The Liberation of Light

The Liberation of Light	
Offered by	Department of the Built Environment
Language	English
Primarily interesting for	All students, but most relevant for students interested in lighting engineering and lighting design
Prerequisites	Required courses: Recommended courses: USE Trajectory 'The secret life of light'
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Content and composition

The Technical Lighting Trajectory "The liberation of light" is an elective package, consisting of three coherent courses. These courses are also available as free electives or embedded in the certificate program of the Intelligent Lighting Institute (ILI).

Innovations in lighting are timely, urgent and require a multidisciplinary perspective. There is a clear and urgent need for engineers with this expertise, given the revolutionary rate of innovations in lighting technology and control, the growing awareness of our need for sustainable solutions, and the increasing insights in the crucial role of light for human health and wellbeing. In this technical trajectory, these new developments will be considered within important new application domains, as reflected in the program lines of the Intelligent Lighting Institute. Currently these lines are:

- Bright Environments, interaction with and control of complex, interactive, and dynamic lighting systems.
- Sound Lighting, intelligent indoor lighting applications harnessing (day)light for optimal human functioning and health.
- Light by Design, investigates advanced physical models describing the interaction of light with optical systems and develop efficient numerical simulation methods for the design of these systems. The Technical Lighting Trajectory "The liberation of light" is designed to train engineers from different backgrounds, uniquely equipped to face the challenges in lighting innovation.

Course code	Course name	Level classification	Last year course is offered	Last year exam is offered
0HEUA0	Light and Experience	Exploration	?	?
7HK30	Physics of Light and Lighting Design	Specialization		
7HK40	Liberation of Light Project	Application		

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Course description

Light and Experience (0HEUA0)
The exploratory course Light and Experience, aims to familiarize students with basic insights in developments in light sources, lighting controls, and or growing insight in light's psychological, biological, and social effects. Students will get acquainted with both theoretical and practical understanding of user needs and preferences, light's effects on health and behavior, interaction with light and the many stakeholders around innovative light applications. We start with 'base camp': one week of introduction into light as a physical phenomenon, the visual system, and lighting design. Students will then explore three themes around intelligent lighting: 1) Light for health and wellbeing; 2) Smart urban lighting; and 3) New interaction styles with light.

Physics of light and lighting design (7HK30)
The advancing course Physics of light and lighting design, aims to provide students with the technical understanding of light, essential for the design and research in lighting related topics. After an introduction in the physics of light, optics, photometry and colorimetry, several lamp types are discussed: classical light sources like incandescent and halogen lamps, but also LED and OLED. The chemical processes -for example the role of phosphors -are addressed. In addition to knowledge on light sources, the course introduces luminaires and (intelligent)lighting control. Finally, students get familiarized with calculations which enable them to predict, design and control the light condition in a given environment. In several workshop assignments, the theory of all light related technical aspects is translated into practice.

Liberation of Light project (7HK40)
In the third phase of the Liberation of Light technical trajectory, students select a project team (±3 students) and assignment. Where possible, every team will work for an ILI partner (client) and will have (at least) one ILI coach. The client and ILI staff define a selection of challenges, each embedded in one of the program lines. All assignments consist of a thorough exploration, prototype design, and prototype testing. In each assignment there should also be a clear and explicit consideration of the user perspective. The technical character of projects may vary and have an emphasis in for instance architectural lighting design, innovative controls & interaction, dynamic lighting applications, or energy efficiency/smart materials. Examples of projects: 'Lighting design for elderly Sad-free building', 'Daylight harvesting system for public parking lots', 'Being controlled or controlling our environment', 'Capturing and Liberating Daylight'.

Additionally

Use trajectory and certificate program
The Intelligent Lighting Institute has also developed a USE trajectory, The Secret Life of Light and a certificate program, which are open to students from ALL majors taught at TU/e.

The certificate program is aimed at all BSc students of TU/e as well as external students.
The workload consists of 20 ec. At least 5 ec must be followed on top of the regular BSc program. The USE trajectory, *The secret life of light,* consists of three sequential courses and so does the technical coherent package, *The liberation of light.* Both lines consist of the same explorative course, a deepening course and a project.
The requirements of the certificate are:

- Successfully obtain (1) the explorative course, (2) both advanced courses, and (3) one project (USE or technical, free choice)
- Doing at least one of the courses over and above the regular study program (in other words extra or on top of the 180 ec of the total BSc program.

More information can be found at the website of ILI.
As of 2022, after finishing this course successfully, you can register yourself as European Lighting Expert (ELE) for € 25. This is a unique opportunity to have an official confirmation of your high level of competence in the field of light and lighting.
More information on ELE: https://europeanlightingexpert.org/en/home/
Registration form: https://europeanlightingexpert.org/en/about-us/anerkannte-studiengaenge/