Programme syllabus

Master's Programme, Architectural Lighting Design and Health, 120 credits
Masterprogram, ljus, design och hälsa
120.0 credits

Valid for students admitted to the education from autumn 10 (HT - Autumn term; VT - Spring term).

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

Programme objectives

The program Architectural Lighting Design and Health is based on the quality descriptions for Degree of Master, two years (Higher education ordinance, issued by the Swedish national agency for higher education).

After completing the courses’ requirements the students must be able to demonstrate the following knowledge, skills and judgments.

Knowledge and understanding

- Broad and deep scientific based knowledge in the area of electrical light and daylight
- In-depth and thorough knowledge in the area of Architectural Lighting Design and Health
- Ability to apply advanced knowledge in the area, both professionally and scientifically.

Skills and abilities

- Independent ability to identify, formulate, analyze and solve problems in the area of Architectural Lighting Design, for electrical and daylight solutions.
- Ability to perform all phases of the design process to the development of architectural lighting design projects, for outdoor and indoor environments, following the KTH method.
- Ability to apply advanced techniques and tools in the area.
- Ability to present and communicate results in an international environment.
- Ability to develop scientific work.

Ability to make judgements and adopt a standpoint

- Ability to independent and critical analysis of results in the area.
• Show a professional and ethical responsibility in scientific, technical, ecological and social activities.
• Have understanding that Architectural-related problems, considered from a design, building and urban perspective are often complex, can be incompletely defined and sometimes contain conflicting conditions.

**Extent and content of the programme**

The program consists of a two-year full time studies corresponding to 120 credits.

Educational level is advanced.

The teaching language is English.

Individual adjustment of the duration of the program is possible.

It is a mainly a one-track program.

Complete information on the degree requirements can be found at the local degree policy of KTH, see http://intra.kth.se/regelverk/utbildning-forskning/grundutbildning/examina/1.27227?l=en_UK

**Eligibility and selection**

In order to be eligible to apply to the master’s program, a higher education degree of at least 180 higher education credits of Bachelor’s degree in Architecture, Design or Engineering must be completed. The Engineering degree must contain at least 50 credits of Architecture and Design subjects.

A good knowledge of written and spoken English. Applicants must provide proof of their proficiency in English.

Admission to the program is based on the following criteria (in order of priority):

Assessment of university/higher education institute; grades in degree; grades in courses relevant to the program; work experience relevant to the program; and letter of recommendation and references.

Complete information on the eligibility requirements can be found at the local admission policy of KTH, see http://intra.kth.se/regelverk/utbildning-forskning/grundutbildning/antagning/1.27192?l=sv_SE

**Implementation of the education**

**Structure of the education**

The study year is partitioned into four study periods, three during the autumn term and one during the spring term, plus the degree project (master thesis). The program starts in late August and ends in the beginning of June the following year. The program is given at Campus Haninge, KTH, School of Technology and Health.
The programme includes eighteen months taught courses, which sums up to 120 hp (120 ECTS); 1.5 hp (1.5 ECTS) corresponds to one week of full time studies.

The program consists of the following courses and subjects.

Term 1:

Light and Humans

Basis of light for humans, in its cultural, historical and social developments.

Light and Lighting vocabulary.

Theoretical basis for design process, having light as shaping element of physical spaces.

The character of light sources and their field of application.

Materials and how they can be used and effect on light distribution.

Workbook presentation and reflections

Light and Space - Outdoor

Theoretical basis for outdoor lighting – landscape and urban.

Methodology and tools for the outdoor design process, from concept to calculation.

Full scale applications and tests.

Urban planning and analysis, sustainability and energy issues.

Workbook presentation and reflections

Light and Science

Light and theory putting the theoretical knowledge in relationship with the practical application.

In this module, the students will use their knowledge to contemplate in existing environments and make a case study to evaluate the lighting qualities, within writing an academic text.

Workbook presentation and reflections

Term 2:

Light and Space – Indoor
Theoretical basis for indoor lighting – architectural qualities and indoor spaces structures and complexity.

Methodology and tools for the lighting design process, from concept to proposal.

Daylight basics.

Full-scale mock-ups and tests.

Visual evaluations and calculation tools.

Workbook presentation and reflections

**Luminaire Design**

Theoretical basis in luminaire design: methodology and tools.

History of luminaire design.

Character of light sources and their fields of application.

Lighting distribution, reflectors constructions, material features.

Tests, measurements, full-scale mock-ups.

Workbook presentation and reflections

Term 3

**Daylight and Architecture**

Methods of daylight applications in buildings treating the complex co-ordination of daylight design (qualities, calculation, visualizations).

Physical and visual based definitions.

Materials, constructions, architectural, climate and functional effects.

Sustainability effects and energy calculation.

Workbook presentation and reflections

**Depth in Lighting Design**

Depth the knowledge in the field, in relation to contemporary issues and the professional practice.

Light and Health, Ergonomics and Well-being.

New technologies.
Visualization and marketing tools.

**Theory of Science**

Existing theories of science with relevance to the field as basis for the development of design approaches to scientific works and academic thinking to design projects.

Methodologies of research.

Term 4

**Degree project**

The teaching language is English. Course descriptions and syllabuses can be found at http://www.kth.se/student/kurser/?l=en_UK

Course names and numbers are listed in Appendix 1.

**Courses**

The programme is course-based. Lists of courses are included in appendix 1.

**Grading system**

Courses in the first and the second cycle are graded on a scale from A to F. A-E are passing grades, A is the highest grade. The grades pass (P) and fail (F) are used for courses under certain circumstances.

**Conditions for participation in the programme**

**Term enrolment**

A condition in order to be able to participate in the studies is that the student must enroll for the next term. This is done on the first day of the term. With the enrolment, the student has submitted their intention of studying and participating in the program.

Only after that is it possible for the student to:

- register for courses
- register for the term
- get results

To be promoted to the second academic year of the program at least 45 higher education credits have to be completed during the first academic year (including the re-examination period in August).

**Recognition of previous academic studies**
The student has the possibility to apply to receive credit from courses taken at another university/higher education institution both in Sweden and from abroad. The application can be found on KTH’s web page. KTH’s policy for recognition of previous academic studies, see

http://intra.kth.se/regelverk/utbildning-forskning/grundutbildning/prestationer/1.27200?l=sv_SE

Degree project

The degree project gives the student an opportunity to show his/hers ability of independent work in the main area of the program, as well as writing reports and scientific papers.

The degree project work can be started only after a large portion of the studies have been completed. Adviser for the degree project is appointed by the program director.

More information on the KTH policy on the degree project can be found at

http://intra.kth.se/regelverk/utbildning-forskning/grundutbildning/examensarbete/1.27212?l=sv_SE

Degree

In order to graduate with the Degree of Master of Science (120 ECTS), a passing grade must be achieved in all courses in the student’s study plan. The study plan must comprise 120 credits including a degree project consisting of 30 credits.

Complete information on the degree requirements can be found at the local degree policy of KTH, see

http://intra.kth.se/regelverk/utbildning-forskning/grundutbildning/examina/1.27227?l=en_UK

Appendix 1 - Course list
Appendix 2 - Programme syllabus descriptions
## Appendix 1: Course list

Master's Programme, Architectural Lighting Design and Health, 120 credits (TLDHM), Programme syllabus for studies starting in autumn 2010

### General courses

#### Year 1

**Mandatory courses (60.0 Credits)**

<table>
<thead>
<tr>
<th>Course code</th>
<th>Course name</th>
<th>Credits</th>
<th>Edu. level</th>
</tr>
</thead>
<tbody>
<tr>
<td>HS2006</td>
<td>Luminaire Design</td>
<td>15.0 hp</td>
<td>Second cycle</td>
</tr>
<tr>
<td>HS2007</td>
<td>Light and Humans</td>
<td>9.0 hp</td>
<td>Second cycle</td>
</tr>
<tr>
<td>HS2008</td>
<td>Light and Space-Outdoor</td>
<td>12.0 hp</td>
<td>Second cycle</td>
</tr>
<tr>
<td>HS2009</td>
<td>Light and Space-Indoor</td>
<td>15.0 hp</td>
<td>Second cycle</td>
</tr>
<tr>
<td>HS2010</td>
<td>Light and Science</td>
<td>9.0 hp</td>
<td>Second cycle</td>
</tr>
</tbody>
</table>

#### Year 2

**Mandatory courses (61.5 Credits)**

<table>
<thead>
<tr>
<th>Course code</th>
<th>Course name</th>
<th>Credits</th>
<th>Edu. level</th>
</tr>
</thead>
<tbody>
<tr>
<td>AK2036</td>
<td>Theory and Methodology of Science with Applications (Natural and Technological Science)</td>
<td>7.5 hp</td>
<td>Second cycle</td>
</tr>
<tr>
<td>HS2011</td>
<td>Daylight and Design Process</td>
<td>12.0 hp</td>
<td>Second cycle</td>
</tr>
<tr>
<td>HS2012</td>
<td>Depth in Light Design</td>
<td>12.0 hp</td>
<td>Second cycle</td>
</tr>
<tr>
<td>HS202X</td>
<td>Degree Project in Architectural Lighting Design and Health, Second Cycle</td>
<td>30.0 hp</td>
<td>Second cycle</td>
</tr>
</tbody>
</table>
Appendix 2: Specialisations

Master's Programme, Architectural Lighting Design and Health, 120 credits (TLDHM), Programme syllabus for studies starting in autumn 2010

This programme has no specialisations.