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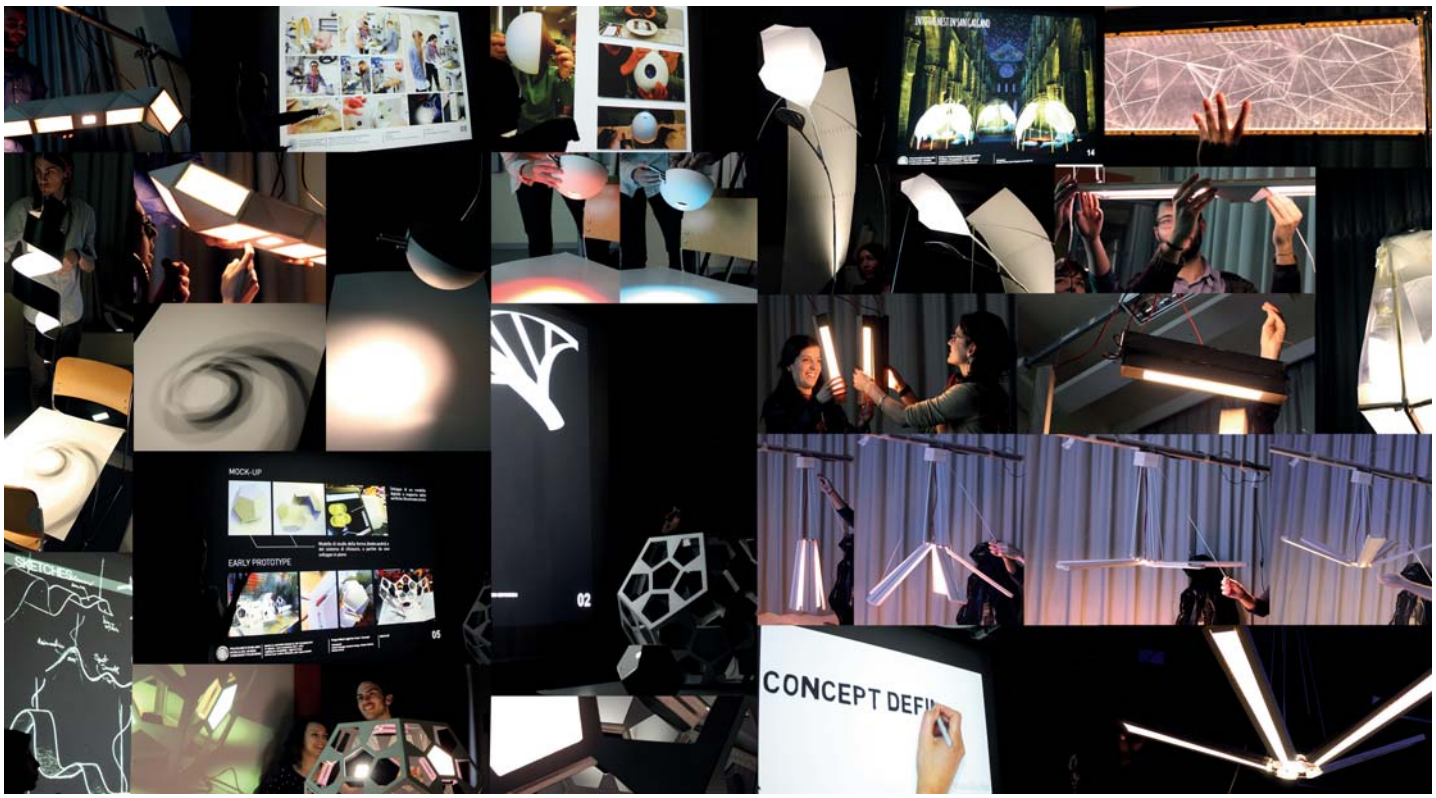
FORMAZIONE

POLI.DESIGN

COURSE + WORKSHOP

LIGHTING PRODUCT DESIGN

II EDITION



DURATION
Course: 60 hours
Workshop: 44 hours

AWARDING BODY
Laboratorio LUCE
Design dept. Politecnico di Milano
Phone: +39 02 2399 5696
Mail: lab.luce@polimi.it

MANAGEMENT
Poli.Design, Politecnico di Milano
formazione@polidesign.net

COURSE PERIOD
04 - 15 September 2017

WORKSHOP PERIOD
18 - 29 September 2017

WEBSITE
www.luce.polimi.it

COURSE FACULTY
Marco Angelini, Paolo Bernardelli, Daria Casciani, Danilo Giannetti, Catia Grossi, Angelo Moretti, Fulvio Musante, Pietro Palladino, Diego Quadrio, Maurizio Rossi, Franco Rusnati, Piero Santoro, Paolo Segù, Andrea Siniscalco, Andrea Verzella, Fabio Zanola

LANGUAGE
Both the course and the workshop are held in English language.

REGISTRATION FEE
Total cost of the course is 1200 € + IVA. The course (60 hours) can be purchased individually at the price of 600 €. A reduced fee of 750 € is available for students of the Schools of Politecnico di Milano. A special fee of 500 € is available for former students of the Lighting Design master of Laboratorio LUCE. Discount of 10% for members of AIDI, APIL, ASSIL, ASSODEL and ASSOLUCE. For registration details and more information, please contact the management.

PRE-REQUIREMENTS
Basic knowledge of electrical engineering (voltage, electric power, electrical resistance, electric current, etc.) and illuminating engineering (luminous flux, illuminance, luminance, inverse-square law, etc.).

CONTENT
Fundamentals
Radiometry and colorimetry. Chromatic quality of LEDs in relation to colour rendering, gamut area, d(u,v).
LED technology
Different families of LEDs in various applications, electrical, thermal and luminous parameters for their characterization. Binning, electrical parameters and different solutions by the manufacturers.
Optics
Principles of optics: law of specular reflection, refraction. Reflectors starting from conics and their properties. Flat faceted reflectors and other light control systems.
Design of optical systems for LED light sources, using semi-finished products: creation of partial photometry in order to obtain specific overall light distribution. Ray tracing simulation for product design optimization. Reflection, refraction, diffusion and emission in ray trace programs.
Power supply
LED luminaires power supply: constant voltage vs constant current, filters. Main configuration of switching power packs. PWM dimming system. Control system interfaces, most used sensors. Reliability of power supply systems.
Luminaires
Dimensioning of the thermal cooling system. Case studies with software. Life span of the product (decay of the luminous flux) in function of junction temperature. Photometric measurement and performance of the luminaire. IEC/CEI standards for the respect to the aspects of electrical safety. Photo biological hazard.
Case studies
Procedures, materials technologies will be presented in case studies by field manufacturers.

WORKSHOP
The workshop would solicit sensibility and critical conscience toward the design of a lighting fixture, by understanging the complexity of the project and unveiling several technical issues (optical+mechanical+thermal+electrical) through a holistic approach to the design and prototyping of a LEDs based luminaires. The prototyping phase would be optimal for testing iteratively design choices by building parts or a full demonstrator of the luminaire, to make sure that the design achieves all the design goals and to use the prototype for further refinement of the luminaire design or to assess users' interactions. The workshop is intended to give the student a broad overview of the design/development process with tangible results till the creation of a completely custom lamp.

WITH THE PATRONAGE OF

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