



PhD in INGEGNERIA MECCANICA / MECHANICAL ENGINEERING - 40th cycle

**PNRR 630 Research Field: MEASUREMENT OF FORCES AND MOMENTS AT THE HUB OF A
CAR**

Monthly net income of PhDscholarship (max 36 months)
€ 1500.0
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	<p>Missions of PNRR and related impact of the research</p> <ul style="list-style-type: none"> •Digitalizzazione, innovazione, competitività, cultura e turismo - Measurement of forces at wheel hubs allows the creation of a digital twin of the car •Rivoluzione verde e transizione ecologica - The knowledge of forces allows lightweight construction that involves reduction of rolling resistance •Infrastrutture per una mobilità sostenibile - Measuring forces allows to estimate the tyre-road friction coefficient and such data can be broadcasted to enhance traffic safety •Istruzione e ricerca - Educating a ESR allows to enhance the research capabilities of both industry and academia •Salute - A safer traffic is in favour of public health
Methods and techniques that will be developed and used to carry out the research	<p>A PNRR project, Vesuas, based on a patent of Politecnico di Milano, will be exploited to implement measuring hub into a car. Data will be acquired and processed for structural design purposes and other aims listed above.</p>
Educational objectives	<p>Both hard skills and soft skills will be obtained by the ESR</p> <p>Hard skills: structural computing, fatigue, smart manufacturing, sensorization, data acquisition and processing, vehicle dynamics, virtual reality simulations,</p>



	human-machine interface. Soft skills: research management, networking, dissemination, communication, outreach
Job opportunities	Employment by OEMs or Automotive Suppliers (1.5million positions in EU only). Employment statistics of PhDs can be found at: https://cm.careerservice.polimi.it/en/employment-statistics/ List of Universities, Companies, Agencies and/or National or International Institutions that are cooperating in the research include: TU Wien, University of Tokyo, Virginia Tech, University of Michigan, Kanagawa Institute of Technology, Audi research centre
Composition of the research group	2 Full Professors 2 Associated Professors 2 Assistant Professors 11 PhD Students
Name of the research directors	Prof. Giampiero MASTINU, Massimiliano GOBBI

Contacts	
Phone +39 333 326 79 07 Email gianpiero.mastinu@polimi.it For questions about scholarship/support: 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	750.0 €
By number of months	6

National Operational Program for Research and Innovation	
Company where the candidate will attend the stage (name and brief description)	Lamborghini S.p.A.
By number of months at the company	6
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 6.114, 50. 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.