



PhD in ARCHITETTURA, INGEGNERIA DELLE COSTRUZIONI E AMBIENTE COSTRUITO / ARCHITECTURE, BUILT ENVIRONMENT AND CONSTRUCTION ENGINEERING - 38th cycle

PARTENARIATO PNRR Research Field: ECO-DESIGN STRATEGIES AND SMART AND SUSTAINABLE PRODUCTS AND SYSTEMS

Monthly net income of PhDscholarship (max 36 months)

€ 1275.0

In case of a change of the welfare rates during the three-year period, the amount could be modified.

Context of the research activity

Motivation and objectives of the research in this field

Develop and experiment with a portfolio of PSS (Product-Service-Systems) eco-design strategies that support all design phases:

- design of PSS architecture, materials, and components;
- cradle-to-cradle PSS lifecycle design and impacts evaluation; and
- service and communication design for social innovation and behavioral change.

The research work is part of the PNRR Measure "Partenariati estesi" and specifically in PE11 - Made in Italy and Circular Sustainability (funded by the Italian Government, MEF - Ministry of Economy and Finance).

CUP: PE 11-MICS (3A-ITALY) PARTENARIATO ESTESO MADE IN ITALY CIRCOLARE E SOSTENIBILE (D43C22003120001)

D.D. 341 del 15/03/2022 Avviso pubblico per la presentazione di Proposte di intervento per la creazione di "Partenariati estesi alle università, ai centri di ricerca, alle aziende per il finanziamento di progetti di ricerca di base" - nell'ambito del Piano Nazionale di Ripresa e Resilienza, Missione 4 "Istruzione e ricerca" -



	Componente 2 "Dalla ricerca all'impresa" - Investimento 1.3, finanziato dall'Unione europea - NextGenerationEU
Methods and techniques that will be developed and used to carry out the research	<p>The Candidate will fully investigate the potential and the issues of eco-design.</p> <p>The candidate will deal with analytic and experimental aspects of the research. The research will:</p> <ul style="list-style-type: none"> •Produce a portfolio of eco-design strategies and related methodologies and tools that support all phases of PSS design, and lifecycle management; •Develop a cradle-to-cradle design approach based on new models of PSS impact assessment along their entire lifecycle up to their potential zero-impact dismissal, recycle, reuse and/or remanufacturing; •Develop methodologies for PSS architecture design (e.g. zero-waste and less energy consumption), and design and finishing of smart, bio-based/inspired materials and components; •Develop metaverse environments for leaner PSS development and made-to-measure design methodologies, and of integrated systems for their manufacturing eco-efficiency; and •Develop cradle-to-cradle design approaches for PSS reuse, recycle and remanufacturing, lifecycle assessment of such approaches and redesign of production processes (less energy and raw materials).
Educational objectives	<p>The educational goals will concern:</p> <ul style="list-style-type: none"> •Advanced knowledge on eco-design strategy and approach; •Methods to evaluate and analyse data from experimental tests in order to obtain results directly useful for the design of innovative products; •Technical solutions design, modelling and reuse-recycle and remanufacturing process; and •Publishing on international journals and congress



	proceedings.
Job opportunities	The skills acquired through the research are expected to make the Candidate a highly qualified expert in the field of LCA (Life Cycle Assessment) and eco-design for innovative components and the of innovative products to work in the research and development branch of producer companies.
Composition of the research group	2 Full Professors 1 Associated Professors 1 Assistant Professors 4 PhD Students
Name of the research directors	Prof. Tiziana Poli

Contacts
Prof. Tiziana Poli email: tiziana.poli@polimi.it

Additional support - Financial aid per PhD student per year (gross amount)	
Housing - Foreign Students	--
Housing - Out-of-town residents (more than 80Km out of Milano)	--

Scholarship Increase for a period abroad	
Amount monthly	637.5 €
By number of months	6

Additional information: educational activity, teaching assistantship, computer availability, desk availability, any other information
<p>Additional information can be found in the Regulations for the 38th Cycle of ABC-PhD: please ask to the ABC-PhD Office (dottorato-dabc@polimi.it)</p> <p>Additional information about ABC department and ABC-PhD programme: available at link: https://www.dabc.polimi.it/</p> <p>Additional support for the research activity: a total amount of 5.197,62 Euros per student, available since the first year, to be spent according to the department rules.</p>



Desk availability:

the ABC department provides non-permanent desks to be temporarily booked in common PhD rooms.