HS2010 Light and Science 9.0 credits

Ljus och teori

This is a translation of the Swedish, legally binding, course syllabus.

Establishment

Course syllabus for HS2010 valid from Autumn 2019

Grading scale

A, B, C, D, E, FX, F

Education cycle

Second cycle

Main field of study

Technology and Health

Specific prerequisites

The eligibility as required for the programme, or the equivalent knowledge in Architecture or related field.

Language of instruction

The language of instruction is specified in the course offering information in the course catalogue.

Intended learning outcomes

- Students should be able to handle theoretically the relations between the physics of light radiation, the visual based theory definition of light and the function of the perceptual system.
- Students shall apply methods of observation and analysis of lighting conditions, based on the understanding of a scientific approach to light and lighting and the orchestration of the multiple theoretical bases.
- Students shall train the ability to apply scientific based knowledge and adopt relevant standpoints in the lighting design process.
- Students should train and develop the ability to structure and write academic papers in a given time frame.

Course contents

- Physics of light radiation
- Visual, perceptual based theory and definition of the concept of light
- The function of the perceptual system from stimuli to information
- Basics concepts of color and color system
- Basis of photometry and measurements
- Academic writing and case study paper development
- Basics concepts of Lighting and Health

Disposition

Content's structure:

**Visual and Physical approach
**(Light, Colour, Space, Time)

**Laboratory experiments
**(Visual-physical evaluation and measurement)

**Visual Ergonomics and Health
**(Methods, evaluation)

Literature Seminar

(Scientific approach and academic writing styles)

**Case Study
**(Paper)

Course literature

Liljefors, A. (1999). Lighting Visually and Physically. KTH School of Architecture, Stockholm

Boyce, P. (2014). Human Factors in Lighting, CRC Press; 3 edition

DiLaura, D., Houser, K., Mistrick, R., Steffy, G. (2011). Lighting Handbook, 10th ed, IES

Berns Roy S., (2000). Billmeyer and Saltzman's Principles of Color Technology. 3rd Edition, John Wiley & Sons

Neuman, Dietrich (2010). The Structure of Light. Yale Universtiy Press

Arnkil, H., Fridell Anter, K., Klarén, U. (2012). Colour and Light - Concepts and Confusions, Aalto University publication series

Examination

- INLA - Workbook, 4.5 credits, grading scale: A, B, C, D, E, FX, F
- INLB - Assignment, 4.5 credits, grading scale: A, B, C, D, E, FX, F

Based on recommendation from KTH's coordinator for disabilities, the examiner will decide how to adapt an examination for students with documented disability.

The examiner may apply another examination format when re-examining individual students.

If the course is discontinued, students may request to be examined during the following two academic years.

The course has two examination modules, a workbook (INLA) and an academic paper (INLB) whereas INLB is split up in INLB1 (draft) and INLB2 (final paper opposition).

The course evaluation is a combination of the academic paper and workbook grades.

The personal learning process is assessed through the workbook in relation to these criteria: Completeness, Structure, Depth of reflections and Research.

The academic paper will include these steps: field work (description, presentation); draft paper; final paper; opposition paper criticism (seminar). It will be assessed through these criteria: Content, Style, Structure.

Detailed description of assessment methodology is provided at the beginning of each course.

Other requirements for final grade

To receive a final grade for this course, grade E or higher on the workbook (report of lectures, process and reflections) and the paper work (process, essay, seminars) is required, as well as 80 % attendance.

Overall course grade is based on grading scale A-F.

Ethical approach

- All members of a group are responsible for the group's work.
- In any assessment, every student shall honestly disclose any help received and sources used.
- In an oral assessment, every student shall be able to present and answer questions about the entire assignment and solution.