



PhD in INGEGNERIA MECCANICA / MECHANICAL ENGINEERING - 39th cycle

**PARTENARIATO PNRR Research Field: DEVELOPMENT OF INNOVATIVE INSTRUMENTS
FOR INDUSTRIAL AND SPACE APPLICATIONS**

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**

Nowadays measurements are the basis for the smart processing of huge amounts of data in real-time conditions, either in industrial or space scenarios, to enable full interaction with the surrounding environment and support the decision-makers. In industry production line monitoring is quickly evolving, thanks to the possibility to share data in real-time in the cloud and the availability of efficient processing approaches for big data manipulation. In the space sector, the design and development of miniaturized instruments are paving the way for many future flight opportunities, being the overall missions design trend to reduce as much as possible the required resources and investments for space payloads. In these scenarios, the availability of reliable and accurate data plays a crucial role, enabled by the design of innovative instruments and the development of new sensing techniques. Thus, this project is aimed at the development and metrological qualification of innovative instruments and measuring techniques both for industrial and scientific applications. The main goals of the research include instrument design, optimization of the measuring approaches, and data analysis to obtain a reliable representation of the monitored system, process, or scenario.

The research activity is financed and developed within the Ecosystem for Innovation MUSA (Multilayered Urban Sustainability Action), Spoke 3 (Deep Tech:



	<p>Entrepreneurship & Technology Transfer)</p> <p>ECS00000037, as part of the National Plan for Recovery and Resilience (PNRR, M4 C2 Dalla ricerca all'impresa, Investimento 1.5), finanziato dall'Unione Europea - Next GenerationEU.</p> <p>Norms of reference: CUP D43C22001410007 - D.D. 1055 del 23/06/2022</p> <p>D.D. 3277 del 30/12/2022 Avviso pubblico per la presentazione di Proposte di intervento per la creazione di 12 Ecosistemi dell'innovazione sul territorio nazionale da finanziare nell'ambito del Piano Nazionale di Ripresa e Resilienza, Missione 4 Componente 2 Investimento 1.5 - Creazione e rafforzamento di "ecosistemi dell'innovazione", costruzione di "leader territoriali di R&S" - finanziato dall'Unione Europea - NextGenerationEU.</p>
Methods and techniques that will be developed and used to carry out the research	<p>Design and development of new instruments and sensing techniques and development of data processing strategies to obtain information on the monitored systems. The study will be applied to systems and test data available from instruments recently developed or currently under design in the laboratory.</p>
Educational objectives	<p>The candidate will eventually fully master the modelling tools and methods required for the analysis of the measuring systems. Applications to space and industrial environments will be considered. The capability of designing test set-ups and test procedures, developing data processing techniques for measurements validation, and uncertainty reduction will be among the developed skills</p>
Job opportunities	<p>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.</p>
Composition of the research group	<p>1 Full Professors 2 Associated Professors 1 Assistant Professors 4 PhD Students</p>



Name of the research directors	Prof. Diego Scaccabarozzi
---------------------------------------	---------------------------

Contacts
<p>Phone: +39 0223998702 E-mail: diego.scaccabarozzi@polimi.it</p> <p>For questions about scholarship and support, please contact phd-dmec@polimi.it.</p>

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

Additional information: educational activity, teaching assistantship, computer availability, desk availability, any other information
<p>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.</p> <p>Our candidates are strongly encouraged to spend a research period abroad, joining high-level research groups in the specific PhD research topic, selected in agreement with the Supervisor. An increase in the scholarship will be applied for periods up to 6 months (approx. 700 euro/month- net amount).</p> <p>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.</p>