

CALL FOR STUDENTS NOMINATIONS

SPRING 2023

Research Abroad in Engineering at Politecnico di Torino

With the aim of offering high-performing students at Tec de Monterrey a multicultural environment that contributes to their global perspective, academic, research and personal development in institutions of recognized international prestige, the Vice-Rector's Office for Internationalization, in collaboration with the School of Engineering and Sciences of Tec de Monterrey and the Mechatronics Research Center of the department of Mechanical and Aerospace Engineering at the Politecnico di Torino, invites undergraduate students to carry out research internships during the Spring semester (February-June) of 2023.

All applicants must have and demonstrated:

- Completed at least 6 semesters at TEC by the time of the application
- A minimum general average of 90
- Proof of English language proficiency from the minimum TOEFL 550 or equivalent
- Participation and experience in research projects
- Highly motivated, able to work independently, well organized and a good team player.
- Passionate about tackling grand challenges

Starting dates and deadlines for receipt of applications for Spring 2023:

- *Opening date: August 16*
- *Closing date: August 31*

This call is addressed to Students Tec 21 and plans prior 2019. Please review carefully all the document.

- Period of Stay: February - June 2023. Exact dates to be confirmed.
- The deadline for the submission of the documentation is September 2nd, 2022.

THE RESEARCH INTERNSHIPS

Project 1) Energy Management Strategies for Hybrid Vehicles

No. spots: 1

Candidate Profile: Major in Mechanical, Mechatronics, Physical or Automotive engineering (Those students who qualified for the project vacancy, despite the study program at TEC, are encouraged to apply if they can demonstrate skills and knowledge required at the project description)

POLITO Supervisors: Profs. Andrea Tonolli and Nicola Armati

TEC partners: Drs. Ricardo A. Ramirez and Renato Galluzzi

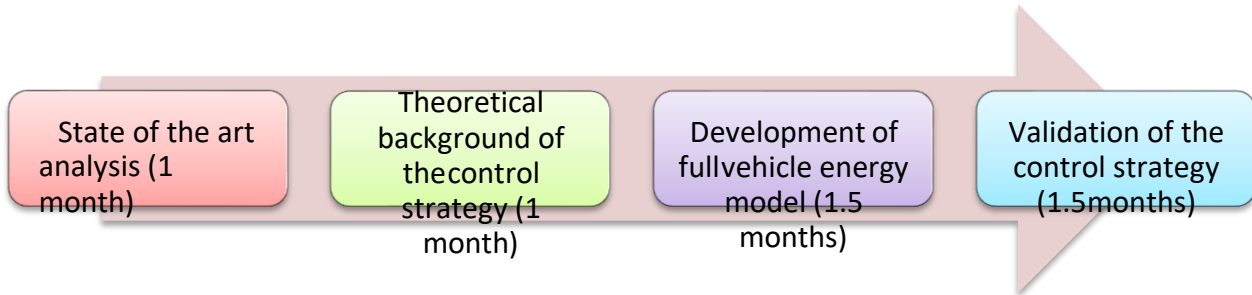
PROJECT SUMMARY

Objective: Study the energy flow in hybrid powertrain and propose strategies to optimize a specific target.

Description: In this activity, strategies will be defined to suitably command the internal combustion engine and the electrical machine. The final goal is to optimize critical benchmark quantities, such as CO₂ emissions & battery charge.

Tools: MATLAB™, Carsim™

Activity Workplan:



Relevant References:

- di Napoli, M., Galluzzi, R., Zenerino, E. C., Tonoli, A., & Amati, N. (2019). Investigation on the performances of a twin arm tensioning device. *Proceedings of the Institution of Mechanical Engineers, Part D: Journal of Automobile Engineering*, 233(7), 1687–1697. <https://doi.org/10.1177/0954407018775816>

Project 2) Experiment Analysis for Passive Magnetic Levitation System

No. spots: 1

Candidate Profile: Major in Mechanical, Physical or Mechatronics engineering (Those students who qualified for the project vacancy, despite the study program at TEC, are encouraged to apply if they can demonstrate skills and knowledge required at the project description)

POLITO Supervisors: Profs. Andrea Tonolli and Nicola Armati

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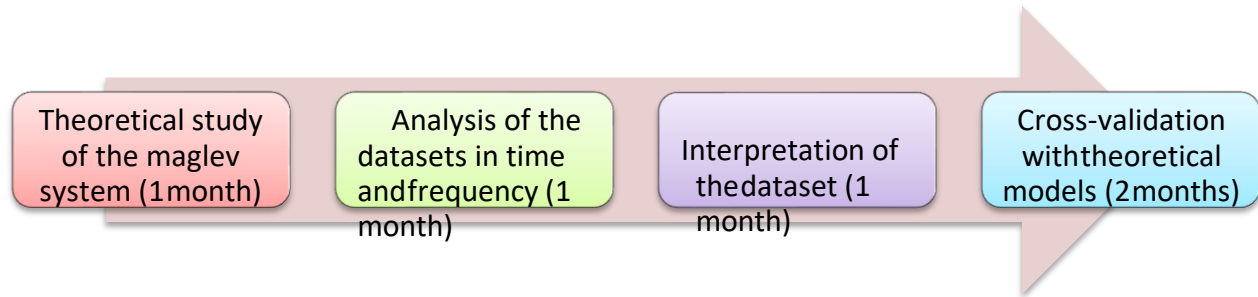
PROJECT SUMMARY

Objective: Analyze and interpret the experimental data obtained from a magnetic levitation test bench.

Description: The work is centered in analyzing raw data from a maglev test bench to evaluate its performance. This system reproduces the levitation pads of an ultra-high-speed maglev train. The performance must be evaluated in terms of stability, comfort, and efficiency (lift vs drag forces).

Tools: MATLAB™

Activity Workplan:



Relevant References:

- Galluzzi, R., Circosta, S., Amati, N., Tonoli, A., Bonfitto, A., Lembke, T. A., & Kertész, M. (2020). A Multi-Domain Approach to the Stabilization of Electrodynamical Levitation Systems. *Journal of Vibration and Acoustics*, 1–30. <https://doi.org/10.1115/1.4046952>
- Circosta, S., Galluzzi, R., Amati, N., Tonoli, A., Bonfitto, A., Lembke, T. A., & Kertész, M. (2021). Passive Multi-Degree-of-Freedom Stabilization of Ultra-High-Speed Maglev Vehicles. *Journal of Vibration and Acoustics*, 143(061003). <https://doi.org/10.1115/1.4049944>

DOCUMENTATION and GENERAL GUIDELINES

Documentation to submit:

- A copy of your CV (free format)
- A motivation letter (maximum of 1 page) in English.
- Letter of recommendation in English from one researcher at Tec de Monterrey probing the student skills for the project.
- Transcript (FAM in English)
- Proof of English language proficiency from the minimum TOEFL 550 or equivalent (Current or expired)
- Copy of valid passport

Some recommendations when writing motivation letters and CV:

- be very specific in both CV and motivation letters on how they can prove they have the skills and abilities required.
- include evidence of teamwork skills, leadership, and proactivity (i.e., participation in student groups, social activities, representative teams, entrepreneurial activities, outstanding work done as a team leading the respective team, etc.)

General guidelines:

- Have a VALID national passport at the time of submitting the application to this call and with sufficient validity to remain in Italy if selected.

- Students must have sufficient funds and appropriate Medical Insurance as per POLITO guidelines to support themselves in Italy during their internship.
- Students will cover the costs related to the visa application as well as all personal expenditures to come and live in Italy.
- It is the candidate's responsibility to carefully read the information on the research projects as well as additional information on the center or laboratory and scientist associated with the research project of interest.
- Once students are selected and confirmed by TEC and POLITO, it is their sole responsibility to continue with the VISA application.
- All positions announced at this call are not remunerated. Students are encouraged to apply to national and international scholarships.

Before sending applications, please the practical information for international students found in the following site: https://international.polito.it/practical_information, Here students can also find information that will help them estimate living costs and make their budget before arrival.

PROCESS IN THE INTERNATIONAL PROGRAMS PLATFORM

1. The student should update his/her profile, the route to access is:
Mi Tec -> Mi Experiencia Internacional -> Estudiante Interesado -> Actualiza tu Perfil
2. It is necessary to send an application in ROUND ONE (August 16 to 31, 2022) including the program key: **ITA-5EI-014A**. The route to access is:
Mi Tec -> Mi Experiencia Internacional -> Estudiante Interesado -> Realiza tu solicitud
3. The application result will be available on September 2nd, it must be accepted, and send by the student. It is very important to keep in mind that this is NOT the final result (September 2nd). The student must wait for the decision of the researcher in charge of the project. It will be communicated by the International Programs office.

HOW AND WHERE TO SUBMIT THE DOCUMENTS

Students can apply to different internships in the same call. However, remember to modify your motivation letter, CV, and recommendation letter.

Documents must be digitized in 1 single PDF file named with the prospective student ID # and last name of POLITO Research Professor of the project to be applied for. ***Applications will not be received if the documents come in multiple files.***

Enter info and requested documentation in the following link:

<https://form.jotform.com/222121522293848>

Without exception, applications will not be accepted after the deadline. Candidates with incomplete documentation will be automatically rejected. Please, be sure you enclose all documents before submitting. Students might also be contacted and offered a different project, according to each profile and skills. We thank all students for their participation. We will only communicate with those who are preselected for an interview.

Deadline for submitting documents: September 2nd.

SELECTION PROCESS

An evaluation of each applicant is done by Tec de Monterrey under this calendar:

a) International Office of Monterrey Campus reviews documentation of all candidate's	September 2 to 15
b) Notification of Preselected Candidates to Swiss International Liaison Office	September 15
c) Preselected candidates will be contacted by Swiss International Liaison Office to arrange date and time for an interview with POLITO researchers.	September 16 to October 26
d) Email by Swiss International Liaison Office confirming final candidates selected by POLITO Researchers	October 27 to 28

After final interviews, we will announce the final resolution and students will have a couple of days to accept or reject the offer. Once accepted, students will have further instructions to move forward with the VISA application.

The committee's decision is always final.

SOME CONSIDERATIONS TO KEEP IN MIND FOR SELECTED STUDENTS

- The starting and finishing day will be agreed in individual cases by the student and the POLITO researcher.
- **Official Spring term is February- June.** Students need to complete at least 16 weeks of research internship. Students are welcome to arrive a few weeks before the internship starts.
- Be fully aware that, as a selected student, you are part of the image of the institution, so in addition to complying with the norms and standards of POLITO, you remain under the code, rules, values, and the General Regulation of Students at Tec de Monterrey when being abroad.
- The selected students are encouraged to be proactive and committed with their learning process, dedication, and contribution during their research internship. Occasionally, students might be asked to read some bibliography and dedicate some hours to the project before arrival, so they are better prepared.
- The work schedule will be defined for both the student and POLITO researcher before the student arrives in Italy. There will be a TEC Researcher closely involved in the project or internship.
- Students must sign a confidentiality agreement at POLITO, depending on the nature of the project and agreed terms by the professors.
- Research internships are unpaid. Students need to demonstrate sufficient funds to apply for an internship or student visa. Notice that this is a full-time internship from Monday to Friday.
- This call does not include funding for accommodation, food, or any personal expenditures either from TEC or POLITO.
- Visa process will take from 2 to 3 months. Students should cover their visa process cost.

You can visit the site

https://international.polito.it/practical_information/immigration_requirements

for further information about immigration requirements.

REGISTRATION AND ACCREDITATION OF COURSES

The program has a minimum duration of 16 weeks, students will be enrolled at Tec de Monterrey in the academic period Feb-Jun 2023.

Students of academic plan: Prior to 2019

The number of units to be accredited will be defined by the Academic Coordinator prior to the student's participation. The number of units to be enrolled and credited in each semester is:

Minimum: 8 units

Maximum: 32 units

Students of academic plan: Tec 21

The student will enroll and credit 18 credits per semester. Prior to participation the student should review with the Academic Coordinator the accreditation in the study plan.

TUITION

The tuition to be paid will be directly at Tec de Monterrey. Payment will be made according to the number of units/credits registered in Feb-Jun 2023.

It is the student's responsibility to validate with the Academic Coordinator the availability of the topics and/or subjects to be accredited by a project in which they participate.

ADDITIONAL INFORMATION

Any point not covered in this call will be resolved by the selection committee in conjunction with the competent authority of Tec de Monterrey as the case may be. Any problem or doubt regarding the application stage should be communicated in a timely manner by sending an email to: Kathia Berenice Castillo Rangel k.castillo@tec.mx