

ELISAVA

Barcelona School of
Design and Engineering

**MASTER IN DESIGN
THROUGH NEW MATERIALS**

PRODUCT DESIGN



MASTER IN DESIGN THROUGH NEW MATERIALS

Start date: September

ECTS Credits: 60

Language: English

Qualification: Master's

Degree in Design through New Materials, degree awarded by ELISAVA School of Design and Engineering of Barcelona.

Schedule: Tuesdays, Thursdays and Fridays, from 5 pm to 9.15 pm

COURSE LEADER

LAURA CLÈRIES

Laura has both creative and scientific backgrounds: she obtained her BA in Physical Chemistry and her PhD in Materials Science from the University of Barcelona and then pursued degree studies in Industrial Design. Laura has worked internationally as designer in main design companies (Zara Home) and design studios, and as researcher for main forecasting publications and think tanks (Pantone Colour Planner, WGSN).

As materials innovation consultant, she has worked for EURECAT electronic textiles division, for the architects of Jean Paul Gaultier's headquarters, and she has curated exhibitions related to materials innovation and forecasting (Materfad —textile area— and 'Materiality').

Her present research work focuses on futures research methodologies, as well as in materials innovation. She is currently professor at ELISAVA School of Design and Engineering and Head of ELISAVA Research.

AIMED AT

- Professionals from the design sphere: product design, industrial design, textile design, activewear.
- Engineers and architects.
- Marketing and forecasting professionals in search for specialization in their sector.
- Professionals and entrepreneurs who want to seize the opportunity to innovate through materials.

PRESENTATION

Could materials define the way our future is built? Understanding new materials in order to create new opportunities.

The study of materials is a remarkable driving force behind innovation, which opens up a range of practically endless possibilities. Both new advanced materials as well as new uses of conventional materials provide alternative solutions and new ways for socio-economic development, which will certainly have a great impact on our future.

Design through New Materials aims to provide a working knowledge and active mastery of new materials as agents in innovation and understand their current and future roles in design, sustainability and industry.

The contents and methodology of the course allow for experiencing both materials theory and material hands-on practice; to envision innovation from research to industry, from speculative to applied projects, and to adopt a scientific, creative and multidisciplinary attitude on the field.

The programme sustains practical workshops as well as up-to-date insights from relevant lecturers and visits to leading materials innovation hubs and material-related industries. Our working spaces are both ELISAVA and Materfad, our innovative materials library located at the Barcelona Design Hub, while collaborating simultaneously with multiple institutions and universities involved with related materials innovation and material-driven design in Europe, to strengthen networks and facilitate partnerships.

The applied professional orientation of the master involves developing a final master project with a focus on sustainability, innovation and near-future inspired solutions.

COURSE AIMS

This Masters course aims:

- To prepare professionals for the new opportunities arising from the advancement of materials and technologies.
- To train professionals with the ability to blend scientific research applied to the design process with product development.
- To train professionals with abilities in the development of projects with energy and environmental concerns.
- To train professionals to new creative ways of making.

RATIONALE BEHIND

The evolution of mankind has been intimately tied to the development in materials: from concrete and the newly built skyscrapers transforming the face and social life of cities, to plastics and synthetic colours allowing for the birth of pop culture.

Material-wise we are currently at a turning point in history. The growing dichotomy between an explosive potential in materials and technological advancements pushing incremental and disruptive innovations on the one hand, and a compression of natural resources and its consequential growing environmental concerns on the other hand, calls for new paradigm in both sustainable solutions and mindset. Spanning across every sector, from high to low-tech, from 3D print automation to biologically grown, from the optimal use of virgin resources to redefining the beauty and qualities of waste, the emphasis of a smarter material-based reality takes its root.

The disciplines of Design and Engineering are fusing with the development of materials as a core focus and common denominator of its intent. Product innovation is intimately dependant on equal developments in materials and their processes, be it experimental or by direct application, spanning across all alignments in methodologies of production, philosophy and communication of brand eventually rippling into market placement and communication strategies, through aesthetically appealing products which are in-line and vertically integrated into the practices of the whole.

Material selection thus becomes a driving catalyst and epicenter in the innovation wave - a front-end claimstake upon which all other differentiations, including brand aesthetics, business models, sourcing and craft to industry processes are rooted in the effort of creating new circular economies of scope and scale.

From a consumer's perspective, materials are languages of communication, where form, colour and texture of products merge with sensorial appeal, and philosophical beliefs, providing both a tangible and intangible experience.

The world of materials has multidisciplinary character, involving transversal knowledge and practices, transcending geography and fusing the technological with the creative and the historical through interaction.

The future of industry will thrive and be heavily dependent on materials - skilled professionals, defined by those who understand the importance of materials - driven innovation and design.

SYLLABUS

Module 1. Materials in context, material narratives - culture and forecasting (4.5 ECTS, 30h)

The cultural and social aspects of materials. Market trends. Futures-research methodologies and building future scenarios and narratives.

- Invited lecturers: experts from materials culture and forecasting areas
- Workshop 1: exploring future scenarios

Module 2. Materials foundations - science and technology (4.5 ECTS, 30h)

Materials families. Metals, ceramics and beyond: towards a new ontology of materials. Scientific and creative views on physical properties. Materials processing.

- Discovery: Traditional and upgraded traditional materials discovery session at Materfad.
- Invited lecturer: traditional materials industry

Module 3. Materials in use - materials in action, materials as form (4.5 ECTS, 30h)

Materials selection. Understanding applications of materials in different sectors, from automotive to health.

- Workshop 2: initiation to hands-on work. Materials as form

Module 4. Materials innovation - research and futures (10.5 ECTS, 70h)

Current views on materials innovations. Materials research and materials development trends. From advanced high tech materials and nanotechnology to bio-based low-tech materials.

- Discovery: several new materials discovery sessions at Materfad
- Visits: technological centers and other innovation hubs
- Invited lecturers: company, designer, developers, researcher, organisations (3)
- Workshop 3: ideating applications of new materials

Module 5. Materials experimentation - experimenting and developing and DIY (6 ECTS, 40h)

A series of workshops on materials making. From craft to industry.

- Workshop 4: Materials development
- Workshop 5: Field trip workshop

Module 6. Materials industry and sustainability - the future of fabrication (3 ECTS, 20h)

Production in the 21st century.

Sustainability – from life cycle to new business models

- Invited lecturer: sustainable industry through materials: case study
- Visits to or from companies

Module 7. Materials languages, materials interaction - Materials as form, surface and emotion (6 ECTS, 40h)

Colour, materials and finish design.

Materials aesthetics trends. Languages and narratives, visual storytelling, styling, media Emotionality of materials. Sensory qualities. Tangible and intangible properties.

- Invited lecturer: color and trim designer and a materials forecasting representative
- Workshop 6: surface design lab

Module 8. Materials strategies - communication and market placement (3 ECTS, 20h)

Market placement; strategy, patent, IP, business models.

- Invited lecturer: marketing manager, publishing agency

Final Master Project (18 ECTS, 120h)

The final master project is developed by devoting weekly sessions with tutors and runs in parallel to course modules. Research begins in Module 1. A value proposition is made by Module 4, followed by development, evaluation, communication and the development of a portfolio.

The project will consist on developing a materials-derived product and/or strategy with focus on innovation and sustainability. The Project can be orientated and/or done in collaboration with an industrial partner.

Recommended project focus:

- Automotive - Transportation
- Circular economies - Cradle to cradle
- City - Building
- Health - Well-being
- Home - Workspace
- Accessories - Activewear
- Packaging

CHARACTERISTICS

Academic Structure:

- Mandatory subjects 34.5 ECTS credits
- Others (invited lecturers, visits) 3 ECTS credits
- Non academic traineeships - none
- Final Master Project 22.5 ECTS credits
- TOTAL: 60 ECTS credits

This master will have at least one field trip involving an innovation workshop.

COMPETENCES

The master course is structured for students to acquire, develop and exercise and specific abilities and competences, which cumulatively encompass the necessary skill-set to design, develop, optimize and efficiently communicate a project in terms of both materials-driven innovation, process based production and design solutions.

The student will take on the theoretical and practical knowledge associated with each module, as well as a project defined, cross-sectional and transdisciplinary vision of the whole process with student body and academic staff.

At the end of the course, the student will:

- Be able to analyse future socio-cultural scenarios and contextualise new materials in a global context.
- Be able to select and apply materials, technologies and manufacturing processes in design and the specific nature of the development processes.
- Acquire the skills for the ideation of applications of new materials.
- Be able to evaluate sustainability aspects and environmental impact of materials for industry application.
- Be able to experiment with new materials and related technologies in order to produce new material applications, new material developments or new material languages.
- Be able to generate families of colour and trim as well as materials languages applied to brand and market placement.
- Be able to generate a sound narrative and strategy in order to successfully position a material within the market or sector.
- Be able to recognize the potential of new business models associated to the materials and related technologies being generated.

METHODOLOGY

The programme is structured by 8 modules. Each module includes lectures and seminars, workshops, visits, and invited lecturers.

Lectures (2 hours) are normally followed by seminars and discussion group sessions / debates and QandA for subject acquisition.

Invited speakers lectures (2h each) and possible workshops. Students share their experiences with multi-sectoral professionals related to the contents of the module.

Hands-on workshops. Brief workshops (8h), medium (12h) or long workshops (20h). The workshops are experimental, hands-on and promote the creative development of the projects focusing on the subject-matter of the specific module.

Different spaces. ELISAVA: classrooms, laboratories [Materials science, prototyping, media], and Materfad [at DHUB].

Final Master project. The final master project is developed by devoting weekly sessions with tutors and runs in parallel to the course modules. Research begins in module 1. A value proposition (project focus) is made by module 4. Subsequent development, evaluation, communication and portfolio development. The project will be related to developing a materials-derived product and/or strategy with focus on innovation and sustainability. The Project can be oriented and/or done in collaboration with an industrial partner. Recommended project paths: Automotive / Circular economy / City / Health / Home / Accessories-activewear

Visits to diverse Technological Centres, Innovation Hubs and Companies will be conducted during modules and phases of the projectual development.

Active mentoring of the student during the duration of the master, in order to optimize his/her personal evolution and professional interests.

EVALUATION SYSTEM

80% assistance is required for being evaluated

Both long workshops and the Final Master Project are evaluated and will account for 30% and 70% of the total mark respectively. Workshop course tutors will be responsible for the assessment and evaluations. Evaluation of the Master Project will be evaluated by a project committee panel.

CAREER OPORTUNITIES

Graduates from this programme will have the expertise to work in transdisciplinary environments including marketing, innovation, development and management departments of automotive, activewear, product, home, health, architecture, packaging, manufacturing industry.

LECTURERS

Teachers and/or workshop tutors:

VALÉRIE BERGERON

Architect DPLG. Materfad Materials Library Manager.

EFRAT FRIEDLAND

Materials Researcher and Consultant. materialscout.

ROBERT THOMPSON

Design Engineer and researcher in Somatics. Responsible for the training activities at Materfad-ELISAVA and lecturing professor at ELISAVA.

DR. LAURA CLÈRIES

Materials innovation consultant and designer, founder of Materiality. Lecturing professor and Head of ELISAVA Research.

CAROL RIUS AND HELOISE BUCKLAND

HUSK Ventures.

BLANCA GUASCH

Industrial Design Engineer. PhD candidate on graphene communication.

DR. MARTIN KOCH

Biomedical engineer. Synthetic biomaterials expert. Lecture professor and manager of the Materials Science, Interaction and Electronics lab at ELISAVA.

SARA GONZÁLEZ "DE UBIETA"

Architect and shoe designer. Expert in materials as form.

CRISTINA NOGUER

Materials researcher, designer and innovation manager. Puig. Author of Materials Guide vol. I [Ed. oficina de disseny].

DR. MARTA GONZÁLEZ

Materials Science Engineer and materials consultant. Materials and sustainability area coordinator at ELISAVA.

SAÚL BAEZA

Product and fashion designer with focus on new materials. Co-founder of Hunch Office.

DR. OSCAR TOMICO

Interaction designer and Head of BA in Design Engineering at ELISAVA.

DR. MARIA BOTO

Microbiologist and nutrition scientist. The Color BioLab. University College Ghent.

ANASTASIA PISTOFIDOU

[Textile Fablab BCN].

DR. PERE LLORACH

PhD in Environmental Science and Technology. Lecture professor in Sustainable Materials and Resources at ELISAVA.

JOAN RIERADEVALL

Environmental engineer. Main researcher at the Sostenipra project from the ICTA and collaborator of Inedit (innovation for sustainability).

RAÚL ARRIBAS AND GONZALO SÁNCHEZ DE LOLLANO

Founders of Kiwi Bravo.

JORDI TRUCO

Architect. Partner at HYBRIDa and director of Master of Advanced Design and Digital Architecture at ELISAVA.

Invited lecturers: Relevant designers, company representatives, materials researchers, materials developers, and trend forecasters. With a multi-sectoral and international approach.

Scientific advisors: A selected panel of scientific international advisors. Names to be released.

Visits to EURECAT, LEITAT, IaaC-Fablab- GreenFablab, Eurecat-Ascamm, Hangar, and materials companies.

PRODUCT DESIGN

MASTERS DEGREE

Product Design and Development
Furniture Design
Engineering in Industrial Design
3D Automotive and Product Digital Modelling
Design through New Materials

POSTGRADUATE DIPLOMA

Product Concept
Product Development
Furniture Design for Communities, Contract and Urban
Furniture Design for the Habitat

Fabric, by Miriam Estévez. Class of 2015

MORE INFORMATION

www.elisava.net/en/studies/master-design-through-new-materials

Bold category members of Elisava Alumni Association enjoy a 15% reduction.

The teaching staff is likely to change according to reasons beyond the course programme. ELISAVA reserves the right to make changes in programming as well as the right to suspend the course two weeks before it starts if not reached the minimum number of participants, without further obligation of the amounts paid by each participant.

Master's and Postgraduate Degree programmes schedules can be expanded according to the selected course activities (weekends included).

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