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Didactic for building professionals. The experience of Lighting Design and Color Design masters

1. INTRODUCTION

The creation of professional figures with very transversal competences, able nevertheless to maintain a profile with a recognizable identity that is appealing for the world of work, is a challenge that anyone involved in training has to deal constantly. The global crisis, coupled with a growing necessity of flexible figures, with competences so that they are not confined in steady positions, is making the creation of didactic programs an activity more difficult than in the past. To this premise, we must add the boom of new technologies, that in the last years changed radically the way of working in term of request, products, management, and more. Moreover, there are issues (concerning the creation of a learning path) that become crucial, when the graduate student cannot be accredited in professional bodies such as architects or engineers. These issues are usually related to the perception of the professional figure created by the course: by the candidates (in terms of expectations) and by the world of work (in terms of competences needed for certain positions).

In this contribution, I will focus on a didactic process thought for two specific professional figures, the Lighting Designer and the Color Designer. I will describe briefly two specializing masters: the Lighting Design & LED technology held by Laboratorio LUCE of the department of Design, Politecnico di Milano, and Color Design & Technology held by Lab. LUCE and Università degli studi di Milano.

2. BUILDING A PROFESSIONAL

The main purpose of these two master programs is to create figures that can enter the world of work from the very moment they finish their training. This is a direct consequence of the lack of academic degree programs specific to these two disciplines. Manufacturers and studios that have in the design of light and color their main activities, usually have to undergo a long process of internal training for students that come from "classic" faculties (usually architecture, engineering and design), where these subjects are handled in a very academic way or with very little depth. The Master in Lighting Design at the Politecnico di Milano exists since 2004 (with a previous program held in 1988) and evolved greatly in the eleven editions



Figure 1 - Students attending the first lectures of the eleventh edition of the master in Lighting Design & LED Technology

that went through. This evolution in the program came directly by the continuous dialogue between university and the world of work. Lighting design studies, with their interventions have helped to give a very practical, project oriented direction, and companies, over the years, helped defining the program by communicating the subjects that in their opinion, were the most useful in order to work in their technical offices. The process to obtain a program balanced between the many souls of this professional sector required to find an appropriate balance between technical skills and culture and communication. In addition to that, participants have their own personal idea to what their future profession should be.

The specializing master in Color Design is more recent and can count only one edition, but the experience maturated in the Lighting design sector allowed the two universities to find an effective program straight away.

The world of work has indeed proved to be very receptive to these professional figures so that the requests for graduated students are much higher than the available candidates.

3. FUNDAMENTALS

The definition of a competent professional begins obviously with the basic competences of the subject, the technical tools through which the creativity of the future designers will express at best. The program of the two masters are different regarding the subjects that are proposed.

3.1. MASTER IN LIGHTING DESIGN & LED TECHNOLOGY

Theory and technology of light

Study of natural light, how it can be measured and how it affects perception of architecture. Electronic components and LEDs is a central subject on the master and focus (in multiple lectures spread on the whole duration) on how to control these new technologies in terms of light sources, optics, power supplies and control systems. There are then experiences with the measuring tools, in order to give a better understanding of the physical quantities of light.

Methods and tools of light planning

The subject mainly known as illuminating engineering in which the main unit of measure and the relation between them are described. This very technical subject help the students to be quick minded when they approach the design; being able to understand the mathematics behind light in order to not just rely on software simulation.

CAD for lighting

Coupled with illuminating engineering, usually we present a professional lighting software to students, so that while they learn the relation between light quantities, they acquire a tool to speed up the verification of their projects. Other than the presentation of the interface and functionality, various real life exercises are proposed to students.

Culture and practice of lighting design

In this modules students deal with art, not only the so-called light art, but the traditional arts as well. How light is portrayed by artist in the centuries so they can steal from the most famous artist and enrich their sensibility for light. Another important aspect presented is science of perception; the mechanism that affect the process of vision from an optical, physic and psycho-physiological point of view and how these effects can be used effectively in a project. There are then a series of seminars with professionals, which bring their experience by describing their more challenging and interesting works.

3.2. MASTER IN COLOR DESIGN & TECHNOLOGY

Perception and color history

Culture and color history and the aspects of perception that are the basis of its complexity. The perceptual mechanisms that affect the color and vision in general are presented to enable the students to recognize and design them.

Colorimetry and color systems

Color is a subjective characteristic, but colorimetry is needed to measure, standardize, communicate and represent in an accurate way the color of a surface or a light source. The theoretical basis of perception, colorimetry, photometric and radiometric measures are presented in this module as well as the color atlases, an alternative way to select, represent and communicate color. This module gives the essential technical skills that are the basis of the color designer, independently on the application areas. Students are also encouraged not only to understand the laws that govern, i.e. a spectrophotometer, but also to learn how to use it correctly.

Digital color

With the diffusion of new technologies, more and more aspects of communication and color reproduction are becoming digital. This module presents theoretical and practical fundamentals for manage, view and reproduce the digital color applied to different media, with particular attention to the limitations and problems associated with the use of different devices and color profiles.

Color applications

This module resumes how the knowledge acquired in the previous modules can be applied in most professional fields and applications, through examples and case studies deriving from different contexts: marketing, visual communication, restoration of cultural heritage, photography, architecture, product and lighting design and more.



Figure 2 - Students of the Color Design & Technology master improve their competences with color systems and measuring tools.

4. PROJECT WORKS

Once the students acquire the basic tools for the project, they must learn a design method. As already stated, however, these competences are very transversal. Professional realities that require these skills may be very different from each other. In order to provide a more complete frame to the students, professionals and manufactures of the sector intervene in the lectures to manage designing experiences (usually lasting three weeks) called project works. Each project work is dedicated to a specific field of the subject, and students organized in teams, must develop a case study from the concept to the executive drawings, reviewing the process with professionals and exposing their projects in a final dissertation. These modules are different for the two masters as well.

4.1 - MASTER IN LIGHTING DESIGN & LED TECHNOLOGY

Lighting for retail purposes

Students have to design the lighting for commercial spaces, where the importance of the object and the brand is essential. The classification of selling points (high range, shopping centers, etc.), and identification of the requirements and the specific peculiarity of the project in various cases. Identification of the key element of the space dedicated to the sale: cash counter, vertical display case, wall objects, dressing rooms, waiting lounges, and all of the various lighting solutions that may be implemented.

Lighting for urban environment

Lighting for exteriors, not only intended as streets, roundabouts, tunnels, but mostly areas of urban interest, where lighting can contribute radically to urban beautification, safety and energetic sustainability. Building facades, squares, and everything that can be improved with the use of proper lighting.

Lighting for the show

The world of lighting for theater and live stage is richly evocative, and the aims of the lighting designer are quite different from the architectural field. How to create suggestions in theater, a cue list for a live concert. All the lighting components (products, technologies and the control protocols) and the history of the show business are described in this module. The emotional component of this module is essential to students to understand how to improve even their architectural/technical work, giving them more depth.

Lighting for cultural heritage

Cultural heritage not intended only as museum lighting. Everything that has to do with the heritage of human beings, such as monuments, historical sites and facades, monuments and so on. All the lighting solutions that suits better the requirements of this delicate field (color rendering index, protection of the goods, etc.).

Lighting for hospitality

How to manage light in the spaces intended to host human beings. Multiple environments can be subject of this module, from hospitals to hotels, from convention halls to restaurants or cruise ships. The use of light and new technologies for the purpose of the temporary stay of individuals.



Figure 3 - Students of the tenth edition of Lighting Design & LED Technology master attending a lecture of Giovanni Pinna at Caly Paky show room.

4.2 MASTER IN COLOR DESIGN & TECHNOLOGY

Color for communication

Function and communicative dimension of color within the project of Communication Design. Each communicative artifact arises from a series of choices that fit into a well-defined design process. The design and implementation of a brand start from the visual identity (name, brand, logo, lettering, packaging, integrated communication) that ensures the recognition and affirmation of the company. It is clear the importance of color in this strategy: the visual identity is built on the evocative and persuasive aspects of the chromatic language.

Color for fashion design

Study of the color texturing in fashion with the aim of being able to offer the same product with different color variation, in order to reach culturally different markets and to offer the sensation of a personal choice to individual consumers. Starting from the construction of the color palette composed by individual colors, for the fashion collection, combined in two or three main approaches in relation to the messages conveyed their aesthetic and social characteristics.

Color for interior design

This module is dedicated to the analysis of the application possibilities of a chromatic design, for the creation of innovative retail spaces, which can ensure a harmonious relationship, with the values from the image communicated by the brand and corporate identity.

Color for industrial product design

The aim of this project work is to develop a methodology to design through the simulation of a CMF project (Color/Material/Finishes) of a real product. The students go through all of the methodical phases needed for the definition of the identity of the product: study of the market (position, competitors...), study and definition of the target, study of CMF trends in the sector and creation of CMF scenarios.

Color for urban space

Explore the close relationship between architecture and urban space and the aspects related to the interaction between the human being and the natural environment. The role of the “perceptual project” for the growth of civic and urban identities is highlighted. The module examines the issues related to the phenomena of perception and color in the urban scale by providing theoretical and procedural tools with the support of pictures, cognitive maps and case studies.

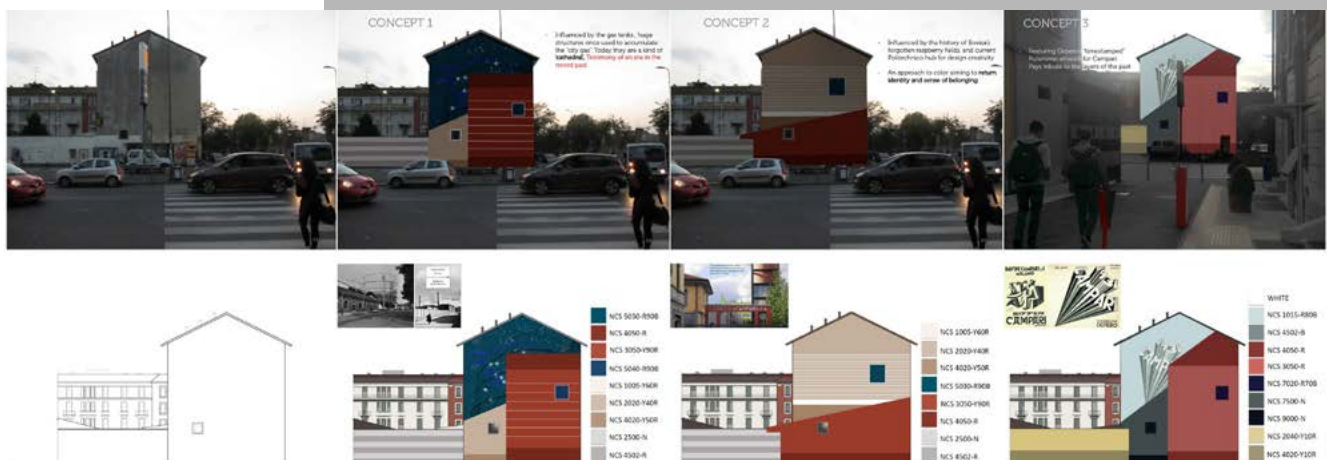


Figure 4 - Project Work “Color in urban spaces” teachers Giulio Bertagna and Aldo Bottoli. Work of Salma Hussein and Tanja Polegubic.

5. PROFESSIONAL EMPOWERMENT AND INTERNSHIP

Many hours of both the master programs have been dedicated to the professional empowerment. Some of the companies and professionals willing to host interns at the end of the front lectures came in the classroom to tell their story and explain why

there is the need of field expert. They also brought products, devices and materials to show to the students. Moreover, visits were made to companies that opened the doors of their laboratories, test sites and technical offices.

The final phase of the didactic path of both masters for all of the students is the internship. More than one hundred realities agreed with the didactic programs by giving their availability to host interns in their offices. The students can express preferences on where to go. The internship last for a minimum of 312 hours and it's a fundamental phase for the students because allow them to use the acquired skills in a professional environment, learning a specific methodology that can be different from a manufacturer, a theater a studio or other realities. The professional figure that emerges from this learning path is innovative, and with enough flexibility to satisfy the needs of the world of work.



Figure 5 – Students of the seventh edition of the master in Lighting Design & LED Technology visit the factory of Disano, one of the companies that collaborated with the master and hosted interns.