In this course, we will explore the quantities and qualities of light. We will study how we can design with and for light while understanding the paradox of lighting design—that it is both science and art. Digital design and simulation tools will be augmented with virtual reality (VR) to extend quantitative measurements of lighting to include qualitative aspects of light such as its influence on occupants' subjective impressions of a space, wellbeing and comfort. When it comes to buildings skin design, the control of radiation and exploitation of daylight is an effective way to reduce the need for electric lighting and improve the overall energy consumption of the building. The desire to bring natural light into spaces is not merely to support tasks; it is also essential to human comfort and wellbeing. This seminar will introduce students computer-based simulations to perform quantitative analyses of light as well as Immersive Virtual Reality tools to assess the qualitative aspects of daylight in architectural spaces.

The intent of this course is to provide the tools necessary for an effective integration of light in the design process of buildings. Fundamentals of lighting design will be introduced and their relevance in effective design will be emphasized. This course provides an in-depth view of how simulation and VR technology can support the design of comfortable and high-performance buildings. Students will be able to set various design goals and use simulation and VR to evaluate the impacts of design strategies on the targeted performance. Through weekly Lectures, discussions, and design work we will discuss issues of perceptions, color, vision, lighting techniques, and standards.

With the support of Professor Cindy Limauro, students in this course will have access to the Lighting Lab at the school of Drama to learn about and experience different lighting technologies, and to explore the use of light properties and qualities to evoke and convey mood.

