



PhD in INGEGNERIA GESTIONALE / MANAGEMENT ENGINEERING - 39th cycle

**PNRR 118 PA Research Field: CIRCULAR ECONOMY & SUSTAINABILITY IN THE LIFE
SCIENCE & HEALTH CARE ECOSYSTEM**

Monthly net income of PhDscholarship (max 36 months)

€ 1450.0

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**

The concept of and practices for a circular economy are gaining momentum in the Life science and Health Care ecosystem because they promote the transition towards sustainability through improved resource management, waste reduction, and extended product lifecycle. By adopting circular principles on a large scale, such as reusing, remanufacturing, and recycling, the Life Science and Health Care ecosystem can minimize its environmental impact, conserve scarce resources, and decrease reliance on virgin materials. This not only reduces waste but also contributes to long-term economic viability and innovation within the Life Science and Health Care ecosystem. Despite the relevance of these issues, our current knowledge about how to design, implement, and govern circular economy methods and tools in the Life Science and Health Care ecosystem is still puzzling and limited.

In light of this, a wide range of research topics are still available where there is enough space for advancing both theory and practice. Some of them include (1) Material Innovation and Design; (2) Product Lifecycle Assessment; (3) Waste Management Strategies; (4) Supply Chain Optimization; (5) Remanufacturing and Refurbishment; (6) Regulatory Frameworks and Policy Recommendations; (7) Business Models Innovation; (8) Technological Innovations; (9) Patients' and Healthcare Professionals' Behavior and Education; (10) Impact Analysis; and (11) Collaboration and Partnerships for Industrial Symbiosis.



	<p>Researching these topics can contribute significantly to the advancement of circular economy practices within the Life Science and Health Care ecosystem, driving innovation, reducing environmental impact, and promoting a more sustainable future.</p>
<p>Methods and techniques that will be developed and used to carry out the research</p>	<p>The research design will combine both quantitative and qualitative methods. In particular, the Ph.D. Student will carry out, under the supervision of the research group, desk analyses of both incumbents and startups through already available databases, surveys to leading practitioners to collect primary data, as well as in-depth multiple case studies through interviews with key informants and document analysis. Additionally, the selected Ph.D. Student will be hosted by the Policlinico di Milano (a large size, leading research hospital in Milan) for six months to run joint in-the-field research on the topics of the doctoral project.</p>
<p>Educational objectives</p>	<p>Beyond developing a distinctive understanding of the Life Science and Health Care ecosystem, and the challenges for circular economy and sustainability, the selected Ph.D. Student will learn how to design a sound research project, and how to develop a new theory and validate it through a robust research design. Moreover, the Ph.D. Student will learn how to interact within the scientific community (e.g., conferences and publications) and with leading companies and Institutions Life Science and Health Care ecosystem (e.g., research interviews, joint projects).</p>
<p>Job opportunities</p>	<p>Once her/his Ph.D. dissertation has been defended, the selected Ph.D. Student will have the opportunity to explore - together with the research group and her/his supervisors - different job opportunities. First, she/he might remain in academia with a post-doc position within the research group or in another Business School. Second, she/he might apply for a senior position outside academia in (i) enterprises operating in either the Life Science and Health Care industry or others, (ii) consultancy firms that are specialized in the topics addressed within the doctoral research, (iii) national/international Institutions (e.g., ISS; EMA, WHO</p>



	etc.) operating in the Life Science and Health Care ecosystem, or (iv) any other organization interested to the distinctive competences and network of contacts developed during her/his doctoral research. Third, she/he might explore an entrepreneurial career by exploiting the results achieved during the doctoral studies by contributing to funding a start-up.
Composition of the research group	4 Full Professors 3 Associated Professors 3 Assistant Professors 8 PhD Students
Name of the research directors	Emanuele Lettieri and Davide Chiaroni

Contacts	
emanuele.letteri@polimi.it & davide.chiaroni@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	725.0 €
By number of months	6

National Operational Program for Research and Innovation	
Company where the candidate will attend the stage (name and brief description)	
By number of months at the company	0
Institution or company where the candidate will spend the period abroad (name and brief description)	
By number of months abroad	6

Additional information: educational activity, teaching assistantship, computer availability, desk availability, any other information
The selected Ph.D. Student will be offered the opportunity to develop teaching capabilities by being involved as a teaching assistant in the courses chaired by the Professors affiliated to the research group, also according to her/his attitude and interests. Courses cover topics about Health Care Management, Innovation in Health and Social Care, Accounting, Finance & Control, and Business Administration. There will be also the opportunity to be involved in developing new educational programs both at the Master of Science level and the post-graduate level (jointly with the POLIMI Graduate School of Management - GSOM).



The selected Ph.D. Student will have desk availability as well as the opportunity for smart working for two days per week.