

CALL FOR STUDENTS NOMINATIONS

Fall 2024

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 EAAD, ECSG, EHE and EIC of Tec de Monterrey and the research laboratories of Purdue University invite pre-graduate students to carry out research abroad starting Fall 2024 term.

GENERAL REQUIREMENTS

- To apply to Fall 2024, 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: Aug - Dec 2024
- 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 March 8th.

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.
- 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

EIC (Part 1)

Major	Project	Qualifications	Spots
IE, IMT, IRS	Wearable electronics	Experience designing electronic circuits (printed circuit boards), programming computers and micro-controllers.	1
IE, IMT, IRS	Remote Monitoring and Analysis of Insect Behavior	-Experience with building circuits and video monitoring equipment (i.e. raspberry pi cameras or a similar technology) -Experience with video analysis and computer programming -Experience developing/assembling remote power sources (solar panels/battery powered devices) -Interest in Agriculture/ Entomology -Desire to work with farmers to develop tools for increasing farm efficiency and sustainability.	1
IQ, IM	Pharmaceutical 3D Printing	A student in chemical or mechanical engineering, or a related discipline, interested in research aimed at redefining pharmaceutical development and manufacturing. Specifically, by combining three personal characteristics: (1) the motivation to put their engineering training into practice, (2) an interest in learning about pharmaceutical materials and products design, and (3) an inclination toward tinkering with of-the-shelf equipment, such as inkjet printers, and adapting them to print (build) pharmaceutical prototypes.	1
IMT	Additive manufacturing and control of modular autonomous underwater vehicles	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 -Communications Protocols: Ethernet, SPI, IIC	1
IQ, INA	Structure-Property-Performance Relationships of Biopolymeric Systems	Physical chemistry, chemistry, biology, statistics, overall engineering background is desired. The student should be motivated, committed, responsible, team player, creative.	1
IBT, INA, IQ, IMD	Point of Care Diagnostic Devices for Pathogen Detection	Basic chemistry laboratory experience. Major in materials science, biomedical engineering, chemistry, biochemistry, or related field are encouraged to apply.	1
ITC	Modeling Air Quality and Pollutant Isotope Distributions	Computer Programing: Python, Data Science R programming, command line scripting/shell script, LINUX, NetCDF. General Chemistry Bonus for FORTRAN and cluster computing	1
IMT	Additive manufacturing with hybrid composites	The student should have completed the following courses or their equivalent: -Statics/dynamics -Strength of materials -Thermodynamics / heat transfer -Differential equations -Industrial automation -Control engineering -Numerical methods/Finite element method Other desired experience: -Programming in Python, C + +, and Matlab -Hands on experience building prototypes Desired attitude: Attention to detail, eagerness to learn, and flexibility to work in a team	1
ITC	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, Phyton or C ++ programming background. • Strong oral and written communication skills. • Strong self-motivation • Excellent collaborative and interpersonal skills Optional:	1

		-Hardware prototyping or manufacturing experience. -Electronics experience	
ITC	Multi-Modal Deep Learning for Scientific Discovery	Solid background in undergraduate – level probability, linear algebra, and machine learning. Strong coding skills in Python and deep learning packages such as Tensorflow and Pytorch.	1
INA, IM	Fabrication of Ceramic Particles for Application in Rotary Detonation Engines (RDE)	Junior or senior in materials or mechanical engineering. Knowledge about materials processing and characterization is desirable.	1
IMT, IRS, IE	Miniaturized / Portable Healthcare Monitoring Electronics	Experience should include at least one of the following: <ul style="list-style-type: none"> • PCB design • Microcontroller • Power management • Low-power circuit design • Troubleshooting skills Experience in sensor design, fabrication and characterization is a plus.	1

EIC (Part 2)

Major	Project	Qualifications	Spots
IMT, IRS, IE	Minimalistic Neuromorphic EV Control	Experience should include at least one of the following: <ul style="list-style-type: none"> • Spiking Neural Networks / Neuromorphic Circuits and Systems • Neuromorphic algorithms • Neuromorphic control • Programming (e.g. Python, VHDL, AHDL, etc.) • Circuit design, building, and testing • Troubleshooting skills Experience in (soft) robotics is a plus.	1
ITC	Extended Reality (XR) Research and Applications	Any of these qualifications would be a plus. Virtual Reality, Mixed Reality, Augmented Reality Unity 3D C#, C++ Computer Graphics Computer Vision	1
IQ	High Energy Biojet	-Strong chemistry knowledge -Experience in analytical chemistry such as mass spectrometry and gas chromatography -chemical engineering or chemistry students will be preferred	1
IFI	Synthetic matter assembled atom-by-atom at subwavelength interatomic spacing	Passion for scientific research, problem solving skills, and critical thinking.	1
ITC, IBT	Computational Genomics / RNA Structure	An understanding of basic molecular biology including the mechanics of gene expression is essential. Since these projects are completely computational, familiarity with the UNIX operating system is a plus, but not essential. For the RNA project, some knowledge of the Python programming language is desirable.	1
IAL, IBT	Design of dietary fiber fibers for gut and whole-body human health	Desired qualifications include training or experience in one of the following: - Supplementation clinical trials - Microbial analysis - In vitro fecal fermentations - Dietary fiber extraction and characterization	1
IDS, IBT	Which rescue to the rescue?	Desired qualifications include a strong interest in conservation biology. Additional interest in evolution and genetics will be useful. Experience will be a combination of field work (sampling for Daphnia in nearby ponds, lab work (culturing of Daphnia), and experiments.	1
IAL, IBT	Valorization of soybean residue by bioprocessing	Desired course work: (1) Food chemistry (2) Food Processing (3) Food analysis (4) Food product development (5) Data analysis Special skills (1) Critical thinking	1

		(2) A team player (3) Good communication skills (4) Attention to detail (5) Technical skills (protein analysis, data analysis and plotting) Training or experience (1) At least one semester hands-on experience on research project (2) Involved in food product development	
IDS, IBT	Amphibian disease ecology	Required: - Strong interest in ecology, evolution, and/or environmental biology - Coursework: Introductory ecology - Ability to work with people from a variety of backgrounds. Preferred, but not required: - Experience with field work, basic laboratory skills, and rearing aquatic organisms - Experience with scientific communication, both written and oral - Coursework: Advanced ecology courses, parasitology, and/or disease ecology	1
IBT, LBC	Circadian disruption in Alzheimer's disease	No prior experience is required, but a background in genetics and biology course-work would be helpful. Prior bioinformatics experience could be useful, but is not required.	1
ITC, IDM	AI applications in Global Forest Ecology	B.S. in forestry, ecology, modeling, computer science, statistics, or related fields. Preference is given to those who have strong quantitative skills and/or research experience with AI.	1
IFI	Attenuation & road roughness estimation from traffic-induced vibrations recorded on road-side fibers	Students with a strong math, physics, geophysics, and programming background are highly encouraged to apply.	1
INA, IM	Recycling & Upcycling of Fiber-Reinforced Composite Materials	Students pursuing majors in Engineering or Technology-related disciplines. Self-motivated students with a strong interest in research endeavors. Candidates with prior experience and proficiency in Composite part design, fabrication, and testing will be preferred.	1

EN and ECSG

Major	Projects	Qualifications	Spots
LRI, EHE, LLE	Documenting Black Heritage Sites in the Greater Lafayette Area	An ideal student will have the following: 1. Interest in doing historical and archival research 2. Willingness to learn how to do historical and archival research 3. Willingness to go on a hunt for information by digging up clues and piecing them together to create a historical narrative about a building 4. Curiosity to find historical information 5. Hard working 6. No other prior experience needed 7. Student needs to be comfortable with writing essays in English	1
LEC	Diverse Corn Belt	Desired experience: statistics, economics, data science skills.	1
LAET, LEM, LIN, BGB, LDE	Rural Tourism and Quality of Life	Undergraduate students in their third-year of BA or BS program who have taken a research-related course and who have scored B+ or higher grade in English-writing course.	1

On the following link you will be able to find more information regarding the projects and the researchers:

<https://globalpartners.purdue.edu/global-partnerships/mexico/purdue-tec-de-monterrey/>

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-5EVI-201A
Period: Aug - Dec 2024 (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-5EVI-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 April 17, 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.

Application deadline: March 8th, 2024

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.

Document submission deadline: March 8th, 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 take into account 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 April 17, 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 if your selection is not satisfactory, you cannot postulate to another program as the last day to do so is March 28, 2024; besides, you cannot submit two applications on the International Programs platform simultaneously. Therefore, you will have to plan another academic activity for the semester.

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 Aug - Dec 2024.

Students of academic plan Tec21:

Students will enroll in 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 -> REGISTRA
TUS 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 the number of units registered in the period Aug - Dec 2024.

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

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](#).
