

45. ECOFASHION DESIGN FOR CIRCULAR AND SUSTAINABLE FASHION <sup>i</sup>	
Level I	
Department of Architecture (DIDA)	
Course coordinator	Debora Giorgi
Executive Committee	Alessandra Rinaldi Antonella Trombadore Filippo Visintin Pier Andrea Lonostro Luca Rosi
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Practical-professional profile of the course and industry sector of reference	<p>The ECOFASHION Master course is conceived for designers, technicians, and managers in the textile and fashion product sectors facing ecological and digital transition challenges. Tools and methodologies specific to eco-design will be explored in depth, addressing the calculation of environmental impacts, innovative materials, and smart technologies in an approach that starts from the product-service system and expands to synergies at the systemic level of cross-sectoral and cross-industry collaboration of the companies involved. The course's main objective is to train new professionals aware of responsible environmental, social, and economic innovation processes for the fashion and textile industry.</p> <p>These sectors are among the most sensitive in embracing the challenges imposed by social, cultural, environmental, and economic changes. With the acquired skills and abilities, participants will be able to pursue a professional career in sustainability management for companies in the fashion and textile sectors and sustainable design aimed at the product-service system.</p> <p>A student who has earned the master's diploma can work as a sustainability manager or as a sustainability consultant in textile and fashion product companies in the various company departments, from those in which the artifact is designed and engineered to technology development, analytical control, quality control, and certifications, or artifact design and product development.</p> <p>This program aims to create internationally competitive professionals in the field of sustainability from the resources offered by small and medium enterprises in the fashion product and textile industry dotting the country, to increase sustainable innovation in the industry in a widespread manner among those working in the sector. In this regard, ASTRI Consortium collaborates with the university and is an intermediary with companies in the industry.</p> <p>The <b>Reference Labor Market</b> is the one that has opened up in the scenario foreshadowed by the European Green Deal. From the climate and post-pandemic economic crises, sustainability emerges as central to innovating our productive sectors and ensuring business continuity.</p> <p>The Textile and Fashion System constitutes a backbone and distinctive axis in the structure of Made in Italy, supported by a peculiar productive, socio-economic and cultural context, which constitutes an element of uniqueness for our country with the presence of large textile districts of international relevance (Biella, Como, Prato, Caserta) and fashion compartments operating in the high-end. The most important international brands in all sectors, from clothing to footwear, handbags, and precision engineering, are present in our territory (Empoli, Sesto Fiorentino, Calenzano, Marche, Vicenza, Campania, etc.). In</p>

general, the Textile-Clothing supply chain accounts for 8 percent of the Italian manufacturing sector's annual exports (November 2019-October 2020), with a strongly positive trade balance (10.5 billion euros on the 2019 final balance sheet) and the ability to meet both the demand of traditional European and North American markets and that of the new Far East realities.

In particular, the Prato Textile and Fashion District is the largest in Europe regarding companies and employees. It has distinguished itself not only by its wide variety of production-ranging, from fashion fabrics to interior textiles to High Tech fabrics, but also by its sustainable and circular development model, placing it among the first in the world in this field. The textile district, which produces the most important semi-finished product, is closely linked to the finished garment production sectors spread throughout Tuscany as well as nationally, creating an attractor system for the most important international fashion brands that have settled in the area.

That is why the ECOFASHION Master course was created in the Prato Textile District, with the support of the leading local authorities: "Città di Prato" - PIN University Campus, Trade Associations, ASTRI Consortium, - as well as, of course, companies in the Textile and Fashion sector at the regional and national levels - to address the ever-increasing need in the textile and fashion product sector to train qualified personnel with specialized and innovative skills in the area of green transition and digital transformation. New profiles trained to manage the sustainable transition who have specific knowledge of the sector and the local business fabric are therefore in demand.

Roles such as: Sustainability Managers, Sustainability Designers, Circular Economy Managers, Ethical Trade Managers, Sustainable Business Managers, Supply Chain Managers, Corporate Social Responsibility Managers, Social Activists and Copywriters.

The skills of these figures range from sustainability assessment to management and design through eco-design strategies that can be applied at both corporate and district levels.

To this end, the training activities will be divided into four theoretical-practical Modules of 6 CFUs each, aimed at exploring the main issues in the field of sustainability in its three aspects-environmental, social, economic-and eco-design strategies applied to the product-service system, through academic units ranging from chemical knowledge of materials and for quality control to those on ecological and innovative materials, to methodologies for impact assessment and eco-design, to innovative technologies applied in industry and process traceability control, to communication strategies as a strategic element for business competitiveness and for increasing user awareness of sustainability issues.

The four theoretical-practical modules of 6 CFU each, comprise theoretical lectures supported by practical exercises and are complemented by 2 ECO-DESIGN Practical/Experiential Workshops of 9 CFU each, which will be developed around challenges that will be defined with companies in the textile, wearable fashion product and accessories (leather goods, metals, etc.) industries.

The modules are as follows:

Module 1 SUSTAINABILITY IN THE FASHION AND TEXTILE SECTOR

Module 2 ECO-DESIGN FOR THE PRODUCT-SERVICE SYSTEM

Module 3 NEW TECHNOLOGIES FOR CIRCULARITY IN THE FASHION AND TEXTILE SECTOR

Module 4 STRATEGIC COMMUNICATION: CIRCULAR NETWORKS AND EMPOWERMENT

Module 1 will address the definitions, regulations and tools needed today for

companies to transition green.

Module 2 addresses Eco-design methodologies and strategies based on the Life Cycle Thinking approach.

Module 3 expands the business view to a system view to pursue circularity at the supply chain level and introduces smart technologies applied to traceability and transparency requirements, focusing on introducing circular business models.

Module 4 addresses strategic communication issues to support both individual companies and systems with a focus on awareness generation and, thus, empowerment of different actors including consumers understood as prosumers.

The workshops are aimed at developing students' design skills through a creative and systems thinking approach and are:

WS1 - ECO-DESIGN WORKSHOP - Eco-design for the product-service system.

WS2 - ECO-DESIGN WORKSHOP - Sustainable Strategic Design.

To do this, the training objectives are:

- To provide participants with sustainability assessment skills and strategic capacity for sustainable management and innovation of the product-service system or the entire supply chain, knowing how to move into the management of environmental aspects to social aspects to economic aspects.
- Understand and practice eco-design strategies, through Life Cycle Design approach, Life Cycle Assessment methodology, so as to know how to handle qualitative and quantitative sustainability assessment tools.
- Deepen knowledge of the critical issues of production processes, processing, technologies, machinery, materials and chemical agents, so far applied to develop sustainable solutions already at the design stage.
- Know how to handle waste and waste treatment issues, then end-of-life (EoL) strategies according to regulations.
- Managing supply chains concerning the need for traceability and through the opportunities offered by current technologies such as blockchain and smart labels.
- Learn about smart technologies applicable to the textile and fashion industry.
- To provide participants with communication skills and tools to facilitate information transparency and increase the industry's competitiveness with reference to current sustainability regulations and an international market.

The Master course aims to provide knowledge and skills in the various areas of sustainability ranging from impact assessment, supply chain management aimed at responsible innovation, circular business models, use of innovative technologies for traceability and production control, responsible design based on Life Cycle Design principles to strategic communication. These skills are complemented by the skills needed to control the design process throughout the product/service lifecycle using key measurement and tracking tools and methods.

At the end of the course, learners will be able to manage the eco-design process in the Textile and Fashion Sector through integrated and highly specialized knowledge, apply critical awareness of theories and principles in multiple areas of knowledge, focusing on the sustainable approach of systemic processes considering social and economic environmental sensitivity.

Students will be able to:

1. **(theoretical/application level) Sustainability in the fashion and textile industry** Participants will be able to assess and manage sustainability in its three foundational aspects: environmental, social and economic, in relation to the textile and fashion industry. These skills will be achieved through the study and application of the Life Cycle Assessment

methodology and its databases and calculation tools; through the study of social-Life Cycle Assessment and systems such as Fair Trade now being developed to compensate for fair market requirements demanded by consumers; and through the application of the Circular Business model CANVAS tool for managing circularity value within a business. In conjunction with providing participants with these methods and tools, knowledge of supply chains that refer to the textile and fashion industry will be deepened through company visits. Through the acquisition of this knowledge, it will be possible to provide participants with the regulatory and certification tools to achieve the traceability and transparency required of the entire industry today, putting companies in a new position to share information.

2. **(evaluative/application level) *Eco-design of the product-service system*** Through involvement in hands-on activities, participants will be able to use Life Cycle Design tools and apply them to the design of products and business processes. In particular, they will be able to understand eco-design issues related to the chemical and engineering composition of materials and related to the evolution of innovative and sustainable production processes; understand regulations for waste and waste management and analytical methods in selected business case studies, applying specific tools for the analysis of production impacts from a systemic perspective as well as the evaluation of product EoL by applying reverse engineering design processes.
3. **(theory/application level) *New Technologies for Circularity in Textile and Fashion*** Participants will be able to combine technological innovations related to new production and management processes, such as smart manufacturing, with the sustainability needs of textile and fashion companies. For this, knowledge of ICT robotic systems, enabling technologies, and blockchain as a tool for traceability and transparency of processes and products will be explored, with a view to both obtaining certifications and marketing strategy for increased competitiveness.
4. **(Assessment/application level)** Designing engagement and strategic communication for companies. Students will be able to understand and implement strategic communication in the area of sustainability for fashion and textile companies. Specifically, participants, will develop Data Analysis skills, reading and interpreting different types of data and their implications at the enterprise level, developing skills that can devise new data-driven business models, making crucial strategic decisions in the parameters of business sustainability, visualizing business insights to communicate them effectively and using them to plan beneficial business strategies.

<b>Access prerequisites</b>	<p>Bachelor's degree obtained in accordance with the system under Ministerial Decree No. 270/2004 (or degree under Ministerial Decree No. 509/1999 equated under I.D. July 9, 2009) in one of the following classes:</p> <ul style="list-style-type: none"> <li>• L-1 Cultural Heritage</li> <li>• L-3 Disciplines of the Figurative Arts, Music, Performing Arts and Fashion</li> <li>• L-4 Industrial Design</li> <li>• L-5 Philosophy</li> <li>• L-10 Humanities</li> <li>• L-17 Architecture</li> <li>• L-20 Communication Studies</li> </ul> <p>Single-cycle degree obtained in accordance with the system under Ministerial Decree No. 270/2004 (or specialist degree under Ministerial Decree No. 509/1999 equated under I.D. July 9, 2009) in the class</p> <ul style="list-style-type: none"> <li>• LM-4 Architecture and Construction Engineering - Architecture (5-year degree);</li> </ul> <p>A diploma issued by one of the AFAM institutions</p> <p>Degree awarded according to a system prior to Ministerial Decree No. 509/1999 in</p> <ul style="list-style-type: none"> <li>• Architecture</li> <li>• Industrial Chemistry</li> <li>• Disciplines of fine art, music, and performing arts</li> <li>• Industrial Design</li> <li>• Economics</li> <li>• Philosophy</li> <li>• Engineering</li> <li>• Marketing</li> <li>• Communication studies</li> <li>• Culture studies</li> </ul> <p>Degree awarded according to a system prior to Ministerial Decree No. 509/1999 of closely related content, deemed suitable by the Executive Committee or a Commission specifically appointed by it.</p>
<b>Admission procedure</b>	Selection by qualifications and resumé
<b>Duration</b>	9 months
<b>Teaching methods</b>	Mixed - both synchronous and asynchronous modes, according to the Flipped Classroom methodology, using the Moodle platform.
<b>Language of instruction</b>	Italian
<b>Verification of knowledge of the language in which the course is delivered</b>	For foreign students, Italian level B2 with certification to be attached to the application
<b>Attendance requirements</b>	70%
<b>Location of the course</b>	Department/School of Architecture, in Department classrooms and at the Prato PIN Campus.
<b>Foreseen lecture schedule</b>	2 days per week for face-to-face modules and in the more intensive form, up to 5 days per week for workshops
<b>Examinations procedures and schedule</b>	Tests at the end of each module
<b>Final examination</b>	The final examination consists of presenting a paper based on the Internship.

Available places and enrolment fees	
<b>Full-fee students</b>	
<b>Minimum number</b>	8
<b>Maximum number</b>	30
<b>Enrolment fee</b>	€4,700
<b>Single Modules</b>	
<b>Maximum places</b>	3
<b>Cost</b>	€125/credit

<b>Access prerequisites</b>	To be eligible to attend individual modules, one must hold one of the qualifications among those required for admission to the Master Course.
<b>Admission test</b>	The selection of candidates for admission in the to individual modules consists of an evaluation <b>of titles and resumé</b> .

<b>Description of the activities and training objectives of the Internship</b>	<p>The Internship is aimed at the testing and practical application of the knowledge and skills acquired during the course.</p> <p>In order to offer more opportunities to carry out the Internship, <b>ASTRI-Italian Recycled Textile Association</b> (<a href="https://astrirecycling.it/">https://astrirecycling.it/</a>), which brings together more than 130 companies that have made recycling and sustainability their strengths, has lent its support to the master course by offering its expertise both in defining the themes and challenges on which the workshops and theoretical-practical modules will be built and in facilitating the internships in the industry.</p>
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<sup>i</sup> This document is a translation of the form A.1 relating to the characteristics of the course attached to the Decree of the Deputy number 848 (record 153310) of 2th of July 2024, drafted in Italian and issued on the Master | Didattica | Università degli Studi di Firenze | UniFI and which therefore constitutes the only official document. This English translation cannot be used for legal purposes and has the sole purpose of supplying information in English on the content of the public notice.