AALBORG UNIVERSITET

STUDIEORDNING FOR KANDIDATUDDANNELSEN I LYSDESIGN, 2020, KØBENHAVN

CAND.SCIENT.
KØBENHAVN

MODULER SOM INDGÅR I STUDIEORDNINGEN

INDHOLDSFORTEGNELSE

SEEING THE LIGHT

2025/2026

CONTENT, PROGRESS AND PEDAGOGY OF THE MODULE

Develop an understanding and skills in designing with light by synthesizing the fundamental principles of lighting design from the fields of architecture and design, science and media technology. The students must understand the complexity and possibilities that lie in the interplay between the specialized fields. The students will combine the art and science of designing with light in real and virtual spaces.

Students are required to work according to a scientific method and to report results and processes in scientific forms, such as posters, papers or reports.

LEARNING OBJECTIVES

KNOWLEDGE

Students who complete the module will obtain the following qualifications:

- **Understand** the fundamentals of light from an architectural, scientific and media technological approach
- **Understand** lighting design methods and ability to understand light as a holistic tool to create spaces with different purposes
- **Understand** central issues related to how different lighting designs effect human experience

SKILLS

Students who complete the module will obtain the following qualifications:

- Ability to **analyze** and measure, calculate and animate how light relates to the user experience of space and how different designs have different effects and functions
- Ability to **apply** mixed methods to demonstrate design solutions of an aesthetic, technical and functional character
- Ability **toidentify** problems that meet needs, **apply** appropriate goals and **create** sustainable solutions
- Produce a project report according to norms of the area, take into consideration relevant literature, apply correct terminology and convey the research-based foundation, problem and results of the project orally and in writing in a coherent manner, including the relationship between the problem formulation, the project's realization and its conclusions
- Evaluate and select relevant literature, scientific methods and models and other tools for application in the project work, and evaluate the project's problem area in a relevant scientific context

COMPETENCES

Students who complete the module will obtain the following qualifications

- Ability to **create** a lighting design project in an interior space using mixed methods such as registration, calculations, animations, models, user observations, etc.
- Ability to **analyze** how to choose the appropriate method and technology to suit different dimensions of lighting design problems at different stages in the design process
- Ability to **apply** and synthesize relevant theoretical, methodological and practical knowledge of lighting
- Ability to **apply** presentation techniques and communication skills
- Plan, execute and manage complex research and/or development tasks, and assume a professional responsibility for carrying out, potentially cross-disciplinary, collaborations
- Assume responsibility for own scientific development and specialization

TYPE OF INSTRUCTION

Academically supervised student-governed problem oriented project work

EXAM

EXAMS

Name of exam	Seeing the Light
Type of exam	Oral exam based on a project Oral exam based on a project with a scientific report written in English and a poster and a video illustrating and summarizing the project.
ECTS	15
Permitted aids	With certain aids: See semester description
Assessment	7-point grading scale
Type of grading	Internal examination
Criteria of assessment	The criteria of assessment are stated in the Examination Policies and Procedures

FACTS ABOUT THE MODULE

Danish title	At opleve lys
Module code	MSNLIDM1201
Module type	Project
Duration	1 semester
Semester	Autumn
ECTS	15
Language of instruction	English
Location of the lecture	Campus Copenhagen
Responsible for the module	Claus Brøndgaard Madsen

ORGANISATION

Education owner	Master of Science (MSc) in Lighting Design
Study Board	Study Board of Media Technology
Department	Department of Architecture, Design and Media Technology
Faculty	The Technical Faculty of IT and Design

MEANING OF LIGHT: LIGHT AND SPACE

2025/2026

CONTENT, PROGRESS AND PEDAGOGY OF THE MODULE

The module covers understanding and synthesizing the fundamental principles of the interplay between light, space, technology, and human perception. Theory on the sensory and qualitative parameters of lighting design is introduced for natural- and electrical lighting, together with examples of lighting techniques. The starting point of this course is the “experience of light and space”. Real world studies of the interplay between light, space, texture, and the human experience are included. The Nordic light and design tradition will be explored to demonstrate a sensibility to designing with light.

LEARNING OBJECTIVES

KNOWLEDGE

Students who complete this module will obtain the following qualifications

- Understand classical theories of cultural and aesthetic responses to light and the space/time continuum
- Understanding of a group of reference buildings, places and indoor and outdoor spaces where light plays a specific role
- Understand core elements of lighting design in regard to the interplay between daylight and electric light in spaces: form, function, sustainability, location, technique and human significance
- Understand lighting design methodologies including scenarios and social contexts of use
- Applying qualitative methods for research by design, including end-user interview techniques, analysis and experience sampling
- Analyse the qualities of light in space and present the analysis verbally and visually
- Understanding of historical and cultural aspects of lighting; theory of current lighting design practice
- Understand daylight design and control; sustainable architecture; building automation

SKILLS

Students who complete this module will obtain the following qualifications

- Ability to understand light’s functional applications and light used as a design element
- Ability to apply light in space through sketching and/or modelling to demonstrate design solutions of an aesthetic and functional character
- Ability to apply research-based knowledge into practice design
- Ability to apply knowledge to facilitate the design process involving users in real-life contexts
- Ability to demonstrate understanding of relation between characteristics of lighting schemes (daylight and electric light) with the associated luminous effects

COMPETENCES

Students who complete this module will obtain the following qualifications

- Ability to synthesize relevant theoretical, methodological and practical knowledge of lighting
- Ability to apply the design process involving users in context
- Ability to synthesize and apply experienced and measured/calculated qualities of light in space

TYPE OF INSTRUCTION

Refer to the overview of instruction types listed in § 17.

EXAM

EXAMS

Name of exam	Meaning of Light: Light and Space
Type of exam	Oral exam based on a project
ECTS	5
Permitted aids	With certain aids: See semester description
Assessment	7-point grading scale
Type of grading	Internal examination
Criteria of assessment	The criteria of assessment are stated in the Examination Policies and Procedures

FACTS ABOUT THE MODULE

Danish title	Lysets betydning: Lys og rum
Module code	MSNLIDM1202
Module type	Course
Duration	1 semester
Semester	Autumn
ECTS	5
Language of instruction	English
Location of the lecture	Campus Copenhagen
Responsible for the module	Claus Brøndgaard Madsen

ORGANISATION

Education owner	Master of Science (MSc) in Lighting Design
Study Board	Study Board of Media Technology
Department	Department of Architecture, Design and Media Technology
Faculty	The Technical Faculty of IT and Design

LIGHTING FUNDAMENTALS

2025/2026

CONTENT, PROGRESS AND PEDAGOGY OF THE MODULE

The objective of this module is to introduce students to the basic photometric and colorimetric terms, quantities and relationships as well as the processes involved in the perception and appreciation of the luminous environment. The course will propose to master the link between subjective observation and the metrics behind. This covers: real scenes, indoor, outdoor, stage, automotive and virtual spaces.

LEARNING OBJECTIVES

KNOWLEDGE

Students who complete the module will gain the following qualifications:

- **Understand** the basic photometry terms, fundamental laws and colorimetric systems used in international standards
- **Understand** the basic physiology of the human eye and visual perception
- **Understand** and being able to **describe** light propagation and light interaction with matter
- Ability to **relate** to the possibilities offered by materials with embedded nanoparticles or diffractive surfaces
- **Understand** the characteristics and performance of common known light sources (including daylight)

SKILLS

Students who complete the module will gain the following qualifications

- Ability to **describe** basic photometry terms, fundamental laws and colorimetric systems used in international standards
- Ability to **compute** illuminances for various light sources (point and area light sources)
- Ability to **assess** contribution of light reflection on surfaces
- Ability to **measure** luminous quantities with portable equipment and relate to the quantities
- The ability to **select** the most appropriate light source for a given application
- The ability to **communicate** results of measurements and calculations

COMPETENCES

Students who complete the module will gain the following qualifications

- Ability to **synthesize anduse** achieved knowledge of light and lighting and **apply** this in practical and theoretical situations.
- Ability to **apply** objective methods of measurements, observation and analysis of lighting conditions based on a scientific approach to light
- Ability to **analyse** and **understand** various lighting patterns occurring in space

TYPE OF INSTRUCTION

Refer to the overview of instruction types listed in § 17.

EXAM

EXAMS

Name of exam	Lighting Fundamentals

Type of exam	Oral exam
ECTS	5
Permitted aids	With certain aids: See semester description
Assessment	7-point grading scale
Type of grading	Internal examination
Criteria of assessment	The criteria of assessment are stated in the Examination Policies and Procedures

FACTS ABOUT THE MODULE

Danish title	Grundlæggende viden om lys
Module code	MSNLIDM1203
Module type	Course
Duration	1 semester
Semester	Autumn
ECTS	5
Language of instruction	English
Location of the lecture	Campus Copenhagen
Responsible for the module	Claus Brøndgaard Madsen

ORGANISATION

Education owner	Master of Science (MSc) in Lighting Design
Study Board	Study Board of Media Technology
Department	Department of Architecture, Design and Media Technology
Faculty	The Technical Faculty of IT and Design

RENDERED LIGHTING SIMULATION/CGI

2025/2026

CONTENT, PROGRESS AND PEDAGOGY OF THE MODULE

In order to communicate and develop lighting designs it is essential to be able to develop and communicate rendered lighting simulations. The course rational is that students need to have an understanding of how rendered lighting simulations are essential as reproduction of illuminations of a context and how the rendering can be used as design tool and to communicate and develop different aspects of lighting designs

LEARNING OBJECTIVES

KNOWLEDGE

Students who complete this module will obtain the following qualifications

- **Understanding** of how photometric/radiometric illumination concepts transfer to, and are simulated by, rendering software
- **Understanding** of the advanced rendering techniques for global illumination simulation, in particular ray tracing, final gather and photon mapping
- **Understanding** of aspects of the trade-offs between rendering quality and rendering time
- **Understanding** of High Dynamic Range imaging (HDRi)
- **Understanding** of computational day light models
- **Understanding** of shaders

SKILLS

Students who complete this module will obtain the following qualifications

- Ability to **apply** rendering packages (3dsMAX, Maya, LuxRender, RADIANCE, PBRT, or similar) to simulating radiance/luminance, or irradiance/illuminance levels in complex scenes, with complex illumination conditions
- Ability to **apply** virtual reproduction of exterior and interior illumination and analyse the object appearance
- Ability to **use** shadows in rendering to achieve greater depth and realism
- Ability to **apply** HDRi light probe techniques for capturing real-world illumination conditions and re-creating them in a simulation

COMPETENCES

Students who complete this module will obtain the following qualifications

- Ability to **analyse, synthesize, and evaluate** illumination designs through physics-based, realistic simulation using rendering packages, and to use such simulations in an iterative process to balance functional and aesthetic elements of the illumination design

TYPE OF INSTRUCTION

Academically supervised student-governed problem oriented project work

EXAM

EXAMS

Name of exam	Rendered Lighting Simulation/CGI
Type of exam	Oral exam based on a project
ECTS	5

Permitted aids	With certain aids: See semester description
Assessment	7-point grading scale
Type of grading	Internal examination
Criteria of assessment	The criteria of assessment are stated in the Examination Policies and Procedures

FACTS ABOUT THE MODULE

Danish title	Digitale simuleringer med lys/CGI
Module code	MSNLIDM1204
Module type	Course
Duration	1 semester
Semester	Autumn
ECTS	5
Language of instruction	English
Location of the lecture	Campus Copenhagen
Responsible for the module	Claus Brøndgaard Madsen

ORGANISATION

Education owner	Master of Science (MSc) in Lighting Design
Study Board	Study Board of Media Technology
Department	Department of Architecture, Design and Media Technology
Faculty	The Technical Faculty of IT and Design

CREATING WITH LIGHT: INTERACTIVE LIGHTING

2025/2026

RECOMMENDED PREREQUISITE FOR PARTICIPATION IN THE MODULE

The module adds to the knowledge obtained in the 1st semester

CONTENT, PROGRESS AND PEDAGOGY OF THE MODULE

Develop an understanding of creating with light with a focus on an interactive lighting design through media technology and human/conceptual interaction. The students must find a specific context, function and theme where it is possible to define a lighting design project that must show solutions on several levels such as functional, technical, aesthetic, etc.

LEARNING OBJECTIVES

KNOWLEDGE

Students who complete this module will obtain the following qualifications

- **Understanding** of the core elements of lighting in regards to the interactive interplay between human, context, function and light
- Ability to **describe** the lighting fundamentals and the relationship between simulations/renderings of light as design elements
- **Understanding** how light can be used as an interactive design element in an complex context
- Knowledge of **creating** a project – from concept sketches, programming, mock-ups, tests, technical drawings and realisation

SKILLS

Students who complete this module will obtain the following qualifications

- Must be able to see, appreciate and **analyse** lighting design projects, theories, principles and methods
- Ability to **apply** light and use technology to create intelligent and/or interactive effects in a virtual or real space
- Ability to **analyse** lighting designs according to scientific lighting theories
- Ability to **apply** light design theories, principles and methods to the process of creating lighting design
- Ability to **identify** problems and programmes where lighting design creates holistic and sustainable solutions
- Produce a project report according to norms of the area, take into consideration relevant literature, apply correct terminology and convey the research-based foundation, problem and results of the project orally and in writing in a coherent manner, including the relationship between the problem formulation, the project's realization and its conclusions
- Evaluate and select relevant literature, scientific methods and models and other tools for application in the project work, and evaluate the project's problem area in a relevant scientific context

COMPETENCES

Students who complete this module will obtain the following qualifications

- Ability to **create** and present holistic lighting design projects by applying the right knowledge about light design, tools and scientific methods into the design process
- Ability to **analyse, communicate and discuss** research-based knowledge in the area of lighting design
- Plan, execute and manage complex research and/or development tasks, and assume a professional responsibility for carrying out, potentially cross-disciplinary, collaborations
- Assume responsibility for own scientific development and specialization

TYPE OF INSTRUCTION

Academically supervised student-governed problem oriented project work

EXAM

EXAMS

Name of exam	Creating with Light: Interactive Lighting
Type of exam	Oral exam based on a project Oral exam based on a project with a scientific report written in English and a poster and a video illustrating and summarizing the project.
ECTS	15
Assessment	7-point grading scale
Type of grading	External examination
Criteria of assessment	The criteria of assessment are stated in the Examination Policies and Procedures

FACTS ABOUT THE MODULE

Danish title	At skabe med lys: Interaktivt lysdesign
Module code	MSNLIDM2201
Module type	Project
Duration	1 semester
Semester	Spring
ECTS	15
Language of instruction	English
Location of the lecture	Campus Copenhagen
Responsible for the module	Claus Brøndgaard Madsen

ORGANISATION

Education owner	Master of Science (MSc) in Lighting Design
Study Board	Study Board of Media Technology
Department	Department of Architecture, Design and Media Technology
Faculty	The Technical Faculty of IT and Design

EVIDENCE-BASED LIGHTING DESIGN

2025/2026

RECOMMENDED PREREQUISITE FOR PARTICIPATION IN THE MODULE

The module adds to the knowledge obtained in the 1st semester

CONTENT, PROGRESS AND PEDAGOGY OF THE MODULE

The objective of this module is to provide students with evidence concerning the relationship between causes and effects of lighting, particularly in relation to the way we perceive our luminous environment and the possible physiological effects of light.

The facts that will be presented are obtained through reading scientific testing protocols and reviewed papers. The robustness of the scientific literature will be discussed. The results will be used to improve lighting designs and to identify possible risks attached to lighting schemes.

References will be provided and the students will be required to verify the validity of the information, which will relate to any context of lighting design.

LEARNING OBJECTIVES

KNOWLEDGE

Students who complete this module will obtain the following qualifications:

- **Understanding** the characteristics of the human visual system, including the progression of vision as we age and the vision of visually impaired
- Knowledge on how to **analyse** perceived lighting quality
- **Understanding** on lights effect on circadian rhythms
- **Understand** health risks affiliated with lighting
- **Understanding** how light affects plants and animals

SKILLS

Students who complete this module will obtain the following qualifications:

- **Understand** how to set up a scientific test and to report the results, being critical to (and to address the biases that may affect) the outcome of the test.
- Ability to **read and understand** scientific material related to evidence based lighting issues.
- Ability to **discuss and evaluate** results reported in scientific papers, using the right terminology
- Ability to **assess** the performance of a given lighting scheme, based on scientific evidence
- Ability to **analyse** a lighting scheme using the appropriate metric, going beyond state of the art
- Ability to **understand** existing standards (IEC, CIE, WMO, etc.)

COMPETENCES

Students who complete this module will obtain the following qualifications:

- Ability to use up-to-date knowledge from the scientific literature to **analyse and evaluate** a given lighting solution
- Ability to **test and report** on a scientific problem in relation to lighting
- Ability to **develop and propose** lighting schemes which comply with various constraints issued from scientific research and evidence based requirements for specific applications

TYPE OF INSTRUCTION

Refer to the type of instructions listed in § 17.

EXAM

EXAMS

Name of exam	Evidence-based Lighting Design
Type of exam	Oral exam based on a project
ECTS	5
Permitted aids	With certain aids: See semester description
Assessment	7-point grading scale
Type of grading	Internal examination
Criteria of assessment	The criteria of assessment are stated in the Examination Policies and Procedures

FACTS ABOUT THE MODULE

Danish title	Evidensbaseret lysdesign
Module code	MSNLIDM2202
Module type	Course
Duration	1 semester
Semester	Spring
ECTS	5
Language of instruction	English
Location of the lecture	Campus Copenhagen
Responsible for the module	Claus Brøndgaard Madsen

ORGANISATION

Education owner	Master of Science (MSc) in Lighting Design
Study Board	Study Board of Media Technology
Department	Department of Architecture, Design and Media Technology
Faculty	The Technical Faculty of IT and Design

LIGHT AND CONTEXT

2025/2026

RECOMMENDED PREREQUISITE FOR PARTICIPATION IN THE MODULE

The module adds to the knowledge obtained in the 1st semester.

CONTENT, PROGRESS AND PEDAGOGY OF THE MODULE

The module covers aspects of designing with light, with focus on the understanding and practical application of aesthetic, functional, legislative and environmental design parameters in different contexts.

Objectives:

The module will enable the student to acquire theoretical and applied knowledge of light in different context with emphasis on its qualitative aspects; to see, to understand, to be inspired, to design with light and to communicate light in a conceptual framework.

The objectives are realized by presenting scientific methods and tools in a case-based framework and through the students' active participation in workshops and assignments to deepen an understanding of the various design contexts and opportunities for the experience, knowledge and application of light.

The module will develop students' ability to create design solutions in different scales and areas of application, through the combination of research-based theory with examples from practice and exercises through small exercises.

LEARNING OBJECTIVES

KNOWLEDGE

- Critical **understanding** of theories and references of cultural and aesthetic responses to light and the space/time continuum
- **Understand** the process of identifying qualities of light and define desired effects through design
- **Recognize** various contexts such as environment, people's need, legislation, energy and atmosphere and integrate these in the design process
- **Understand** the qualitative and scientific methods for research by design
- **Understand** how to illustrate, communicate and model natural light and electric lighting design solutions

SKILLS

- **Evaluate** light in different context verbally and visually
- **Choose, implement and apply** lighting design solutions in a context that include aesthetic, social and functional considerations.
- **Evaluate and compare** research-based knowledge supplemented by knowledge from practical design competences and apply the methods for a specific design problem/solution
- **Apply** the taught methods to solve concrete practical design problems

COMPETENCES

- Upon successful completion of this module the student will acquire a thorough knowledge and training of practice various aspects of **designing** with daylight and artificial lighting in different context:
- **Evaluate and document** design solutions of lighting in different contexts
- **Synthesize** knowledge, technical and functional aspects of lighting design with an understanding of context
- **Predict** lighting performance in relation to sustainability and energy
- **Communicate** to professional designers and design team
- **Synthesize** lighting design for specific environments

TYPE OF INSTRUCTION

The types of instruction for this course are listed in § 17 and directions are decided and given by the Study Board for Media Technology.

EXAM

EXAMS

Name of exam	Light and Context
Type of exam	Oral exam based on a project
ECTS	5
Permitted aids	With certain aids: See semester description.
Assessment	7-point grading scale
Type of grading	Internal examination
Criteria of assessment	The criteria of assessment are stated in the Examination Policies and Procedures

FACTS ABOUT THE MODULE

Danish title	Lys og kontekst
Module code	MSNLIDM2203
Module type	Course
Duration	1 semester
Semester	Spring
ECTS	5
Language of instruction	English
Location of the lecture	Campus Copenhagen
Responsible for the module	Claus Brøndgaard Madsen

ORGANISATION

Education owner	Master of Science (MSc) in Lighting Design
Study Board	Study Board of Media Technology
Department	Department of Architecture, Design and Media Technology
Faculty	The Technical Faculty of IT and Design

INTELLIGENT LIGHTING DESIGN

2025/2026

RECOMMENDED PREREQUISITE FOR PARTICIPATION IN THE MODULE

The module adds to the knowledge obtained in the 1st semester.

CONTENT, PROGRESS AND PEDAGOGY OF THE MODULE

This module has a focus on interactive lighting design, Interactive applications and multimedia Interaction, using digital media, for both indoor and outdoor applications centred around human factors.

Objectives:

In this module the student will gain an understanding of the principles of intelligent lighting design and development using computational media. The student will gain knowledge in contemporary lighting design in real life and in virtual representations. The student will understand innovation in the field of intelligent and/or interactive lighting, based on research in aesthetics and science. The student will gain an understanding of design processes in prototyping tools and techniques, programming and interaction technology. The student will also get practical exercises in a variety of new materials, scenario techniques, and usability studies.

LEARNING OBJECTIVES

KNOWLEDGE

Students who complete the course module will obtain the following qualifications:

- **Understand** the design process and methodologies in interactive systems
- **Understanding** emerging lighting technologies in designing intelligent or interactive lighting systems, both for indoor and outdoor applications as well as virtual representations
- **Understanding** of principles for designing, prototyping, programming, realizing, analysing and evaluating of the highest level for an intelligent or interactive lighting system
- Critical **understanding** of the scientific and aesthetic processes according to international research in the use of human centred interactive technologies for lighting design
- **Synthesis** of methodological consideration to describe the theoretical and empirical foundation of the project

SKILLS

Students who complete the course module will obtain the following qualifications:

- Ability to **apply** design methodologies and processes in the development of an intelligent or interactive lighting system for real and virtual applications
- Ability to **plan, design, implement and evaluate** systematic tests of the intelligent or interactive lighting design from a human-centred and system-based perspective (analysis)
- Ability to **implement and discuss** feasibility, design requirement specifications and sustainability of the developed interactive lighting system including human physiological and psychological factors (evaluation)

COMPETENCES

Students who complete the course module will obtain the following qualifications:

- Can independently **synthesize** knowledge in aesthetic design methods, choice of material, theories and techniques in interactive lighting systems
- Expertise in **communicating and presenting** the project, applying aesthetic and scientific-based descriptions of aspects such as design, construction, analysis and evaluation of an interactive lighting system, including consideration of human factors (evaluation)
- Must have competencies in **comparing and assessing** complex interactive lighting technologies, and methods in order to make the proper design choices for optimum functionality (synthesis)
- Can independently **mediate** collaboration with professionals such as city planners, designers, and architects in order to implement interactive lighting system

TYPE OF INSTRUCTION

Refer to the overview of instruction types listed in § 17. The directions are decided and given by the Study Board for Media Technology.

EXAM

EXAMS

Name of exam	Intelligent Lighting Design
Type of exam	Oral exam based on a project
ECTS	5
Permitted aids	With certain aids: See semester description.
Assessment	7-point grading scale
Type of grading	Internal examination
Criteria of assessment	The criteria of assessment are stated in the Examination Policies and Procedures

FACTS ABOUT THE MODULE

Danish title	Intelligent lysdesign
Module code	MSNLIDM2204
Module type	Course
Duration	1 semester
Semester	Spring
ECTS	5
Language of instruction	English
Location of the lecture	Campus Copenhagen
Responsible for the module	Claus Brøndgaard Madsen

ORGANISATION

Education owner	Master of Science (MSc) in Lighting Design
Study Board	Study Board of Media Technology
Department	Department of Architecture, Design and Media Technology
Faculty	The Technical Faculty of IT and Design

LIGHTING DESIGN INNOVATION

2025/2026

RECOMMENDED PREREQUISITE FOR PARTICIPATION IN THE MODULE

The module adds to the knowledge obtained in the 1st and 2nd semester.

CONTENT, PROGRESS AND PEDAGOGY OF THE MODULE

Develop and evaluate new solutions where cross-disciplinary knowledge in the field of lighting design can be synthesized to create innovative solutions. The focus can be exploring commercial aspects as well as socio-cultural implications and/or its use in generating scientific knowledge.

LEARNING OBJECTIVES

KNOWLEDGE

Students who complete the module will gain knowledge, skills and competences as follows:

- **Evaluation** of core state-of-the-art concepts, theories, techniques and methodologies related to lighting design
- Ability to **synthesize** relevant lighting concepts, theories and techniques with a significant focus on process and context in lighting design
- **Evaluation** of the design phases including identifying problems, concept, design development, detailed design, specification, laboratory experiments, model building, mock-ups
- Account for the scientific foundation, and scientific problem areas, of the specialization
- Describe the state of the art of relevant research in the specialization

SKILLS

Students who complete the module will gain knowledge, skills and competences as follows:

- Ability to **synthesise** market and trend analysis methods to a lighting product or installation based on light and the principals related to lighting design
- Ability to **evaluate** lighting design related to scientific design methods, tools and technologies to create lighting designs that meet specific needs and are viable from a product, commercial, socio-cultural, and/or scientific perspective
- Master the scientific methods and general skills associated with the specialization
- Produce a project report according to norms of the area, apply correct terminology, document extensive command over relevant literature, communicate and discuss the research-based foundation, problem and results of the project orally, graphically and in writing in a coherent manner
- Critically evaluate the results of the project in relation to relevant literature and established scientific methods and models, evaluate and discuss the project’s problem area in a relevant scientific context
- Evaluate and discuss the project’s potential for further development

COMPETENCES

Students who complete the module will gain knowledge, skills and competences as follows:

- Ability to **evaluate** and select relevant lighting theories, methods and tools with the specific aim of working towards **creating** new qualitative products, commercially viable products/installations, or new knowledge
- Ability **tocreate** lighting drawings and lighting layouts that support the design process and communicate the project
- Participate in, and independently carry out, technological development and research, and apply scientific methods in solving complex problems
- Plan, execute and manage complex research and/or development tasks, and assume a professional responsibility for independently carrying out, potentially cross-disciplinary, collaborations
- Independently assume responsibility for own scientific development and specialization

TYPE OF INSTRUCTION

Academically supervised student-governed problem oriented project work.

EXAM

EXAMS

Name of exam	Lighting Design Innovation
Type of exam	Oral exam based on a project Oral exam based on a project with a scientific report written in English, a portfolio documenting project details, and a poster and a video illustrating and summarizing the project.
ECTS	20
Permitted aids	With certain aids: See semester description.
Assessment	Passed/Not Passed
Type of grading	Internal examination
Criteria of assessment	The criteria of assessment are stated in the Examination Policies and Procedures

FACTS ABOUT THE MODULE

Danish title	Innovativt lysdesign
Module code	MSNLIDM3201
Module type	Project
Duration	1 semester
Semester	Autumn
ECTS	20
Language of instruction	English
Location of the lecture	Campus Copenhagen
Responsible for the module	Claus Brøndgaard Madsen

ORGANISATION

Education owner	Master of Science (MSc) in Lighting Design
Study Board	Study Board of Media Technology
Department	Department of Architecture, Design and Media Technology
Faculty	The Technical Faculty of IT and Design

PROJECT-ORIENTED STUDY IN AN EXTERNAL ORGANISATION

2025/2026

RECOMMENDED PREREQUISITE FOR PARTICIPATION IN THE MODULE

The module adds to the knowledge obtained in the 1st and 2nd semester.

CONTENT, PROGRESS AND PEDAGOGY OF THE MODULE

The Project-Oriented Study in an External Organisation must have a scope that corresponds the ECTS load.

Objectives:

Develop and evaluate new solutions where cross-disciplinary knowledge in the field of lighting design can be synthesized to create innovative solutions. The focus can be exploring commercial aspects as well as socio-cultural implications and/or its use in generating scientific knowledge.

The purpose of this project module is to give the student the opportunity to acquire practical, real-world experience within the context of a company or an organization. The development must be subject to relevant constraints and conditions of the real-world context.

LEARNING OBJECTIVES

KNOWLEDGE

Students who complete the module will gain knowledge, skills and competences as follows:

- **Evaluation** of core state-of-the-art concepts, theories, techniques and methodologies related to lighting design
- Ability to **synthesize** relevant lighting concepts, theories and techniques with a significant focus on process and context in lighting design
- **Evaluation** of the design phases including identifying problems, concept, design development, detailed design, specification, laboratory experiments, model building, mock-ups
- Must be able to **understand** professional, business-related and organizational concepts that are relevant for the hosting organization and the developed project.
- Account for the scientific foundation, and scientific problem areas, of the specialization
- Describe the state of the art of relevant research in the specialization

SKILLS

Students who complete the module will gain knowledge, skills and competences as follows:

- Ability to **synthesise** market and trend analysis methods to a lighting product or installation based on light and the principals related to lighting design
- Ability to **evaluate** lighting design related to scientific design methods, tools and technologies to create lighting designs that meet specific needs and are viable from a product, commercial, socio-cultural, and/or scientific perspective
- Must be able to **apply** host relevant constraints and affordances in the product design
- Master the scientific methods and general skills associated with the specialization
- Produce a project report according to norms of the area, apply correct terminology, document extensive command over relevant literature, communicate and discuss the research-based foundation, problem and results of the project orally, graphically and in writing in a coherent manner
- Critically evaluate the results of the project in relation to relevant literature and established scientific methods and models, evaluate and discuss the project's problem area in a relevant scientific context
- Evaluate and discuss the project's potential for further development

COMPETENCES

Students who complete the module will gain knowledge, skills and competences as follows:

- Ability to **evaluate** and select relevant lighting theories, methods and tools with the specific aim of working towards **creating** new qualitative products, commercially viable products/installations, or new knowledge
- Ability **tocreate** lighting drawings and lighting layouts that support the design process and communicate the project
- Participate in, and independently carry out, technological development and research, and apply scientific methods in solving complex problems
- Plan, execute and manage complex research and/or development tasks, and assume a professional responsibility for independently carrying out, potentially cross-disciplinary, collaborations
- Independently assume responsibility for own scientific development and specialization

TYPE OF INSTRUCTION

Academically supervised student-governed problem oriented project work.

EXAM

EXAMS

Name of exam	Project-Oriented Study in an External Organisation
Type of exam	Oral exam based on a project Oral exam based on a project with a scientific report written in English, a portfolio documenting project details, and a poster or a video illustrating and summarizing the project.
ECTS	25
Permitted aids	With certain aids: See semester description.
Assessment	Passed/Not Passed
Type of grading	Internal examination
Criteria of assessment	The criteria of assessment are stated in the Examination Policies and Procedures

FACTS ABOUT THE MODULE

Danish title	Projektorienteret forløb i en virksomhed
Module code	MSNLIDM3204
Module type	Project
Duration	1 semester
Semester	Autumn
ECTS	25
Language of instruction	English
Location of the lecture	Campus Copenhagen
Responsible for the module	Claus Brøndgaard Madsen

ORGANISATION

Education owner	Master of Science (MSc) in Lighting Design
Study Board	Study Board of Media Technology
Department	Department of Architecture, Design and Media Technology
Faculty	The Technical Faculty of IT and Design

PROJECT-ORIENTED STUDY IN AN EXTERNAL ORGANISATION

2025/2026

RECOMMENDED PREREQUISITE FOR PARTICIPATION IN THE MODULE

The module adds to the knowledge obtained in the 1st and 2nd semester.

CONTENT, PROGRESS AND PEDAGOGY OF THE MODULE

The Project-Oriented Study in an External Organisation must have a scope that corresponds the ECTS load.

Objectives:

Develop and evaluate new solutions where cross-disciplinary knowledge in the field of lighting design can be synthesized to create innovative solutions. The focus can be exploring commercial aspects as well as socio-cultural implications and/or its use in generating scientific knowledge.

The purpose of this project module is to give the student the opportunity to acquire practical, real-world experience within the context of a company or an organization. The development must be subject to relevant constraints and conditions of the real-world context.

LEARNING OBJECTIVES

KNOWLEDGE

Students who complete the module will gain knowledge, skills and competences as follows:

- **Evaluation** of core state-of-the-art concepts, theories, techniques and methodologies related to lighting design
- Ability to **synthesize** relevant lighting concepts, theories and techniques with a significant focus on process and context in lighting design
- **Evaluation** of the design phases including identifying problems, concept, design development, detailed design, specification, laboratory experiments, model building, mock-ups
- Must be able to **understand** professional, business-related and organizational concepts that are relevant for the hosting organization and the developed project.
- Account for the scientific foundation, and scientific problem areas, of the specialization
- Describe the state of the art of relevant research in the specialization

SKILLS

Students who complete the module will gain knowledge, skills and competences as follows:

- Ability to **synthesise** market and trend analysis methods to a lighting product or installation based on light and the principals related to lighting design
- Ability to **evaluate** lighting design related to scientific design methods, tools and technologies to create lighting designs that meet specific needs and are viable from a product, commercial, socio-cultural, and/or scientific perspective
- Must be able to **apply** host relevant constraints and affordances in the product design
- Master the scientific methods and general skills associated with the specialization
- Produce a project report according to norms of the area, apply correct terminology, document extensive command over relevant literature, communicate and discuss the research-based foundation, problem and results of the project orally, graphically and in writing in a coherent manner
- Critically evaluate the results of the project in relation to relevant literature and established scientific methods and models, evaluate and discuss the project’s problem area in a relevant scientific context
- Evaluate and discuss the project’s potential for further development

COMPETENCES

Students who complete the module will gain knowledge, skills and competences as follows:

- Ability to **evaluate** and select relevant lighting theories, methods and tools with the specific aim of working towards **creating** new qualitative products, commercially viable products/installations, or new knowledge
- Ability **tocreate** lighting drawings and lighting layouts that support the design process and communicate the project
- Participate in, and independently carry out, technological development and research, and apply scientific methods in solving complex problems
- Plan, execute and manage complex research and/or development tasks, and assume a professional responsibility for independently carrying out, potentially cross-disciplinary, collaborations
- Independently assume responsibility for own scientific development and specialization

TYPE OF INSTRUCTION

Academically supervised student-governed problem oriented project work.

EXAM

EXAMS

Name of exam	Project-Oriented Study in an External Organisation
Type of exam	Oral exam based on a project Oral exam based on a project with a scientific report written in English, a portfolio documenting project details, and a poster or a video illustrating and summarizing the project.
ECTS	30
Permitted aids	With certain aids: See semester description.
Assessment	Passed/Not Passed
Type of grading	Internal examination
Criteria of assessment	The criteria of assessment are stated in the Examination Policies and Procedures

FACTS ABOUT THE MODULE

Danish title	Projektorienteret forløb i en virksomhed
Module code	MSNLIDM3203
Module type	Project
Duration	1 semester
Semester	Autumn
ECTS	30
Language of instruction	English
Location of the lecture	Campus Copenhagen
Responsible for the module	Claus Brøndgaard Madsen

ORGANISATION

Education owner	Master of Science (MSc) in Lighting Design
Study Board	Study Board of Media Technology
Department	Department of Architecture, Design and Media Technology
Faculty	The Technical Faculty of IT and Design

MASTER'S THESIS

2025/2026

RECOMMENDED PREREQUISITE FOR PARTICIPATION IN THE MODULE

The module adds to the knowledge obtained in the first three semesters.

CONTENT, PROGRESS AND PEDAGOGY OF THE MODULE

Objective:

To give the students the ability to make a project as an experimental design based on empirical, artistic, technological /engineering and/or theoretical investigation of one or more central issues in the chosen specialisation within the field of lighting design. This happens with reflective incorporation of relevant scientific theories and mixed methods acquired throughout the master's programme in lighting design. The final thesis must substantiate the student's ability to apply scientific theories and mixed methods from the fields of architecture, science of lightning and media technology into new solutions.

LEARNING OBJECTIVES

KNOWLEDGE

Students who complete the module will gain knowledge, skills and competences as follows:

- Must have knowledge and **understanding** about relevant theories and methods in relation to the chosen project theme
- Must have knowledge and **understanding** in one or more subject areas that are representative of the state of the art in the research community of the chosen specialisation
- Can **synthesise** and, on a scientific basis **apply** an area of the chosen specialisation and identify scientific problems
- Must be able to **understand** and **synthesise** the theories and methods within the scientific fields of architecture, media technology and lighting technology and to apply these in relation to the practice of lighting design
- Account for the scientific foundation, and scientific problem areas, of the specialization
- Describe the state of the art of relevant research in the specialization

SKILLS

Students who complete the module will gain knowledge, skills and competences as follows:

- Must be able to **synthesize** scientific methods and tools and general skills related to the chosen specialisation
- Can **evaluate and select** among scientific theories, methods, tools and general skills and, on a scientific basis, **create** new analyses and solutions in the chosen specialisation
- Can **synthesize** research-based knowledge and discuss professional and scientific problems with both peers and non-specialists
- Must be able to **make** proposals for design, strategies and interventions of relevance to the lighting design field
- Master the scientific methods and general skills associated with the specialization
- Produce a project report according to norms of the area, apply correct terminology, document extensive command over relevant literature, communicate and discuss the research-based foundation, problem and results of the project orally, graphically and in writing in a coherent manner
- Critically evaluate the results of the project in relation to relevant literature and established scientific methods and models, evaluate and discuss the project's problem area in a relevant scientific context
- Evaluate and discuss the project's potential for further development

COMPETENCES

Students who complete the module will gain knowledge, skills and competences as follows:

- Must have competencies to **synthesize** knowledge and use mixed methods to create design solutions of an aesthetic, technical and functional character
- Must have competencies to **synthesize and create** solutions and that are complex, unpredictable and require new solutions
- Must have competencies to independently **synthesize** and take responsibility for one's own professional development and specialisation
- Master the scientific methods and general skills associated with the specialization
- Produce a project report according to norms of the area, apply correct terminology, document extensive command over relevant literature, communicate and discuss the research-based foundation, problem and results of the project orally, graphically and in writing in a coherent manner
- Participate in, and independently carry out, technological development and research, and apply scientific methods in solving complex problems
- Plan, execute and manage complex research and/or development tasks, and assume a professional responsibility for independently carrying out, potentially cross-disciplinary, collaborations
- Independently assume responsibility for own scientific development and specialization

TYPE OF INSTRUCTION

Academically supervised student-governed problem oriented project work.

The project is carried out individually or in small groups of a maximum of three students. At least one internal supervisor is assigned, who deals with the primary area of the project in his or her research.

EXAM

EXAMS

Name of exam	Master's Thesis
Type of exam	Oral exam based on a project Oral exam based on a project with a scientific report written in English and a poster and a video illustrating and summarizing the project.
ECTS	30
Permitted aids	With certain aids: See semester description.
Assessment	7-point grading scale
Type of grading	External examination
Criteria of assessment	The criteria of assessment are stated in the Examination Policies and Procedures

FACTS ABOUT THE MODULE

Danish title	Kandidatspeciale
Module code	MSNLIDM4201
Module type	Project
Duration	1 semester
Semester	Spring
ECTS	30
Language of instruction	English
Location of the lecture	Campus Copenhagen
Responsible for the module	Claus Brøndgaard Madsen

ORGANISATION

Education owner	Master of Science (MSc) in Lighting Design
Study Board	Study Board of Media Technology
Department	Department of Architecture, Design and Media Technology
Faculty	The Technical Faculty of IT and Design

DESIGN EXPERIMENTS

2025/2026

RECOMMENDED PREREQUISITE FOR PARTICIPATION IN THE MODULE

The module adds to the knowledge obtained in the 1st and 2nd semester.

CONTENT, PROGRESS AND PEDAGOGY OF THE MODULE

The purpose of this course is to give the student the opportunity to make a mini design research experiment, where the student study one specific and narrow focus area/choosen subject. This mini design experiment will develop the student's ability to define and frame a specific topic and to explore this through experimental and scientific experimentation. The student will create findings that can be realted to the praxis of designing with light and/or be used as a experimental reference for semester project reports of LiD9 or Master Theses.

LEARNING OBJECTIVES

KNOWLEDGE

- **Understand** theories and processes within design reserach
- **Understand** the potentials of designing with knowledge
- **Understand** how to create knowledge through experiemnts

SKILLS

- **Identify** and **frame** appropriate knowledge in a very specific subject
- **Define** hypothesis for design eksperiments
- **Develop** design eksperiments based on hypothesis
- **Communicate** the findings in a praxis or theoretical context

COMPETENCES

- Select and **synthesize** knowledge and theories and **define** and **excecute** a design eksperiment
- **Create and communicate** new knowledge within a specific subject based on the findings from the eksperiment

TYPE OF INSTRUCTION

The types of instruction for this course are listed in § 17 and directions are decided and given by the Study Board for Media Technology.

EXAM

EXAMS

Name of exam	Design Experiments
Type of exam	Oral exam based on a project
ECTS	5
Permitted aids	With certain aids: See semester description.
Assessment	Passed/Not Passed
Type of grading	Internal examination
Criteria of assessment	The criteria of assessment are stated in the Examination Policies and Procedures

FACTS ABOUT THE MODULE

Danish title	Design eksperimenter
Module code	MSNLIDM3202
Module type	Course
Duration	1 semester
Semester	Autumn
ECTS	5
Language of instruction	English
Location of the lecture	Campus Copenhagen
Responsible for the module	Claus Brøndgaard Madsen

ORGANISATION

Education owner	Master of Science (MSc) in Lighting Design
Study Board	Study Board of Media Technology
Department	Department of Architecture, Design and Media Technology
Faculty	The Technical Faculty of IT and Design

USER EXPERIENCE DESIGN FOR SERVICE INTERACTION

2025/2026

CONTENT, PROGRESS AND PEDAGOGY OF THE MODULE

This course trains students to research, analyse, conceptualise and prototype user experiences for services considering all system aspects including the social and cultural contexts of use. The course gives a comprehensive knowledge about user involvement in the design process, going beyond traditional methods such as usability lab testing and giving the means to better understand and represent the different levels of interaction within a service. The objectives are realised by presenting methods and tools in a case based framework and through the students´ active participation in workshops and assignments.

LEARNING OBJECTIVES

KNOWLEDGE

Students who complete the course module will obtain:

- knowledge about qualitative research methods involving design, data collection, data analysis and reporting
- knowledge about methods and tools to analyse, ideate, prototype and evaluate a given service experience

SKILLS

Students who complete the course module will be able to:

- design, plan and execute a thorough user research
- qualify a user experience in relation to the service specification

COMPETENCES

Students who complete the course module will be able to:

- choose the appropriate methods that suit different dimensions of a design problem at different stages
- keep a user centred perspective along the whole design process

TYPE OF INSTRUCTION

See general description of the types of instruction described in § 17.

EXAM

EXAMS

Name of exam	User Experience Design for Service Interaction
Type of exam	Written or oral exam
ECTS	5
Permitted aids	With certain aids: See semester description.
Assessment	7-point grading scale
Type of grading	Internal examination

Criteria of assessment	The criteria of assessment are stated in the Examination Policies and Procedures

FACTS ABOUT THE MODULE

Danish title	Brugeroplevelse af serviceinteraktion
Module code	MSNSSDM1232
Module type	Course
Duration	1 semester
Semester	Autumn
ECTS	5
Language of instruction	English
Location of the lecture	Campus Copenhagen
Responsible for the module	Claus Brøndgaard Madsen

ORGANISATION

Study Board	Study Board of Media Technology
Department	Department of Architecture, Design and Media Technology
Faculty	The Technical Faculty of IT and Design

ACADEMIC PAPER WRITING

2025/2026

RECOMMENDED PREREQUISITE FOR PARTICIPATION IN THE MODULE

The course module adds to integrated design knowledge obtained in 1st semester of the Master's program in Urban Design engineering. Therefore, the student is recommended to have knowledge, skills and competencies within the urban design and engineering field corresponding to the completion of the MSc01 - MSc02 level at the Urban Design Engineering education.

CONTENT, PROGRESS AND PEDAGOGY OF THE MODULE

The objective is to give the students the necessary skills to participate in the academic and professional practice within the fields of Architecture, Design, Planning and mobilities (or related areas) as contributing scholars and researchers by training the basic academic skills of paper writing and design of research methodology seen in light of the adequate positions within theories of science / philosophy of science.

LEARNING OBJECTIVES

KNOWLEDGE

- Must have knowledge about the academic production process, the systems of research quality assessments and monitoring governing the field of research and the channels for publication and dissemination of academic knowledge
- Must be able to understand societal and contextual conditions for a situation of increasing 'scientification' of practice fields
- Must be able to understand how the 'state-of-the-art' within academic fields of relevance are emerging and how these are evolving

SKILLS

- Must be able to apply established models for paper writing and methodological reflection to a specific case within architecture, design, planning or mobilities
- Must be able to write a methodologically reflective paper which positions itself in relation to relevant and adequate positions within theories of science / philosophy of science
- Must be able to evaluate the paper in relation to established practices and systems of academic research

COMPETENCES

- Must have competencies in writing an academic paper and/or a design for a research methodology relating to the state-of-the-art of knowledge production within architecture, design planning or mobilities
- Must have competencies in communicating with lay and professional audiences

TYPE OF INSTRUCTION

See general description of the types of instruction described in § 17.

EXAM

EXAMS

Name of exam	Academic Paper Writing
Type of exam	Written exam
ECTS	5

Permitted aids	See semester description
Assessment	Passed/Not Passed
Type of grading	Internal examination
Criteria of assessment	The criteria of assessment are stated in the Examination Policies and Procedures

FACTS ABOUT THE MODULE

Danish title	Akademisk artikelskrivning
Module code	AODUM3K201
Module type	Course
Duration	1 semester
Semester	Autumn
ECTS	5
Language of instruction	English
Location of the lecture	Campus Aalborg
Responsible for the module	Thomas Arvid Jaeger

ORGANISATION

Education owner	Master of Science (MSc) in Engineering (Urban Design)
Study Board	Study Board of Architecture and Design
Department	Department of Architecture, Design and Media Technology
Faculty	The Technical Faculty of IT and Design