

AUTOMOTIVE ENGINEERING FOR INTELLIGENT MOBILITY

Section "PhD positions and scholarships" integrated on 29/04/2020

Section "Positions and scholarships" integrated on 19/05/2020

Section "Positions and scholarships" integrated on 28/05/2020

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Starting date of the PhD Programme	01/11/2020
Duration	3 calendar years
Language of the PhD Programme	Italian
Mandatory stay abroad	Yes (3 months)
Associated Universities pursuant to art. 2, para 2, lett. d) of the M.D. n. 45/2013	Università di Modena e Reggio Emilia Università degli Studi di Parma
Curricula	Research topics
1. Vehicle Design, Manufacturing and Systems Integration	The curriculum pursues the education of researchers and high-qualified engineers, operating in the areas of design and manufacturing of the automotive sector, and able to address issues related to design and research activities in disciplines such as: <ul style="list-style-type: none"> - Industry 4.0 and Advanced Manufacturing Technologies - Supply Chain Management - Industrial Automation and Robotics - Big Data and Cloud Computing for Manufacturing - Materials, Lighting Technology and Design Methods for improving Efficiency and Safety of Vehicles - Vehicle Lifecycle Assessment. Circular Economy: Vehicle refurbish, re-use of Vehicle Parts.
2. Energy Systems, Powertrains, Vehicle Performance	The curriculum pursues the education of researchers and high-qualified engineers, operating in the areas of vehicle dynamics and energy management, and able to address issues related to design and research activities in disciplines such as: <ul style="list-style-type: none"> - Electrification and Power Electronics - Electric, Hybrid and ICE-based Powertrains - Advanced Combustion and Aftertreatment Systems - Batteries and Energy Storage Systems - Vehicle Energy Management and Energy Optimization - Vehicle Dynamics and Control
3. Vehicle Informatics and Connectivity	The curriculum pursues the education of researchers and high-qualified engineers, operating in the areas of vehicle digitalization and connectivity, and able to address issues related to design and research activities in disciplines such as: <ul style="list-style-type: none"> - Vehicle Human Machine Interface and Infotainment systems - Gamification for Improving Driver Behavior - Vehicular networks, Vehicular Sensors and Big Data for Mobility - Automatic and Autonomous Drive - Connectivity for V2I - Vehicle to Infrastructure, V2V - Vehicle to Vehicle and V2G - Vehicle to smart Grid interfacing - Data Analytics and Advanced Prediction Models

PhD positions and scholarships

Position n.	Financial support	Description	Curriculum	Positions linked to research subjects
1	PhD Scholarship	Totally funded by the University of Bologna general budget	2	Multicomponent modeling of reciprocating engine in-cylinder lubricant dilution
2	PhD Scholarship	Totally funded by the University of Bologna general budget	1	Topological optimization for additive manufacturing of motorcycle components
3	PhD Scholarship	Totally funded by the University of Bologna general budget	3	Connected Vehicles for Beyond 5G Scenarios
4	PhD Scholarship	Totally funded by the University of Bologna general budget	2	Electrical engineering for high-efficiency and high-reliability electric vehicles

5	PhD Scholarship	Funded by the University of Bologna general budget and co-funded by the Department of Industrial Engineering	2	Development and testing of control and diagnosis methodologies for innovative combustion systems
6	PhD Scholarship	Funded by the University of Bologna general budget and co-funded by the Department of Industrial Engineering	2	Innovative systems and methods for motorcycle dynamic performance and stability estimation and optimization
7	PhD Scholarship	Funded by the University of Bologna general budget and co-funded by the Department of Industrial Engineering	1	Analysis of the fretting-fatigue behaviour of road vehicle components
8	PhD Scholarship	Funded by the University of Bologna general budget and co-funded by the Department of Industrial Engineering	1	Lightweighting of automotive components by optimization of Selective Laser Melting process and heat treatment of high strength steels and light alloys
9	PhD Scholarship	Funded by the Università di Parma	2	Hybrid vehicle systems
10	PhD Scholarship	Funded by the Università di Parma	3	Integrated systems for autonomous driving
11	PhD Scholarship	Funded by the Università di Parma	3	Vehicle Human Machine Interface and Infotainment systems; Cabin acoustic field simulations
12	PhD Scholarship	Funded by the Università di Modena e Reggio-Emilia	1	Innovative design and manufacturing of efficient, smart and sustainable high-performance vehicle
13	PhD Scholarship	Funded by the Università di Modena e Reggio-Emilia	2	Development of new concepts for high efficiency and low environmental impact engines
14	PhD Scholarship	Funded by the Università di Modena e Reggio-Emilia	3	Electronic systems for driver attention monitoring
15	PhD Scholarship	Funded by the Università di Modena e Reggio-Emilia - Dipartimento di Ingegneria "Enzo Ferrari" with funds made available by the project Green SEED "Design of more-electric tractors for a more sustainable agriculture" funded by PRIN 2017 with decree MIUR 2068, 29/10/2019 (project code BARATERGREENSEEDPRIN2017 - Prof. Davide Barater – CUP: E94I19002480001)	2	Design of more-electric tractors for a more sustainable agriculture
16	Senza borsa		1	
17	Senza borsa		2	Data management and development of algorithms for test-cell and vehicle data analysis aimed at virtual calibration, fault prediction, implementation of dynamic cycles on the engine test bench
18	Senza borsa		3	
19	Industrial doctorate	Position reserved for employees of HPE Srl		

Each PhD position is reserved for one of the Curricula covered by the PhD programme. These positions will be awarded on the basis of the Curriculum for which the applicant has expressed his/her preference in the statements made at the time of filling in the application and indicated on the cover page of the research project submitted. In the event the applicant has not indicated the preferred Curriculum as described above, the Admission Board will assign him/her a Curriculum based on the research project submitted and on the oral examination.

Positions linked to specific research subjects: during the oral examination applicants may express their interest in one or more positions linked to specific research subjects. Considering the expressions of interest above, the Admission Board will establish if the applicants can be considered eligible for the allocation of the positions linked to specific research subjects, taking into account their skills, experience and aptitude.

Admission requirements

Please, see art. 2 of the Call for applications

Mandatory documents to be attached to the application

Please, see art. 3 of the Call for applications

Further qualifications that may be attached to the application, if in possession of the applicant (only qualifications attested by documents drawn up in Italian, English, French, German and Spanish shall be considered as valid and assessed by the Admission Board)

- Abstract of the second cycle master's degree thesis. Undergraduate applicants may submit the draft of the thesis approved by their supervisor (please, note that abstracts cannot exceed 5.000 characters, including spaces and formula possibly used. The above figure does not include: the title of thesis, the outline, and images such as graphs, diagrams, tables etc. - where present);
- Multi-annual research project, with special emphasis on the activities to be completed during the first-year course. The proposal must meet the following requirements:
 - o It must indicate in the cover page the Curriculum of the PhD Programme associated to the research project proposal and for which the applicant is applying;
 - o It cannot exceed 20.000 characters, including spaces and formula possibly used. This figure does not include: the title of project, the outline, references and images (such as graphs, diagrams, tables etc - where present);
 - o It must include:
 - the state of the art;
 - description of the project;
 - expected results;
 - references.

The research projects that successful applicants shall carry out during their doctoral career may possibly differ from the project proposed at the application.
- List of the publications (monographs, articles published on scientific journals, volume chapters).
- List of the minor publications (conference papers, etc.).
- List of the abstracts and posters presented during national and international conferences, etc.
- Professional Master courses (1st or 2nd level) relevant to the PhD Programme.
- Research activity of any kind - whether basic, applied, translational, etc. - carried out in any capacity, including when covered by research grants, and as a staff member of research projects.
- Documents attesting the knowledge of the foreign languages.
- Study periods completed by students outside their countries of origin (e.g. Erasmus programme or other similar mobility programmes).
- Other qualifications attesting the suitability of the applicants (scholarships, prizes, etc).

Admission exams (art. 4 of the call for applications)

Examination type	Schedule (please, note that applicants shall not receive any communication concerning the exams schedule)	Examination results publication (please, note that applicants shall not receive any communication concerning the publication of results)	
Qualifications and research project evaluation	Non-presential.	The results of the qualifications and research project evaluation shall be available online starting from the 18/06/2020 at the page http://studenti.unibo.it (please, select "summary of the requests in progress" - "see detail" and open the pdf file "risultati valutazione titoli e progetto")	
Oral examination	Date	30/06/2020 In case that the oral examination cannot be completed in one day due to the large number of applicants, the oral exam schedule shall be made available at the webpage http://studenti.unibo.it together with the results of the qualifications and research project evaluation	The results of the oral examination shall be available on the webpage http://studenti.unibo.it starting from 05/07/2020 (please, select "summary of the requests in progress" - "see detail" and open the pdf file "risultati prova orale").
	Time	09:00 a.m. (local time)	

Applicants shall take the exam remotely. For further details please refer to the relevant provision laid down in art. 4 of the Call for applications.

Evaluation criteria

Points will be allocated to applications out of a total of 100 on the basis of the following weighting:

1. Qualifications and research project

- Minimum for admission to the oral exam: 30 points
- Maximum: 50 points

Only qualifications relating to the last 5 calendar years prior to the calendar year of publication of the Call for applications shall be taken into consideration, with the exception of the University Degree (Diploma di laurea). Please, note that qualifications must be consistent with the PhD Programme.

Points relating to qualifications shall be allocated on the basis of the following criteria:

- Graduation final mark. Undergraduates shall be evaluated on the basis of the Weighted Average Mark (WAM): max 20 points
- Publications: max 5 points

Points relating to the research project shall be allocated on the basis of the following criteria:

- Scientific value and ground-breaking nature of the proposal: max 15 points
- description and structure of the proposal: max 5 points
- proposal feasibility: max 5 points

2. Oral examination

- Minimum for inclusion in the final ranking list :30 points
- Maximum: 50 points

Oral examination is intended to assess the suitability of the applicant to pursue scientific research as well as the general knowledge of issues connected to the Curricula of the PhD Programme. During the oral examination, knowledge of English language shall be assessed. The oral examination is carried out in Italian or in English.

Points relating to the oral examination shall be allocated on the basis of the following criteria:

- knowledge of the English language: max 5 points
- research project presentation: max 30 points
- general knowledge of issues connected to the PhD Programme: max 15 points

Possible evaluation sub-criteria will be available on the [Unibo website](#), selecting the relevant PhD Programme → “PhD programme information” at the bottom of the page in the section “Notices”.

Final ranking list and enrolment (arts.6 and 7 of the Call for applications)

After the publication of the results of the oral exam, the final ranking list will be available on the [Unibo website](#), selecting the relevant PhD Programme → “PhD programme information” at the bottom of the page in the section “Notices”.

Following the publication of the final ranking list, successful applicants must enroll on <http://studenti.unibo.it> by the deadline indicated on the [Unibo website](#), selecting the relevant PhD Programme → “PhD programme information”.