



Politecnico
di Torino



Call for applications
for the 2nd level Specializing Master's programme
in
**“Electrified, cooperative and automated
construction machines for climate neutral fleets”**

Academic Year 2022/2023

(Annex “A”- Rector's Decree no. 673/2022 of 06/07/2022)



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Art.1

(Programme overview)

The 1st edition of the 2nd level Specializing Master's programme in Electrified, cooperative and automated construction machines for climate neutral fleets is offered by Politecnico di Torino, in accordance with D.M.270/2004, for academic year 2020/2021.

The programme coordinator is Ezio Spessa, from the Interuniversity Department of Energy (DENERG) of Politecnico di Torino (hereinafter referred as to "Programme Coordinator").

The duration of this 2nd level Specializing Master's programme is two year for a total of 60 ECTS.

This programme is offered in collaboration with the company CNH INDUSTRIAL ITALIA S.P.A. (hereinafter referred as to "CNHI").

The 2nd Level Specializing Master's programme will begin in October 2022.

Art. 2

(Training objective, didactic contents and organization of the activities)

This Specializing Master's program aims to train young graduates in new skills development for:

- a) the use and management of innovative technologies in the industrial vehicle sector, with particular reference to the electrification of the traction system and solutions for autonomous driving;
- b) the integration of these technologies on industrial vehicles;
- c) the application of innovative ICT technologies to the logistics of the construction sector.

Nowadays, the so-called "carbon neutral" logistic requires a deep innovation of the current propulsion systems based on internal combustion engines fueled with petroleum-based fuels (Diesel) or with alternative fuels (CNG and LNG). The adoption of renewable fuels, also of the "drop-in" type, and of different levels of hybridization of the traction system (including the complete electrification of the powertrain for certain applications and missions) represents the main solution for the reduction of CO₂ emissions equivalent and pollutants.

The progressive consolidation of the standards that defines intervehicular communication, the rapid evolution of the regulatory framework relating to assisted and autonomous driving vehicles, as well as the pervasiveness of the electronic instrumentation on board the vehicle have made the issues relating to the connected and autonomous vehicle extremely interesting for manufacturers of industrial vehicles and related industries.



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The program benefits from CNHI experience in this sector with many projects realized. As a consequence, it offers its participants a unique opportunity to get involved in high-level projects under the guidance of CNHI's experts.

The 2nd level specializing Master is a full-time program of approximately two academic year duration for a total of 60 ECTS; it will start in October 2022 and end in October 2024.

The 2nd Level Specializing Master's program is organized as follows:

- 12 courses – 38 credits
- Project work/Final thesis – 700 hours, 28 credits

Table n.1 – Organization of the courses

Course	CFU
Energy and technological outlook for the industrial vehicles of the future	4
Chassis Design for Autonomous Industrial Vehicles	3
E-motors, power electronics, e-drives and control fundamentals for electrified propulsion solutions	4
Propulsion systems, fuels and vehicle architectures for industrial applications	6
Electronic systems for Autonomous Driving	4
ITS, Connected Vehicles and OTA techniques	1
Energy and thermal management of electric and hybrid vehicles	1
Big Data, Artificial Intelligence and Cybersecurity for Autonomous Vehicles	2
Energy storage and power buffer systems for electrified propulsion solutions	3
Policy and legislative framework for vehicles	1
Policy and legislative framework for vehicles	1
Machine architectures for the power lines: drivetrain and hydraulic	2

The official language of the program is English.

Classes are held in hybrid mode, with remote/in presence classrooms at Politecnico di Torino – Campus Lingotto, starting in October 2022 and ending in December 2024.

The program is residential.

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 COVID-19, which aim to protect public health and maintain adequate



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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 Specializing Master's programme is open to 15 participants.

The programme is intended for both Italian and foreign citizens who must:

- have earned a Master's degree (or equivalent qualification) within the enrolment deadline;
- MSc's final grade equal to or higher than 100/110;
- prove knowledge of the English language (minimum CEFR B2-level).

In order to be admitted to this 2nd Level Specializing Master's programme, you must hold, by the enrolment deadline (approximately end of October 2022), a full degree (Master of Science degree/Laurea specialistica/Laurea magistrale) in one of the following degree classes (D.M. 270/2004):

- LM-20 Aerospace 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

Even if you have not earned your Master's degree yet but are going to graduate before the enrolment deadline you can submit your application for admission to the programme.



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Art. 5

(Application deadline and selection process)

Admission and deadline

You can apply for admission for this Specializing Master's Programme ONLY through the Application Form available at:

https://didattica.polito.it/master/electrified_cooperative_automated_construction_machines/2023/how_to_apply

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

Applications are due by:

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

You can find the list of mandatory documents that you must attach to your application.

Please note: only documents in English or in Italian will be accepted.

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);
- Application form and questionnaire (available on the webpage of the Specializing Master's programme <https://didattica.polito.it/master/home/en/request>);
- list of exams of both Bachelor's and Master's degree programmes (or equivalent):
 - o If your degree(s) was awarded by a non-Italian University or by a private Italian University: official transcript(s) of records, issued by the University of origin, produced on letter-headed paper, containing the full list of all the exams passed, the grades obtained the graduation final grade, final thesis topic and the date of degree conferral.
- or
 - o If your degree(s) was awarded by an Italian Public University: self-certificate (*dichiarazione sostitutiva di certificazione* - Art. 46 DPR 28 December 2000, n. 445) in which you declare that you earned both a Bachelor's and a Master's degree. Your self-certificate must include: name of degree programme, name of the University, date of degree conferral, full list of all the exams passed and grade obtained, final thesis topic and graduation final grade. In compliance with art. 75 of D.P.R. 445/2000, should your self-certificate be found to be false or incorrect, you will lose any benefit acquired based on your untruthful declaration.
- Motivation Letter: max 1 page (see the template available on the webpage of the Specializing Master's programme)



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https://didattica.polito.it/master/electrified_cooperative_automated_construction_machines/2023/documentation

OPTIONAL DOCUMENTS

- English Language Certificate
- Official certificates related to other academic careers (i.e. PhD, Master Universitari ecc.)
- Certificates related to professional courses
- Resident permit (for extra-EU citizens only)

If you fail to attach even one of the above mandatory documents, you will be excluded from the selection process.

Selection process

Step 1. Evaluation of applicants' qualifications

The Selection Committee assesses all the applications and the attached documents.

The Selection Committee can assign you a maximum of 40 points, according to the following criteria:

- MSc's final grade (for graduands: weighted average grade of the exams passed before the application deadline as stated in the documentation uploaded to Apply@polito) – maximum 15 points;
- number of years needed to get the final degree and graduation date: degrees awarded in the past two solar years obtain higher score – maximum 10 points;
- MSc's exams coherence with programme's topic – maximum 10 points;
- work experiences related to programme's topic – maximum 5 points.

The final score of the first step of the evaluation is based upon the above-mentioned criteria, up to a maximum of 40 points.

You will be considered as "ineligible" and you will not be admitted to the second step of the selection process if you:

- do not attach all the compulsory documents;
- do not fulfill all the admission requirements;
- do not reach the minimum score of 15 points.

Step 2. Interview

This step is divided in two different phases: 1) Group Assessment, 2) Individual Interview.

1) Group Assessment: in this phase, the Selection Committee, together with CNHI, also with the support of an external society, will assess your level of English proficiency and your soft skills.



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The Selection Committee can assign you a maximum of 25 points for:

- your level of English proficiency – maximum 10 points;
- soft skills evaluation (leadership; humble; innovative mindset; transparency; focus; problem solving) – maximum 15 points.

2) Individual Interview: the Selection Committee interviews the applicants who passed the first phase of the step 2 of the selection process. The Selection Committee can assign you a maximum of 35 points.

Individual interviews aim to assess:

- your motivation – maximum 15 points;
- your technical knowledge – maximum 15 points;
- your work experience – maximum 5 points.

You will be considered as “ineligible” if you do not reach the minimum score of 35 points for phase 1 and 2 of the second step of the selection process.

Provided that you obtain the minimum score required, on the programme website, you will be contacted for 1st and 2nd phases of the second step of the selection process (at least five days before the date of the group assessment and the individual interviews).

Phase 1 and 2 will take place in presence.

If you do not attend the group assessment or the individual interview you are automatically excluded from the selection process.

If you are unable to attend the group assessment and the individual interview in presence for important reasons, the Selection Committee can give you the opportunity to have them remotely. The decision of the Selection Committee is unquestionable.

The Selection Commission can contact eligible candidates passing Step 1 of the selection process starting from July, 13th 2022, providing that they are available.

The overall score is the sum of the score obtained in the first and second step of the selection process. If you do not score at least **50 points** you are not admitted to the programme.

Art. 6

(Selection outcomes)

At the end of the selection process, a ranking list is published on the online University Bulletin and on the Selection Outcomes page of the Specializing Master Programme's website



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(https://didattica.polito.it/master/electrified_cooperative_automated_construction_machines/2023/selection_outcomes).

The ranking list will contain:

- the list of applicants admitted to the Specializing Master's Programme;
- applicants on reserve list.

Provided that you have attached all the required documents, fulfilled all the requirements, scored at least 50 points you will see your position in the rankings and your final score on the Selection Outcomes page.

Please note that you will be provisionally accepted in case you:

- do not obtain the degree within the enrolment deadline (approximately at end of October 2022).
- do not obtain a MSc's final grade equal to or higher than 100/110.

In case you will not fulfill the abovementioned conditions, you will not be admitted to the programme.

Art. 7

(Participation confirmation, enrolment and documents submission)

Participation confirmation

In case you are on the list of applicants admitted to the Specializing Master's programme, in order to confirm your participation, you must comply within the deadline defined by Politecnico for participants to accept the offer and download **the Acceptance Declaration**, fill it in and send it by e-mail to master.universitari@polito.it.

The official deadline will be specified on the website on the Selection Outcomes page

(https://didattica.polito.it/master/electrified_cooperative_automated_construction_machines/2023/selection_outcomes).

Failure to send the declaration within the aforementioned terms is considered as final renunciation to the programme.

In case you are on the reserve list, it means that you are eligible for replacement and will have the possibility to enrol in the programme if one or more participants renounce their offer of admissions. In



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this case, the Office of Specializing Master's Programmes will contact you according to your order on the ranking list.

Admitted students are given a deadline to confirm their participation.

If you decide to decline your offer of admission, you are invited to inform the Office of Specializing Master's Programmes (master.universitari@polito.it) with an official notification.

Enrolment

If you are admitted, you must enroll at Politecnico before the programme starts. You will receive an e-mail with useful information for your enrolment.

At the moment of the enrolment you will be requested to pay the participation fee (see Art. 9). Failure to send payment within the terms is considered as final renunciation to the programme.

N.B.: In case your participation is sponsored by the partner CNHI, Politecnico will agree the methods and the deadlines for the payment of the participation fee directly with the sponsor (see Art. 9).

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 2nd level Specializing Master's Programme in "Electrified, cooperative and automated construction machines for climate neutral fleets", except for any subsequent amendments and regulatory additions to the regulations in force.

Documents submission

After completing the enrolment process, admitted students must present the original documents uploaded to their Application Form to the Office of Specializing Master's Programmes together with the Acceptance Declaration before the programme starts (please refer to Art. 6).

If your degree was awarded by a non-Italian University, upon enrolment you must submit the original copy of the Dichiarazione di Valore/Statement of validity (related to your degree) issued by the Italian Diplomatic Mission in the country where the qualification was awarded or Attestato di Comparabilità /Statement of Comparability issued by the CIMEA Centre.

If your degree was awarded by a European university, you can submit your Diploma Supplement instead of the Dichiarazione di Valore/Statement of validity.



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If you do not submit your Statement of validity, you can enroll in the programme with condition, but you must present this document within 6 months of the beginning of the programme. If you do not provide the above-mentioned mandatory document by the deadline, you are placed on hold and cannot progress in your studies until you actually present this document.

If you are a non-EU national, you are required to comply with the norms on entry visa¹ and residence permit. You have to submit:

- Student Visa – type D for participants who are non-EU citizens residing 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. 8

(Student assessment and final qualification)

The Specializing Master's programme requires you full time commitment. You are requested to attend activities for at least 75% of the programme.

Absences for more than this limit leads you to exclusion from the Specializing Master's programme.

Withdraw from the programme must be put in writing.

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 2nd level Specializing Master's Programme in "Electrified, cooperative and automated construction machines for climate neutral fleets", except for any subsequent amendments and regulatory additions to the regulations in force.

STUDENT ASSESSMENT

At the end of each course, you have to take an exam consisting in a written test and/or an oral evaluation test.

¹ Please refers to the MIUR/MAE note: "Procedures for entry, residency and enrolment of international students and the respective recognition of qualifications for higher education courses in Italy valid for the academic year 2022-2023".



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If you fail the exam, you can arrange a make-up exam directly with the professor responsible for the course. You can take a make-up exam just once.

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.

FINAL QUALIFICATION

Upon completion of the programme, participants who regularly attended the activities and earned 60 ECTS (required for graduation), are awarded the "Electrified, cooperative and automated construction machines for climate neutral fleets" 2nd level Specializing Master's diploma by Politecnico di Torino. The Diploma will be issued in Italian.

If, at the end of the Specializing Master's Programme, you have not passed all the exams included in your Study Plan you can get a Certificate of Attendance and a Transcript of Records with the list of the exams that you have passed with grades, dates, credits and scientific disciplinary field.

Art. 9

(Participation and enrolment fee)

Participation and enrolment fee

The participation fee is 18.000,00 Euro (eighteen thousand/00) + 21,00 Euro (twentyone/00)² for the enrolment fee (Premium for accident insurance 5,00 € + Enrolment revenue stamp 16,00 €).

The total amount must be paid to Politecnico di Torino according to the following instalments:

² The insurance premium may change due to new rules adopted by Edisu and to the stipulation of an insurance contract



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- 9.000,00 Euro (nine thousand/00) Euro + 21,00 Euro (twentyone/00) at the time of enrolment (October 2022);
- 9.000,00 Euro (nine thousand/00) Euro before May 31st 2023.

If you withdraw from the programme or are excluded from it, you will not be reimbursed your participation fee and enrolment fee under any circumstances and furthermore you will be requested to pay the whole amount of the participation fee.

The issue of the Diploma of the 2nd level Specializing Master's programme in "Electrified, cooperative and automated construction machines for climate neutral fleets" requires the payment of a revenue stamp (16,00 €).

Participation sponsored by Third Parties

If your participation in the programme is sponsored by Third Parties (payment of one or more instalments), it will be processed as follows:

- the sponsor must complete and submit the form available at https://didattica.polito.it/master/electrified_cooperative_automated_construction_machines/2023/selection_outcomes
- After the end of the admission process, the sponsor will receive a message with:
 - the list of admitted sponsored candidates.
 - payment methods
- The 2nd level Specializing Master's Programme in "Electrified, cooperative and automated construction machines for climate neutral fleets" is included in the course catalogue of Politecnico. Therefore, participation and enrolment fees are VAT exempt (Article 4 of DPR 633/72). Upon payment, Politecnico di Torino will issue a payment receipt.
- The sponsor undertakes to host the student(s) it sponsors for the project work activity.

In case of participations sponsored by Third Parties, Politecnico di Torino may provide for exceptions from the provisions related to the number of instalments and to the deadlines scheduled for the payment of the participation and enrolment fee.

If you are enrolled in the 2nd level Specializing Master's Programme in "Electrified, cooperative and automated construction machines for climate neutral fleets", including if you are sponsored by Third Parties, you are subject to the rules and provisions of the Tuition Fee Guide concerning failure to pay or late payment and hold on academic progress.



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Art. 10

(Competent office)

The competent office is the Office of Specializing Master's Programmes and Lifelong Learning of Politecnico di Torino, Tel. 01 10907986 – e-mail: master.universitari@polito.it

Art. 11

(Person responsible for the administrative procedure)

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

Art. 12

(Privacy Information Notice)

The Parties declare that they have mutually acknowledged compliance with the obligations related to personal data protection, each for the part under its responsibility, deriving from 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).

The Parties acknowledge that they 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, personal data are processed by Politecnico di Torino exclusively for the selection and enrolment process in pursuit of the institutional purposes 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/>.

In order to pursue the Specializing Master's Programme in "Electrified, cooperative and automated construction machines for climate neutral fleets" candidates agree that the Politecnico di Torino shares their personal data with CNHI who will act as autonomous data controller.

During the selection procedure, CNHI may avail a third party who will act as Data Processor pursuant to art. 28 GDPR.

For CNHI the privacy information notice is available at: https://didattica.polito.it/master/electrified_cooperative_automated_construction_machines/2023/cnhi_privacy_information_notice



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The contact details of the parties for the purposes of this article are as follows:

- for Politecnico, the Data Controller is the Politecnico di Torino, with offices in C.so Duca degli Abruzzi, n. 24, 10129 Turin, in the person of the Rector, pro tempore. The contact details of the owner are PEC: politecnicoditorino@pec.polito.it (certified e-mail), for information and clarifications: privacy@polito.it; the data protection officer of the Politecnico can be contacted at: dpo@polito.it; dpo@pec.polito.it (certified email);
- for CNHI, the Data Controller is CNH Industrial S.p.A., CNH.italia@pec.CNHind.com

Art. 14

(Access to documents)

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

Art. 15

(Final provisions)

1. The programme will start only if the minimum number of participants is reached.
2. Communication with applicants takes place primarily through the “Apply@Polito” platform. Specific communications might be sent via email or SMS using the contact details provided by applicants during registration on the platform.
3. Politecnico does not take any responsibility in case of unavailability of recipients and for loss of communications due to inexact indication of an applicant's email address or telephone number or due to delay or failure to notify changes to the contacts provided during registration.
4. The Call for applications 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/electrified_cooperative_automated_construction_machines/2023.