



PhD in INGEGNERIA ELETTRICA / ELECTRICAL ENGINEERING - 39th cycle

**PNRR 117 Research Field: INNOVATIVE METHODS FOR SUSTAINABLE MOBILITY
APPLIED TO THE TRANSPORT SECTOR**

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

International policies in many countries today are strongly oriented toward the process of decarbonizing the transportation sector. The emissions produced can affect both air quality, especially in urban areas, and climate change. From a quantitative point of view, the transport sector is second only to electricity production and heating in terms of emissions. The acquisition and analysis of large amounts of data enables the development of methodologies and approaches that can make strategic decisions for Local Public Transport (TPL) companies. In particular, the focus will be on the deployment of green mobility, proposing feasible and applicable models and technical solutions in companies.

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

In view of the fact that new mobility management is increasingly affected by the "many" factors, the planned methods and techniques will cover:

- Collaborate with the Business Development (BD) manager on the design of the new IT system for managing service design activities.
- Collaborate with BD managers on the preparation of technical bids for participation in tenders, through:
- The use of appropriate optimization software to analyze operating schedules in order to determine the number of staff and vehicles required to cover the required service.



	•The feasibility analysis referring to the use of vehicles with lower environmental impact, specifically electric and/or hydrogen vehicles, and the relative sizing of recharging infrastructure. •Study and in-depth study of the evolution of sector-specific regulations. •Use of tools for monitoring the performance of the market lines. •Collaboration with the IT and Digital Team to define a development platform for the use of integrated mobility.
Educational objectives	To prepare researchers with high scientific qualification, independent research capabilities in the area of electric transportation systems. This includes specific skills in modeling both technical and economic issues, simulations, critical analysis and validation of results. However, psychological and philosophical aspects will also be considered.
Job opportunities	The main opportunities are generally provided by R&D departments of small and large companies and innovative manufacturers, research centers, and EV charging system operators in collaboration with research groups in universities. There will also be opportunities to collaborate with foreign universities such as MIT in Boston, CanmetENERGY Research Centre in Ottawa and University, Tokyo University of Science and University of Malaga. Possible experience at one or more Arriva Group locations in Europe, to be evaluated with the student and mentor and in accordance with company opportunities.
Composition of the research group	5 Full Professors 4 Associated Professors 6 Assistant Professors 15 PhD Students
Name of the research directors	Prof. Michela Longo

Contacts

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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)	ARRIVA 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)	The project promotes collaboration with relevant international universities and research centers. The foreign institution will be selected during the 3 years research program in agreement with the industrial partner.
By number of months abroad	6

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

Educational activities:

Financial aid per PhD student is available for purchase of study books and material, funding for participation in courses, summer schools, workshops and conferences, instrumentations and computer, etc. This amount is equal to 10% of the annual gross amount, for 3 years.

Teaching assistantship:

Availability of funding in recognition of supporting teaching activities by the PhD student. 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.

Computer availability: individual use.

Desk availability: individual use.