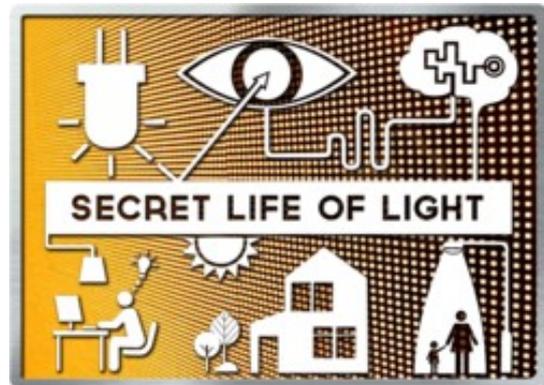


# The secret life of light | USE Trajectory

The lighting business is changing radically. Three major developments have spurred this revolution: (1) society's growing awareness of the need to **save energy**, (2) recent insights in light's pathways through the brain and its impact on **human health & functioning**, and (3) the introduction of LED, a low power, flexible light source, offering potential for miniaturization, embedding, and **advanced dynamic control**. All these developments have direct implications for users and society at large. We can now offer tailored light conditions to optimise human performance, health and wellbeing, and balance human needs with environmental impact.



The Secret Life of Light USE course sequence is designed to raise awareness of the impact of light on human functioning to equip engineers from different backgrounds with the necessary insights in psychological and biological lighting needs and with tools to address such needs, and to face the challenges in multi-stakeholder lighting innovation. This USE sequence is coordinated by the Intelligent Lighting Institute (ILI).

## USE 1 Light and Experience | Exploration (Quartile 1)

The exploratory course *Light and Experience* aims to familiarise students with basic insights in light and lighting design, new developments and insights in lighting applications, lighting technology, and of course it's impact on humans pertaining to interaction with light, experience of light, and behavioural and health effects. Students will get acquainted with both theoretical and practical understanding of user needs and preferences, light's effects on health and behaviour, interaction with light and the many stakeholders around innovative light applications.

## USE 2 Advancing Light for Human Functioning | Specialization (Quartile 2)

The specialized course *Advancing Light for Human Functioning* offers more in-depth knowledge in a number of domains, structured in modules (2ECTs, three weeks each). Modules adhere to one of the USE perspectives and give students a more thorough understanding of the user, societal issues, or entrepreneurship in the domain of light & lighting. All modules run twice. Students select two modules from the set: *The basis of light perception and experience*, *The appraisal of light – measuring & understanding consumers' reactions*, *Sensory design*, *Interaction design for intelligent light*, and *Business aspects of intelligent lighting solutions*. During the final two weeks, students write a research proposal integrating the insights gained from the chosen modules.

## USE 3 Secret Life of Light project | Application (Quartile 4)

In the final phase of the Secret Life of Light USE sequence, students select a project team (±5 students) and assignment during an exciting matchmaking event. Every team will work for an ILI partner (client) and will have (at least) one ILI coach. For each thematic programme, clients and ILI staff together define a small number of challenges, which clearly refer to the USE components. This renders a set of 6-9 challenges/projects to choose from. Examples of such projects: 'Light for safety at the Stratum Eindhoven', 'Light Apps for the Elderly', 'Light for stress relief', 'Simulating daylight', 'Campus 2020'.

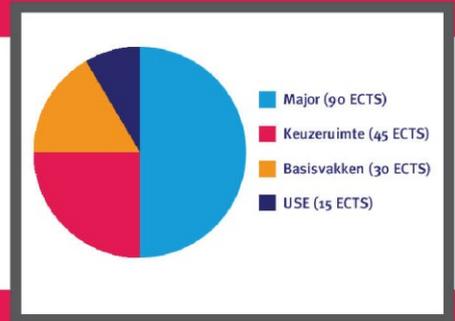
Assignments may have a research or design orientation. Research assignments consist of an investigation and a formulation of a vision. Design assignments consist of a design exploration, prototype design, and evaluation. Whether research or design oriented, the assignments should be grounded in a basic understanding of the user, contextual, and technical requirements of innovative light applications, and involve empirical data gathering and analysis, i.e. user-research. Examples of a research and a design oriented project can be found in Application section of the deliverables for the USE sequence.

### **Technical trajectory and certificate program**

The Intelligent Lighting Institute has also developed a coherent technical trajectory and a certificate program which are open to students from ALL majors taught at TU/e. More information can be found at the [website of ILI](#).

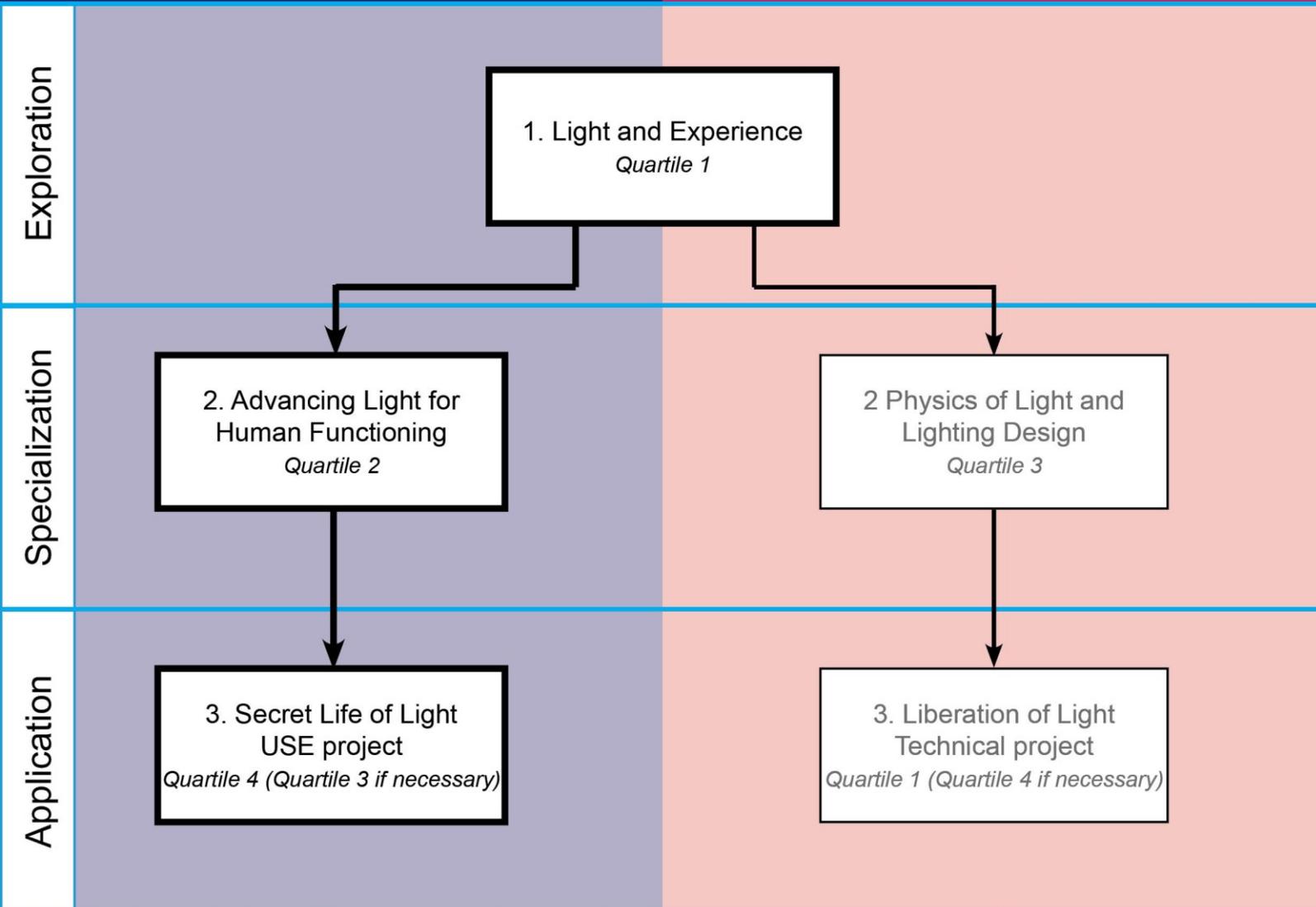
The certificate program Engineering Intelligent Lighting is a multidisciplinary training program for bachelor students majoring in any of the disciplines offered in the TU/e bachelor school. It involves a course program of 30 ETCS, multidisciplinary and tailored to the students' interests and expertise, and a bachelor end project embedded in the Intelligent Lighting Institute. The Intelligent Lighting certificate thus strives for a multidisciplinary, yet thematically focused training of young engineers. The certificate reflects that the student has attained:

- Knowledge of light as a physical phenomenon, light sources, and its behaviour in physical spaces.
- Knowledge of the perception and human factors of light, and awareness of the multifaceted nature of light's effects on human functioning
- Basic knowledge of distributed control, operating systems, computer networks, sensors & signal processing,
- Awareness of the challenges for lighting design and control in terms of system transparency and user interaction



## USE trajectory “The Secret Life of Light”

## Technical trajectory “The Liberation of Light”



↓
Certificate Program
↓  
“Engineering Intelligent Lighting”

USE  
Trajectory  
15 ECTS

&

Technical  
Trajectory  
10 ECTS

&

5 ETCS  
Core electives