

CALL FOR STUDENTS NOMINATIONS

Spring 2025

Research Abroad Program at Purdue University, USA

Estancia Internacional

With the aim of offering high-performing students at Tec de Monterrey a multicultural environment that contributes to their global perspective, academic and personal development in institutions of recognized international prestige, the Vice-Rector's Office for Internationalization in collaboration with the School of Engineering of Tec de Monterrey and the research laboratories of Purdue University invite pre-graduate students to carry out research abroad starting Spring 2025 term.

GENERAL REQUIREMENTS

- To apply to Spring 2025, you must be enrolled in the 5th semester by the time of submitting the application and have completed 72 credits by the time of applying.
- Period of the Research Stay: February – June 2025
- Proof of English language proficiency as follows: TOEFL iBT 80, TOEFL iBT Home Edition 80 or IELTS 6.5, TOEFL ITP 550
- A minimum general average of 90
- Previous participation and experience in research projects are a plus.
- The deadline for the submission of the documentation will be **September 5th**.

GENERAL GUIDELINES

Students must satisfy the following points:

- 1) It is the candidate's responsibility to carefully read the information on possible research projects as well as additional information on the center or laboratory and scientist associated with the research project of interest.
- 2) Present a motivation letter with a maximum of one page, addressed to the leading research professor at HOSTING UNIVERSITY, as well as a copy of your CV (free format). Both documents must be submitted in English.
- 3) Proof of English language proficiency as follows: TOEFL iBT 80, TOEFL iBT Home Edition 80 or IELTS 6.5, TOEFL ITP 550
- 4) Letters of recommendation in English from two professors.
- 5) Evidence of teamwork skills, leadership and proactivity (Certificates, memberships, diplomas, event pictures, which demonstrate participation in student groups, social activities, representative teams. All in digital format and in one single PDF)
- 6) Have a valid national passport at the time of submitting your application to this call and with sufficient validity to remain in the United States if selected. Validity of minimum 6 months after coming back from USA.
- 7) Students must have sufficient funds and appropriate Medical and Liability insurance as per hosting university guidelines to support themselves for the duration of the respective research stay.

PROFESSORS, LABS, AND RESEARCH PROJECT DESCRIPTION

Major	Project	Qualifications	Description	Spots
INA	Additive manufacturing with hybrid composites	<p>The student should have completed the following courses or their equivalent:</p> <ul style="list-style-type: none"> - Statics/dynamics - Strength of materials - Thermodynamics/heat transfer - Differential equations - Industrial automation - Control engineering - Numerical methods/Finite element method <p>Other desired experience:</p> <ul style="list-style-type: none"> - Programming in Python, C++, and Matlab - Hands-on experience building prototypes <p>Desired attitude</p> <ul style="list-style-type: none"> - Attention to detail, eagerness to learn, and flexibility to work in a team. 	<p>Additive manufacturing with short-fiber reinforced polymers has enabled printing non-structural geometries on the scale of multiple meters. However, structural material systems that include continuous carbon fiber are required to enable printing structural components. Although approaches for printing with continuous fiber exist, the printing rates are limited to less than a kilogram per hour due to the physics of polymer melting. Hence, this research project focuses on a novel method developed for printing with a hybrid of continuous and discontinuous fibers at rates similar to large-scale additive manufacturing (>100 kg/hr). During this project, the student will conduct simulation and experimental studies in the CAMRI system developed at Purdue.</p>	1
ITC, IMT, BME	Automation and Intelligent Construction & Sustainable Built Environment	<ul style="list-style-type: none"> • Hands-on experience working with industry robots (e.g., Kuka, ABB, Fanuc, Yaskawa, etc.) or any sensor • Java, Python or C++ programming background • Strong oral and written communication skills • Strong self-motivation • Excellent collaborative and interpersonal skills <p>Optional:</p> <ul style="list-style-type: none"> • Hardware prototyping or manufacturing experience • Electronics experience 	<p>We are investigating the future of construction by integrating internet of things (IoT), building information modeling (BIM), robotics, and cyber-physical systems (CPS) into our cutting-edge D. Dorsey Moss Construction Lab (take a peek at the lab facility here: https://www.youtube.com/watch?v=HJ5O2bo8Z74)</p> <p>. Several federal and state sponsored research projects are underway at the Automation and Intelligent Construction (AutoIC) Lab, such as the following:</p> <p>https://www.nsf.gov/awardsearch/showAward?AWD_ID=2231160&HistoricalAwards=false</p> <p>https://www.nsf.gov/awardsearch/showAward?AWD_ID=1827733&HistoricalAwards=false</p> <p>https://www.nsf.gov/awardsearch/showAward?AWD_ID=2222838&HistoricalAwards=false</p> <p>https://www.nsf.gov/awardsearch/showAward?AWD_ID=2121967&HistoricalAwards=false</p> <p>https://rip.trb.org/view/1870407</p> <p>We are glad to host students who have a passion in construction automation and sustainable built environment, and would like to work on research topics related to any of the above mentioned areas.</p>	1

Major	Project	Qualifications	Description	Spots
IMT,BME	Additive Manufacturing and Control of Modular Autonomous Underwater Vehicles	<ul style="list-style-type: none"> - Required Skills: - Controls - Statics and Mechanics of Materials - Machine and CAD Design - Programming: Python, C, Matlab - Communication Protocols: UART - Preferred Skills: - FEA - CNC Machining - Commitment - Teamwork - Communication Protocols: Ethernet, SPI, IIC 	<p>The objective of this project is twofold. One of the objectives is to define a process using additive manufacturing of composite materials through which the body of an autonomous underwater vehicle (AUV) can be manufactured to meet mission specifics, actuation needs, and payload requirements. A modular vehicle will be designed for printing in sections with fiber-reinforced polymers using the Composites Additive Manufacturing Research Instrument (CAMRI) system developed at Purdue. Further, a joining technology will be developed to provide structural integrity and water resistance. The second objective is to endow the system with motion capabilities through a control and navigation unit. This latter involves integrating a multiprocessor system with different sensors that can interface with the main computer through serial interfaces. The overall goal is to validate the navigation capabilities of the prototype and estimate its hydrodynamic properties through an experiment with a motion capture system at the dive well of Purdue.</p> <p>This project is a collaboration between Dr. Nina Mahmoudian, Dr. Eduardo Barocio, and Dr. Jalil Chavez-Galaviz.</p>	1

HOW TO APPLY

Follow 3 steps:

1. Update your profile at:
MITEC -> MI EXPERIENCIA INTERNACIONAL -> ESTUDIANTE INTERESADO -> ACTUALIZA TU PERFIL Tutorial:
<https://youtu.be/Vnr9vVDgY1w?feature=shared>
It takes 16 working hours to validate it.

2. Once your profile has been validated, you can send your application:
MITEC -> MI EXPERIENCIA INTERNACIONAL -> ESTUDIANTE SOLICITANTE -> REALIZA TU SOLICITUD
Code: **EUA-5EII-201A**
Period: Feb - Jun 2025 (Preselección)
Tutorial: <https://youtu.be/qdl18kp7Del?feature=shared>

Key points:

- The preselection programs are not part of the regular application calendar of the study abroad and international exchange programs. Therefore, if this is the research abroad program you are most interested in, **EUA-5EII-201A** is the only code you must register for on your application. You do not need to include any other code or any other period.
- Shortly after the application is sent, you will receive an e-mail to notify you that you must accept a “pre-selection.” It is important to keep in mind that this is only an automated status of the platform to continue with the next step. It is NOT the official selection of students. The International Programs Office will inform the official selection by e-mail on October 16th, 2024.

3. Submit your documents:

MITEC -> MI EXPERIENCIA INTERNACIONAL -> ESTUDIANTE SOLICITANTE -> ENTREGA DE DOCUMENTOS DE ADMISIÓN

Once you have accepted the pre-selection status on the platform, you must submit the listed documents.

DOCUMENTS TO SUBMIT

Submit all documents in PDF format:

- 1) Present a motivation letter with a maximum of one page, addressed to the leading research professor at Purdue.
- 2) Curriculum Vitae in English (free format).
- 3) English language proficiency certificate: TOEFL iBT: 80, TOEFL iBT Home Edition 80 or IELTS 6.5, TOEFL ITP 550
- 4) Letters of recommendation in English from two professors.
- 5) Evidence of teamwork skills, leadership and proactivity (participation in student groups, social activities, representative teams, outstanding work done as a team leading the respective team, etc. All in digital format and in one single PDF))
- 6) Have a valid national passport at the time of submitting your application to this call and with sufficient validity to remain in the United States if selected. Validity of minimum 6 months after coming back from USA.

Without exception, applications will not be accepted after the date indicated, so it is suggested to complete the application as soon as possible. Candidates with incomplete documentation will be automatically disqualified. There is the possibility that they will not be selected for the laboratory to which they applied, but they could be selected for another, so if it is of interest to you, it is recommended to indicate a second, or even a third option.

Application and documents submission deadline: September 5th, 2024.

SELECTION PROCESS

The selection process is divided into two parts.

1) At Tec de Monterrey.

- a) Analysis and review of documentation
- b) Selection of candidates according to the program
- c) Sending the file directly to the research project leading professor at HOSTING UNIVERSITY

2) At partner university

- a) Analysis of the candidates sent and, where appropriate, selection of them for an interview.
- b) If selected for the interview, an appointment will be arranged with the HOSTING UNIVERSITY researchers via video link. It is important to consider that the language of the communication appointment with the researchers is in English.
- c) Report from HOSTING UNIVERSITY's leading researchers to the professor in charge of the Tec de Monterrey program on students selected to participate in the respective research projects.

Once the selection process concludes, the selected students will receive an e-mail from the International Programs Office on October 16th, 2024, with instructions to complete the registration process of Purdue and Tec de Monterrey. The committee's decision is final at all times.

Please consider that you cannot submit two applications on the International Programs platform simultaneously.

TO THE SELECTED STUDENTS

- Be fully aware that, as selected student, you are the image of the institution, so that in addition to complying with the norms and standards of the respective research center or laboratory, you will be obliged, without exception, to comply at all times with the institutional values and the General Regulation of Students of the Tec de Monterrey, which applies when the students of our institution are abroad.
- The commitment of the selected student to participate in the research project in an active and committed way, with an attitude of learning and contribution at all times.
- Under no circumstances the selected student will be able to seek additional work to support themselves during the stay. It is important to take this point

into account, since it is a very serious matter for the immigration authorities of the United States.

- The work schedule will be defined by the mentors of the project in which they will participate and must be fully complied with.
- Due to the nature of the projects and the intellectual property involved, the student must sign a confidentiality agreement.
- The time will be determined by the researcher together with the Tec student, as well as any change in dates. Students must at least complete 16 weeks.
- Students must have sufficient funds to support themselves in hosting university for the duration of their stay. This call does not include funds for accommodation, food or any other type of expense derived from your research stay in the selected laboratory or center.

Accepted students are expected to complete and pay for the corresponding visa process including any related fees that HOSTING UNIVERSITY dictates.

REGISTRATION AND ACCREDITATION OF COURSES

Students will be enrolled at Tecnológico de Monterrey in the academic period February – June 2025 with 18 credits per semester.

Students in conjunction with the Academic Coordinator should evaluate the transfer of the credits to the study plan before the student participates in the research abroad program.

The academic units (subjects) that will receive credits for the research abroad program must be defined and authorized by the Academic Coordinator. It is the student's responsibility to validate with the Academic Coordinator the availability of the academic units of the study plan to be accredited by the project they will participate in. Once it is determined, students must complete their registration in the International Programs platform.

MITEC -> MI EXPERIENCIA INTERNACIONAL -> ESTUDIANTE SOLICITANTE -> REGISTRATUS MATERIAS

A professor from Tec de Monterrey will evaluate the student's research abroad and grade the academic performance according to the [policy](#).

TUITION AND PARTICIPATION FEES

The tuition to be paid will be directly at the corresponding Tec de Monterrey campus. Payment will be made according to 18 number of credits registered in the period February – June 2025.

Selected students will pay a participation fee: 1,600 MXN. Payment may be made in MiTec.

Any student that decides to withdraw from the program after receiving their official acceptance to the project, must pay a penalty of 300 USD regarding the issuance of the documents for the migration process generated by Purdue University. The penalty will be charged on the student's Tec account statement.

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. Please consider that this call is subject to change without notice; this might involve costs, projects, vacancies, dates, or any other. Any problem or doubt regarding the application stage should be communicated in a timely manner by sending an email addressed to [International Programs Office at the correspondent campus](#).
