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REGIONE PIEMONTE

Politecnico di Torino

master school

Call for applications for the 2nd level Specializing Master's programme in

"Digitalization and Autonomous Commercial Vehicles for a Carbon-Free Logistics"

Academic Year 2022/2023

(Annex "A"- Rector's Decree)

Politecnico di Torino - Corso Duca degli Abruzzi 24, 10129 - Torino, Italia
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Art.1
Programme overview

The 2nd level Specializing Master's programme in "Digitalization and Autonomous Commercial Vehicles for a Carbon-Free Logistics" is offered by Politecnico di Torino for academic year 2022/2023. The Programme Coordinator is Ezio Spessa, professor at the Department of Energy (DENERG) of Politecnico di Torino.

The duration of this 2nd level Specializing Master's programme, in its 2nd edition, is 2 years for a total of 60 ECTS.

In the wake of the first edition success and enthusiasm, the 2nd level specializing Master's in "Digitalization and Autonomous Commercial Vehicles for a Carbon-Free Logistics" aims at providing training for young graduate apprentices who will be hired by Iveco Group for Iveco and FPT Brands. The 2nd level Specializing Master's programme will develop skills for the use of innovative technologies in the automotive sector, with particular focus on autonomous driving, hybrid / electric technologies applied to commercial vehicles and digitalization through vehicles connectivity and data analytics.

2030+ commercial vehicles have to meet the EU checkpoint towards the 2050 "close-to-zero emissions", "virtually carbon-free" and "zero accident" goals.

The path towards air quality improvement and noise reduction will be paved by the deployment of pure electric-mode vehicles. Their efficient and effective operations require them to be fully integrated in the energy network and system. This will be based on the pervasive employment of renewable energy associated to the overall energy eco-system efficiency aiming to address greenhouse gas reduction.

Another key element to future decarbonization of the European transport system will be the availability of low-carbon renewable fuels and blending components, both liquid and gaseous e.g. those produced from biomass, or synthetic fuels using green electricity. Their production may potentially remove existing CO^2 from the environment, and they may be used for chemical storage of electrical energy.

Optimized energy consumption, smart routing and predictive diagnostics will leverage on more and more sophisticated algorithms based on connected vehicle data. Safety and comfort for the Drivers will be supported by advanced telematics, real-time notifications and vocal interfaces.

A new way of optimizing energy needs of the vehicle and design efficient solutions for auxiliaries will also be needed to meet the high demanding target.

On top of this, connected automated driving is seen as one of the key technologies and major technological advancements influencing and shaping future logistics and quality of life. The main drivers for higher levels of Automated Driving are:

Safety: reduce accidents caused by human errors.

Efficiency and environmental objectives: Increase transport system efficiency, optimize fleet management and reduce time in congested traffic by new mobility solutions. Also, smoother traffic will help to decrease the energy consumption and emissions of the vehicles.

Comfort: enable user's freedom for other activities when automated systems are active and provide Apps and tools to increase onboard user's productivity

Social inclusion: ensure mobility enlarging the social responsibility for any end user and for the citizen in general.

Accessibility: facilitate access to city centres accordingly to the e-mobility prescriptions.

This 2nd level Specializing Master's programme focuses on all the technologies required to address such challenges in the next decade. It also digs into the new emerging technologies like artificial intelligence, automation, digitalization and big data to create the framework for the new generation of fully-automated and connected vehicles. Beyond 10 years, the new possibilities offered by digital era of transportation will enable new concepts of "smart" vehicles, whose operation can be dynamically adapted and optimized to missions and environmental conditions, pushing efficiency and environmental friendliness of transport means beyond current paradigms.

A giant innovation gap and novel skills are needed to be cover the Iveco Group S.p.A. challenges: it is materially impossible to face the change required by the above-mentioned challenges without breaking the silos. Working together in cross disciplinary and cross sectors teams with a co-creation approach will be a key for success.

The primary objective of this 2nd level Specializing Master's programme will thus be the development of skills spread across mechanical and automotive engineering, electronics, energy, mechatronic, information technology and telecommunications. Students will be initially provided with the fundamental disciplines (vehicle mechanics, thermodynamics, communications, architecture of computers and networks) that create the common language needed to understand the more specialized courses that aim to cover electric and hybrid propulsions, vehicle on-board electronics, intravehicular communication systems, connectivity and embedded systems for vehicle automation.

The Departments of Energy (DENERG), Mechanical and Aerospace Engineering (DIMEAS), Electronics and Telecommunications (DET), and Control and Computer Engineering (DAUIN) are the main Politecnico di Torino departments that will contribute to the implementation of this master. The inter-departmental centers CARS@polito (Center for Automotive Research and Sustainable mobility, http://www.cars.polito.it/), PEIC (Power Electronics Innovation Center, http://www.peic.polito.it/) and SmartData@Polito (Big Data and Data Science Laboratory, https://smartdata.polito.it/) are also involved in this master, as the innovation environments where breakthrough research and cross-disciplinary and cross-sectorial education are developed and technological transfer is fostered.

Art. 2
Training objective, didactic contents and organization of the activities

This 2nd level Specializing Master's programme is an experiential learning path which combines educational activities at Politecnico and on-the-job training at the companies' premises.

The 2nd level Specializing Master's programme is organized as follows:

- 400 hours: training activities at Politecnico di Torino (classroom – laboratory – lecture – business case)
- 525 hours: Training on the job Project Work
- 575 hours: self-learning activities

Table n.1 – Organization of the courses

COURSE	Training activities ECTS	Training activities (hours) Politecnico	Training activities (hours) Companies
Propulsion systems, ICT and Mechanics for the industrial vehicles of the future	5	50	
Chassis Design for Autonomous Vehicles	4	40	
Electrified propulsion solutions and energy storage systems	7	70	
Propulsion system application to commercial vehicles	6	60	
Electronic systems for Autonomous Driving	7	70	
ITS, Inter-vehicular Networks and OTA techniques	3	35	
Modeling and control of electric and hybrid vehicles	4	40	
Big Data, Artificial Intelligence and Cybersecurity for Autonomous Vehicles	3	35	
Project Work	21	0	525
TOTAL	**60**	**400**	**525**

The 2nd level Specializing Master's programme will start on November 2022 and will last 2 years. The official language of the programme is English.

More information on the learning objectives, programme contents and possible career opportunities is available on the website of the 2nd level Specializing Master's programme in "Digitalization and Autonomous Commercial Vehicles for a Carbon-Free Logistics": https://didattica.polito.it/master/digitalization_autonomous_vehicle/2023/home

Art. 3
Safety measures for in-person teaching and curricular activities

Politecnico di Torino enforces all the regulations and applies specific operational procedures in order to prevent infection with against COVID-19, which aim to protect public health and maintain adequate safety conditions in order to facilitate teaching and curricular activities in person (please refers to http://www.coronavirus.polito.it).

In order to promote the widest possible protection of the health of the students and the people working at Politecnico di Torino's premises, in case it would not be possible to hold classes on site, the Specializing Master's School will guarantee all classes online, through a virtual classroom platform (on synchronous basis with possibility to register classes to make these available on asynchronous basis).

Art. 4
Admission requirements

The 2nd level Specializing Master's programme in "Digitalization and Autonomous Commercial Vehicles for a Carbon-Free Logistics" is intended for graduates who have to meet the following compulsory requirements:

- to be under the age of 30 on the date of recruitment;
- to have been awarded a full degree (Master's degree / Laurea specialistica / Laurea magistrale) in one of the following areas of study within the deadline for enrolment in the 2nd level Specializing Master's programme:
  - LM-20 (Aerospatial and Astronautic Engineering)
  - LM-25 (Automation Engineering)
  - LM-27 (Telecommunications Engineering)
  - LM-28 (Electrical Engineering)
  - LM-29 (Electronic Engineering)
  - LM-30 (Energy and Nuclear Engineering)
  - LM-31 (Management Engineering)
  - LM-32 (Computer Systems Engineering)
  - LM-33 (Mechanical Engineering)
  - LM-53 (Materials Engineering)
- High-level English language skills.

The Office of Specializing Master's Programmes and Lifelong Learning will examine the documentation received within the deadline. Only non-Italian university degrees will be evaluated by a specific board chaired by the Programme Coordinator of the 2nd level Specializing Master's programme in "Digitalization and Autonomous Commercial Vehicles for a Carbon-Free Logistics"**.** The partner companies will evaluate only the candidates who meet the above mentioned compulsory requirements.

Art. 5
Partner company selection process

The partner company will evaluate the applications which meet the compulsory requirements (*Art. 4 "Admission requirements"*), and reserve the right to contact only the candidates who meet their internal selection criteria. The selected candidates will be hired by the partner company within the meaning of ex-art. 45 of D. Lgs 81/2015.

A good knowledge of the English and Italian language is considered an essential prerequisite for the final selection. The partner company will assess the candidate's level of proficiency during the interview.

During the entire application period the partner company can contact the applicants who satisfy both the compulsory requirements (art. 4) and the corporate selection criteria.

For further information on the selection process refer to the website of the 2nd level Specializing Master's programme in "Digitalization and Autonomous Commercial Vehicles for a Carbon-Free Logistics":
https://didattica.polito.it/master/digitalization_autonomous_vehicle/2023/selection_process

Art. 6
Admissions and deadlines

Applications for this 2nd level Specializing Master's programme must be submitted on-line by filling out the Admission Request Form available on Politecnico di Torino website (*Apply@polito*) at the following link: https://didattica.polito.it/master/digitalization_autonomous_vehicle/2023/home

DO NOT apply by e-mail, fax or mail because these applications will NOT be considered.

Admission Request Forms must be submitted within the following deadline:

- September 15th, 2022 at 2:00 p.m. - Italian time

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The following supporting documents must be attached to the application form (in English or Italian only):

MANDATORY DOCUMENTS

- valid identification document (passport for extra-EU applicants)
- curriculum vitae (CV must include the authorization to the processing of personal data – in compliance with the General Data Protection Regulation (EU Regulation 2016/679) and the Personal Data Protection Code, Legislative Decree 30 June 2003 no. 196 and subsequent amendments)
- Admission Request Form
- Exam transcripts for both Bachelor's and Master's degree programmes:
  - for applicants with degree(s) obtained from a non-Italian University: official transcript(s), by University of origin, produced on headed paper, containing the full list of all the exams passed and the grades obtained. The transcript(s) must also include the date of the degree conferral. Upon enrolment, the admitted candidates must submit the original copy of the "Dichiarazione di Valore"/"Statement of validity" (related to the Master's degree) issued by the Italian Diplomatic Mission in the country where the qualification was awarded. If the Master's degree was awarded by a European university, admitted candidates can turn in the "Diploma Supplement" instead of the "Dichiarazione di Valore".

  or

  - for applicants with degree(s) awarded by an Italian Public University: self-certification ("dichiarazione sostitutiva di certificazione" - Art. 46 DPR 28 December 2000, n. 445) in which the students declare to have obtained both a Bachelor's degree and a Master's degree. The self-declaration must include: the name of degree programme, the name of the University, the date of degree conferral, the graduation final grade, the full list of all the exams passed and the grades obtained (this information is required for both degrees). Upon enrolment admitted students must provide the original copy of the self-certification, in compliance with art. 75 of D.P.R. 445/2000. Should the self-certification be found to be false or incorrect, the applicant loses any benefit which he/she might have acquired on the basis of the untruthful declaration.

OPTIONAL DOCUMENTS

- Cover letter
- Reference letter
- Italian language certificate (only for non–Italian applicants)
- English language certificate
- Residence Permit (only for non-EU citizens)

Failure to attach even one of the above mandatory documents will result in the exclusion from the selection process.

Art. 7
Selection outcomes

At the end of the selection process carried out by the partner company, Politecnico di Torino will publish the list of the candidates admitted to the programme on the online University Bulletin and on the "Selection outcomes" section of the programme website: https://didattica.polito.it/master/digitalization_autonomous_vehicle/2023/home

Art. 8
Enrolment

Enrolment

The candidates who have been admitted to the programme will have to enrol at Politecnico di Torino before the starting date of the 2nd level Specializing Master's programme. Further information about enrolment will follow by e-mail.

In accordance with current legislation you are not allowed to be simultaneously enrolled in another Specializing Master's Programme nor in any other university programme. If you are enrolled in another programme, you must finish your studies or suspend them before enrolling in the 1st or 2nd level Specializing Master's Programmes in "Digitalization and Autonomous Commercial Vehicles for a Carbon-Free Logistics", except for any subsequent amendments and regulatory additions to the regulations in force.

Delivery of documents

After the enrolment procedure has been completed, the selected candidates will have to hand over the original documentation uploaded in the application phase to the Specializing Master Office, within the starting date of the Master's programme (please refer to art. 6).

Upon enrolment, participants who hold a degree from a non-Italian University must submit the original copy of the "Dichiarazione di Valore"/"Statement of validity" relative to the degree, awarded by the Italian representation in the country in which the qualification or Statement of Comparability issued by the CIMEA Center was issued.
If the Master's degree was awarded by a European university, participants can turn in the "Diploma Supplement" instead of the "Dichiarazione di Valore".
Those who will not have the Declaration of value, can enrol in the Programme with a "provisional" status, but they will have to deliver them by 6 months after the beginning of the academic activity.

If the aforesaid document won't be delivered within the deadline, the student will be unable to complete actions of career, until the document is actually delivered.

Non-EU nationals are required to comply with the norms on entry visa and residence permit and will have to submit:

- Visa for "D" type study for participants who are no – EU citizens and reside abroad;
- Valid residence permit for non-EU citizens residing in Italy.

Politecnico di Torino reserves itself the right to check the truthfulness of the declarations included in self-certificate sent by the applicants (pursuant to Article 46 of DPR. no. 445 of 28 December 2000) and Politecnico excludes them from the ranking list in the event of false declarations.

Art. 9
Participation and enrolment fee

The participation in the 2nd level Specializing Master's programme is free of charge for admitted students, as provided for by the regional call "Apprendistato di Alta Formazione e di Ricerca (Art. 45 - D. Lgs. n. 81/2015) – Aggiornamento dell'Avviso pubblico approvato con Determinazione n. 537. 03/08/2016, Deliberazione della Giunta regionale n. 37-3617 del 11/07/2016 e n. 18/6767 del 20/04/2018 di cui alla D.D. n. 1486 del 17/12/2018".
In accordance with the "Tuition Fee Guide" of Politecnico di Torino, admitted students exempted from paying the participation fee, have to pay € 21,00[1] detailed as follow:

1. Premium for accident insurance: € 5,00
2. Enrolment revenue stamp: € 16,00

The issue of the diploma of the 2nd level Specializing Master's Programme in "Digitalization and Autonomous Commercial Vehicles for a Carbon-Free Logistics" requires the payment of a revenue stamp.

[1] The insurance premium may change due to new rules adopted by Edisu and to the stipulation of an insurance contract

Art. 10
Qualification

Upon successful presentation of the student's Project Work, Politecnico di Torino will confer the 2nd level Specializing Master's diploma in "Digitalization and Autonomous Commercial Vehicles for a Carbon-Free Logistics".

Participants are required to:

- reach the total amount of 60 ECTS;
- attend at least 75% of total classroom hours (400).

At the end of the programme, participants make a final report related to their project work and are assessed for it.

The final grade is assigned by the Graduation Examining Committee who will assess the overall Average grade of all the exams on a scale of 110. Exams passed with honours do not have an impact on the Average grade. The Graduation Examining Committee can add up to a maximum of 5 points, taking into consideration the evaluation of the work you have carried out for the project work (dedication, autonomy, methodological rigour, relevance of results, etc.). If you reach the score of 110/110, the Graduation Examining Committee might decide to confer the degree with honours (cum laude). The decision must be taken by qualified majority (at least 2/3 of the Committee members must vote in favour of awarding this distinction). More details about the exams, final presentation and project work will be presented during the programme.

Art. 11
Competent office

The competent office is the Office of Specializing Master's Programmes and Lifelong Learning of Politecnico di Torino e-mail: master.apprendistato@polito.it

Art. 12
Person responsible for the administrative procedure

The person responsible for the administrative procedure is Mr. Alberto Pusceddu (Head of the Specializing Masters Programmes and Lifelong Learning Office).

Art. 13
Privacy policy and access to documents

Politecnico di Torino and Iveco Group S.p.A. both act as autonomous data controllers and are committed to operating in full compliance with the applicable personal data protection legislation to them in relation to the data processing activities related to the execution of this Call for applications. In particular, students' personal data are processed by Politecnico di Torino exclusively for institutional purposes of education and by Iveco Group S.p.A. as indicated in the privacy notice in Annex 1. The processing of personal data is based on the principles of correctness, lawfulness and relevance of purposes. In order to pursue the Specializing Master's Programme in "Digitalization and Autonomous Commercial Vehicles for a Carbon-Free Logistics" candidates agree that the Politecnico di Torino shares their personal data with Iveco Group S.p.A.

In accordance with the General Data Protection Regulation (EU Regulation 2016/679) and the "Code regarding the protection of personal data" (Legislative Decree No. 196 of 30th June 2003 and further amendments) personal data are processed by Politecnico di Torino exclusively for the selection and enrolment process in pursuit of the university aims and in accordance with the transparency purposes imposed by the law. The processing of personal data is based on the principles of correctness, lawfulness and relevance of purposes. More information on the processing of personal data is available at: https://didattica.polito.it/privacy/.

The Data Controller is Politecnico di Torino, represented by the Rector, with statutory seat in Corso Duca degli Abruzzi, 24, 10129 Torino.

You can contact the Data Controller at politecnicoditorino@pec.polito.it (certified e-mail).

For further information and inquiries write to privacy@polito.it.

You can contact the Data Protection Officer (DPO) of Politecnico di Torino for inquiries on the processing of your personal data and your rights at: dpo@polito.it; dpo@pec.polito.it (certified e-mail).

For the Politecnico di Torino the privacy policy is available at: https://didattica.polito.it/privacy.

For Iveco Grupo S.p.A. the privacy policy is available at: https://www.ivecogroup.com/legal/privacy_policy.

Access to all documents is allowed in the forms provided by current legislation.

Art. 14
Final provisions

1. Communication with candidates will take place primarily through the "Apply@Polito" platform. Specific communications might be sent via email or SMS using the contact details provided by candidates during registration on the platform.

2. Politecnico does not take any responsibility in case of unavailability of recipients and for loss of communications due to inexact indication of a candidate's email address or telephone number or due to delay or failure to notify changes to the contacts provided during registration.

3. This Call is published on the online University Bulletin available at https://www.swas.polito.it/dotnet/albo_online/ . The same can be found on https://didattica.polito.it/master/ .

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