IAESTE ECUADOR

WORK OFFER

Ref. No. EC-2020-USFQ-055

Employer Information

Employer: USFQ Universidad San Francisco de Quito
Diego de Robles

Quito
Ecuador

Website: www.usfq.edu.ec
Location of placement: cumbayá
Nearest airport:
Working hours per week: 40.0
Working hours per day: 8.0

Number of employees: 1000
Business or products: University

Student Required

General Discipline: 01-AGRICULTURE AND FOOD SCIENCE
14A-ENGINEERING, Other
40C-CHEMISTRY, MATERIAL SCIENCE, AND CHEMICAL ENGINEERING

Field of Study: 01.1001-Food Science.
14.3501-Industrial Engineering.
14.0701-Chemical Engineering.

Completed years of study: 3

Student status requirements: Required when nominated

Language required: English Good Or
Spanish Good

Required Knowledge and Experiences:

Other requirements:

Work Offered

The intern will be involved in research and development of a projects depends of the following field of study :
INDUSTRIAL ENG, COMPUTER SCIENCE , BIOLOGY, BIOTECHNOLOGY, CHEMICAL ENG, ELECTRICAL ENG, PHYSICS

Number of weeks offered: 8 - 8
Within the months: 18-MAY-2020 - 27-NOV-2020
Or within: -
Company closed within: 22-JUL-2020 - 09-AUG-2020
Latest possible start date:

Working environment: Research and development
Gross pay: 400 USD / Month
Deduction to be expected: 2
Payment method / time of first payment: Cash / Montly

Accomodation

Canteen at work: Yes
Expected type of accommodation: Guest house or host family
Accommodation will be arranged by: IAESTE

Estimated cost of lodging: 210 USD / Month
Estimated cost of living incl. lodging: 400 USD / Month

Additional Information

As a student you will be enrolled at San Francisco de Quito University , therefore your legal status in Ecuador will be as a student doing a cultural exchange program , in order to complete your studies. Despite of the fact that Ecuador allows almost every country to come as a tourist, you must to request an extension of permanence in Ecuador if you stay longer than 90 days.
http://www.ministeriointerior.gob.ec/servicio-de-apoyo-migratorio/
It is mandatory to apply a visa before coming to Ecuador for the following countries: Afganistán, Angola, Bangladesh, Camerún, Cuba, Eritrea, Ethiopia, Gambia, Ghana, Guinea, India, Irak, Kenia, Libia, Nepal, Nigeria, Pakistán, Democratic Republic of the Congo, North Korea, Senegal, Siria, Somalia, Sri Lanka, Venezuela.
Students must have Health Insurance
Accommodation will be arranged by IAESTE ECUADOR; we will pick you up from the airport and take you to your host family or hostel.

Nomination Information

Deadline for nomination: 15-MAR-2020

Date: 05-FEB-2020 *On behalf of receiving country:* Andrea Peñaherrera Escobar

POLYTECHNIC PROJECTS USFQ

1. GIRO LIMPIO

PERIOD:	May-July
MONTHS:	2

PROJECT´S DESCRIPTION

The objective of Giro Limpio is to make freight transportation more efficient, competitive and environmentally friendly. This goal will be accomplished with the adoption of new technologies and strategies for the reduction of fuel consumption and therefore the minimization of CO2 emissions. This program helps to evaluate, compare and record the CO2 emissions of carriers, shippers and logistics companies. It encourages the adoption of advanced strategies and technologies for measuring the carbon footprint and reporting tools that allow partners the optimization of their emissions related to freight transport

In this context, it is necessary to create a methodology that guide all the logistics companies that want to register their CO2 emissions and the creation of different strategies that help to minimize the production of CO2.

JOB DESCRIPTION

-Research on different strategies that can be used to gather different logistic partners to join our project.

-Research on different technologies to minimize CO2 emissions that can be implemented in the context of Ecuador.

-Create presentations and material that can be show in the meetings and boards.

PERSONAL SKILLS THAT STUDENT MUST HAVE IN ORDER TO DEVELOP THE PROJECT

-Self-motivation

-Creativity

- Organization

-Problem-solving

SPECIFIC KNOWLEDGE OR SKILLS THAT STUDENT MUST HAVE IN ORDER TO DEVELOP THE PROJECT

-Tableau

-Python

ACADEMIC BACKGROUND, FIELD OF STUDIES

Industrial Engineering, Industrial and Systems Engineering.

All study levels are welcome to apply.

a. Middle
b. End
c. Master

2. OBSERVATORY OF URBAN TRANSPORT OF CARGO OTUC-QUITO

PERIOD:	May-July
MONTHS:	2

1. PROJECT´S DESCRIPTION

Observatory of Urban Transport of Cargo OTUC is a technological platform that focuses on the systematic and continuous process of data collection of the urban freight transportation system. This technological tool analyzes and converts GPS data of cargo vehicles into valuable information, generating the conditions that allow monitoring and validating their behavior and evolution over the years. Furthermore, the OTUC observatory promotes the participation of the main agents involved in the urban freight transportation system such as private companies, public policy makers, citizenship and academia, to collaborate in better decision-making processes.

2. JOB DESCRIPTION

-GPS data management and organization of databases.
-Programming queries to get the correct input data for the platform.
-Create algorithms in Python to get file stops from a speed file.
-Create visualizations of GPS data.

3. PERSONAL SKILLS THAT STUDENT MUST HAVE IN ORDER TO DEVELOP THE PROJECT

-Self-motivation
-Creativity
- Organization
-Problem-solving

4. SPECIFIC KNOWLEDGE OR SKILLS THAT STUDENT MUST HAVE IN ORDER TO DEVELOP THE PROJECT

-Tableau
-Python

5. ACADEMIC BACKGROUND, FIELD OF STUDIES

Industrial Engineering, Industrial and Systems Engineering.

All study levels are welcome to apply.

a. Middle
b. End
c. Master

3. PLANT MICROBIOME ASSEMBLY IN AGRICULTURAL SPECIES

PERIOD:	July to December
MONTHS:	2 months

PROJECT´S DESCRIPTION

Plant microbiome could regulate the response to biotic and abiotic stress. Understanding how the microbiome change under stress is key to exploit this potential in the field. We want to isolate and characterize the bacteria from root microbiome for different crop species. We will use these isolates to create synthetic communities that produce desire characteristic in the plants, like diseases resistance.

JOB DESCRIPTION

- Collect samples from crops species in agricultural fields and in the wild.
- Isolate and identify bacteria and fungi from the plant and soil samples
- Make small experiment in order to test the functionality of the different isolates

PERSONAL SKILLS THAT STUDENT MUST HAVE IN ORDER TO DEVELOP THE PROJECT

- Organized
- Team player
- Goal oriented

SPECIFIC KNOWLEDGE OR SKILLS THAT STUDENT MUST HAVE IN ORDER TO DEVELOP THE PROJECT (Office, Autocad, JAVA, Html, C++)

- Biology and basic microbiology
- Lab skills (solutions, media culture)
- Statistics

ACADEMIC BACKGROUND, FIELD OF STUDIES

Biology, Microbiology, Biotechnology, Plant Science undergraduate or master student.

4. **ELECTRICAL ENGINEERING PROJECTS**
   - ***A. Evaluation of ergonomic interventions: Does the use of dynamic workstations affect the biomechanics of the user?***
   - ***B. Three-dimensional knee kinematics and articular contact analysis following anterior cruciate ligament reconstruction***

PERIOD:	May-September
MONTHS:	At least 2 months

PROJECT´S DESCRIPTION

The objective of project A is to evaluate joint angles, feet pressure distribution and muscular activity (EMG) of participants when using a treadmill workstation, walking on a flat surface, and when using a bicycle workstation; with and without cognitive work, in order to assess posture and movement patterns and determine possible effects of the use of dynamic workstations.

The objective of project B is to investigate the biomechanics of the knee through motion capture analysis (VICON) and CT images in people with different conditions in their knees in order to improve the surgical procedures of partial and / or total knee reconstruction, future knee implant designs, and techniques of rehabilitation.

JOB DESCRIPTION

The student will be in charge of recruiting volunteers, and running the experiments with the principal investigators for both projects, A and B. For both projects, the experiments include physiological, biomechanics and motor control measures obtain through motion capture analysis, electromyography, pressure sensors and others. In addition, the students will contribute with the analysis of the experimental data.

PERSONAL SKILLS THAT STUDENT MUST HAVE IN ORDER TO DEVELOP THE PROJECT

The student should be able to communicate effectively in English or Spanish, be sensitive to ethical aspects related to experiments with volunteers and be willing to learn.

SPECIFIC KNOWLEDGE OR SKILLS THAT STUDENT MUST HAVE IN ORDER TO DEVELOP THE PROJECT

Any Statistical Software (SPSS, SAS, STATA, JMP, Minitab or other). Some experience with Matlab is recommended.

ACADEMIC BACKGROUND, FIELD OF STUDIES

Students from any science or engineering program interested in ergonomics or biomechanics. Students in the **medical field** are also welcome to apply.

All study levels are welcome to apply.

a. Middle
b. End
c. Master

5. Citric and lactic production through bioprocesses, using *Aspergillus niger* and Bacillus subtilis

PERIOD:	From August 18, 2020 onwards
MONTHS:	Three months

PROJECT´S DESCRIPTION

The project´s main aim is to research operating conditions for the production of citric acid and lactic acid through different strains of *Aspergillus niger* and Bacillus subtilis, respectively.

Despite the wide range of industrial applications for these organic acids (food, cosmetics, and pharmaceuticals, among other), these are not produced in Ecuador, and regional production is very limited. Thus, there is a great need to implement technologies to meet, at least partially, the local and regional demands. However, industrial strains, the microorganisms most commonly used for citric and lactic acid production, are not commercially available. Ecuador, being a biologically mega-diverse country, has a plethora of substrates from which these can isolated, and thereby tested for metabolite production, particularly citric and acid.

Therefore, within the present project, which has been approved and funded by USFQ, characterization of different strains is of extreme importance, along with the evaluation of their citric acid production potential.

The general stages of the project are:

a) *A. niger* and *B. subtilis* strains characterization (biochemical, morphological and molecular)
b) Preliminary evaluation of citric and acid production from different strains
c) Optimization of fermentation conditions to maximize production
d) Product isolation and purification

JOB DESCRIPTION

The student will be responsible of:

a) Strain characterization
b) Acid production from selected strains
c) Modification of at least two operating conditions to evaluate their effects on acid production

PERSONAL SKILLS THAT STUDENT MUST HAVE IN ORDER TO DEVELOP THE PROJECT

1) Organization and thoroughness
2) Good data keeping and presentation
3) Good communication skills (verbal and written) in Spanish and/or English.

SPECIFIC KNOWLEDGE OR SKILLS THAT STUDENT MUST HAVE IN ORDER TO DEVELOP THE PROJECT

a) Experience with microorganism culture (desirable but not mandatory)
b) Knowledge in biochemistry
c) Analytical chemistry skills, such as use of HPLC and GC-MS
d) Statistical analyses

ACADEMIC BACKGROUND, FIELD OF STUDIES

The student´s academic background can be from **chemistry, chemical engineering, biotechnology of related fields.**

ANY OTHER REQUIEREMENT

It is advisable that the student has an insurance that could cover laboratory accidents. Also, it is important for the student to bring a laptop.