

Lighting Design Master Programme: a Transdisciplinary Approach

Lighting Design AAU CPH 2020



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The Master programme in Lighting Design was launched in 2014.

We have enrolled more than 200 master students.

Half of them are Scandinavian and half of them international representing 25 different nationalities.

The first 26 students graduated in the summer 2016.

Before their graduation half of them were in job and after the first quarter 88 % were in job.



CURRICULUM : MSc Lighting Design





THE "KICK OFF PROJECT"

An engaging entry to a transdisciplinary master education



A woman is punching a man – Two characters in a POP-ART theme

COURSE : Meaning of light: LIGHT & SPACE



Real-world studies of the interplay between light, space, texture and the human experience



COURSE : LIGHTING FUNDAMENTALS



The basic photometric and colorimetric terms, quantities and the relationships between the terms, which are necessary to describe light propagation in real scenes, virtual scenes and light shows



COURSE : RENDERED LIGHT SIMULATIONS



Light sources in CG Advanced rendering concepts Light matter interaction High dynamic range imaging VR

https://www.youtube.com/watch?v=lptMGZSvDqY



SEMESTER PROJECT 1 : Seeing the Light – Relight Campus



COURSE : LIGHT & CONTEXT





COURSE : EVIDENCE BASED LIGHTING DESIGN











COURSE : INTELLEGENT LIGHTING DESIGN



Programming intelligent and interactive systems Smart lamps (hue, lifx) Smart sensors (kinect, leap motion, myo) Use of Arduino and Raspberry Pi Lighting Protocols (DMX, DALI, Ethernet)

https://www.youtube.com/watch?v=BJ_yl9gsoO8&feature=youtu.be



SEMESTER PROJECT 2 : Creating with Light – Interactive lighting

How can interactive lighting design in tunnels improve the Cycle Super Highways?

<u>ttps://www.youtube.com/watch?v=03wM7gKhSV</u>



STUDY ENVIRONMENT





Lighting Design Studio



- DDL Lab : Office space with controllable lights
- E-Lab : Electronics, 3D printing
- Graphics Lab : Access to computers for graphics and rendering
- Light Lab : Controllable lighting equipment





Antropological Analytics

Focus on the practices and experience What is said and done...and that in between Rhythms, Routes and Routines

Methods:

Participant-observations Interview / Focus group Observations Recordings Survey Social mapping Cultural probes

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COPENHAGEN

Technological media based analytics

Sensors

Media-based analytics (activity detection, sleep patterns etc.) Eye tracking EEG and other neurophysiological factors

Renderings and simulations 2D for visualization and user tests 3D for visualization and user tests Modeling Rendering 3D for calculations 3D/VR for real time visualizations

Light control and adjustments interfaces





Design and Architectural Analytics

Phenomenological approach Registration of the physical space, dimensions, materials, tactility Registration of how light is reflected, absorbed and transmitted Registration of experience and use of space over time Reference to a cultural understanding of (day)light, space and time

Test and explore the phenomenon of light through design experiments, scale models, mock up







JOB OPPORTUNITIES

- Consultancy companies within the fields of engineering, architecture, landscape architecture, etc.
- Media production companies where lighting designers are needed to make animation films, computer games and other kinds of entertainment.
- Lighting companies and producers of lighting equipment.
- Furthermore, lighting designers are needed in the public sector where you can find work at municipalities and in the State Administration as well as in various other fields where light and media is involved.



Master thesis: Biophilic Dynamic Light Projections A proposal for the revitalization of socially-inactive urban spaces (Ioana Fartadi)



Figure 42. From original code (shown on previous page), to more fluid, organic shapes. (Click on each image for video).



Figure 43. A second possibility using the same underlying code. (Click on each image for video)





Master thesis: Musicon path: light that follows (Esben Oxholm)





LAYERS







Master thesis: Explore methods for digital asset reconstruction and their application within lighting design (Iulian Drug)



Master thesis: Experiencing the Light Through our Skin - an EEG Study of Colored Light on Blindfolded Subjects (Mads Lind)









Post-Doc: Al-empowered lighting style/atmosphere transfer (Tsampikos Kounalakis)

Content (Reference) Image



Lighting Style Image





Output Image







Lighting Style Image











Project: LighTel Project: Circadian lighting for frail elderly and people with dementia



| | 1 week | 8 w | eeks | 8 weeks | 8 weeks | | |
|---------|----------------------|-----|-------------|------------------------|------------|-------------|--|
| Group 1 | Baseline Ordinary ne | | ew lighting | Circadian new lighting | | | |
| Group 2 | | | Baseline | Circadian new lighting | Ordinary n | ew lighting | |
| Group C | | | 1 week | Baseline | 1 week | | |

Project: Double Dynamic Lighting



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https://www.youtube.com/playlist?list=PL6YnmCLAAMwdiyvSVgFKBv8KHKwaoEorf





PLDC : Professional Lighting Design Convention Award for Best Lighting Design Education 2017



Lighting Design Research Group @ AAU Copenhagen (founded 2015)



The Lighting Design Research Group at AAU-Cph (LiD-RG) has a mission to contribute to new and improved ways as to how we use and perceive light in our daily lives



3 Research Themes

Light and Health

- circadian rhythm lighting in old-age homes
- the effect of lighting on eating disorders
- personalized health

Double Dynamic Lighting

- combining daylight and dynamic artificial lighting to improved productivity and sustainability
- improving learning environments

Intelligent Light

- Artificial intelligence and machine learning
- VR and real-time light rendering
- IoT and Sensor technologies



Funded Research Projects timeline





Light & Learning in elementary schools Circadian lighting for people with eating disorders Innovations Netværk for Smart Urbanisering Lys project (Copenhagen + Aaurhus) Erasmus+ KA107 (Denmark - Russia)

Industrial Partners



University Partners











Technical University of Denmark















- 40 seats
- List of approved bacherlor degrees on website (light.aau.dk)
- Application : Grades from bachelor / undergraduate programme 1-page motivational letter Relevant extra-curricular activities
- Deadline : 1st of March



FOR MORE INFORMATION

| Web : | www.light.aau.dk |
|------------|-------------------------|
| Facebook : | Lighting Design AAU-Cph |

Instagram : lighting_design_aau_cph





