



PhD in INGEGNERIA MECCANICA / MECHANICAL ENGINEERING - 39th cycle

**PNRR 118 PNRR Research Field: INNOVATIVE OPTICAL AND IMAGED-BASED
MEASUREMENT TECHNOLOGIES FOR BIOMATERIALS CHARACTERIZATION**

Monthly net income of PhDscholarship (max 36 months)

€ 1400.0

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 research aims at the development of measurement systems based on innovative optical and image-based technologies to be used for monitoring biomedical parameters and for characterizing biological tissues and tissue-mimicking phantoms. These systems are intended to be applied in the fields of biorobotics and minimally invasive surgery. The research program is coherent with PNRR missions related to innovation in industries, as it uses key-enabling technologies, such as hyperspectral imaging and optical sensing techniques based on optical fibers, which represent the frontiers of the biomedical and industrial technologies, and rely on the development of information science, image processing and pattern recognition technology. The main goals of the research include the development of an innovative and multi-sensorial tool, the optimization of the measuring approaches, and data analysis to obtain a reliable representation of the monitored systems and process.

Methods and techniques that will be developed and used to carry out the research

Development of new sensing solutions based on modern optical hardware, to obtain efficient and reliable measuring systems applicable to obtain real-time data for augmented sensing in human-centered systems and applications. Development of data processing strategies to obtain information on the monitored system by synergic analysis of data from different sensors and imaging tools.

Educational objectives



	We provide doctoral candidates with high-level and competitive scientific training, fostering and refining research skills and problem-solving and independent-thinking abilities by focusing on both theoretical and experimental skills. A person holding a PhD in Mechanical Engineering will be able to layout, draft and perform original research, by working in a team in companies or universities, and leading a research group.
Job opportunities	Our last survey on MeccPhD Doctorates highlighted a 100% employment rate within the first year and a 35% higher salary, compared to Master of Science holders in the same field.
Composition of the research group	3 Full Professors 5 Associated Professors 2 Assistant Professors 10 PhD Students
Name of the research directors	Prof. Paola Saccomandi

Contacts	
Phone: +39 02 2399 8470 Email: paola.saccomandi@polimi.it	
For questions about scholarship, please contact phd-dmec@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	700.0 €
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)	to be defined
By number of months abroad	6



Additional information: educational activity, teaching assistantship, computer availability, desk availability, any other information

Financial aid is available for all PhD candidates (purchase of study books and materials, funding for participation in courses, summer schools, workshops and conferences) for a total amount of euro 5.707, 13.

Teaching assistantship: availability of funding in recognition of supporting teaching activities by the PhD candidate. There are various forms of financial aid for activities of support to the teaching practice. The PhD student is encouraged to take part in these activities, within the limits allowed by the regulations.