WORK OFFER

Employer Information

Employer: SAN FRANCISCO DE QUITO UNIVERSITY USFQ
Diego de Robles y Pampitá

Location of placement: QUITO
Number of employees: 800
Working hours per week: 40.0

Business or products: Education, research and development
Working hours per day: 8.0

Student Required

General Discipline: 14-ENGINEERING
01-AGRICULTURE, AGRICULTURE OPERATIONS, AND RELATED SCIENCES
27-MATHMATICS AND STATISTICS

Field of Study:
14.0501-Bioengineering and Biomedical Engineering
14.0701-Chemical Engineering
14.1001-Electrical and Electronics Engineering
14.1201-Engineering Physics/Applied Physics
14.1401-Environmental/Environmental Health Engineering
14.1901-Mechanical Engineering
14.3501-Industrial Engineering
01.1099-Food Science and Technology, Other
27.0301- Applied Mathematics, General

Language required: English
End (7 Semesters and over)

Other requirements:

Work Offered

The student will be supporting on research areas, enclosed the topics

Number of weeks offered: 0 - 0
Working environment: Research and development
Within the months: 01-JUN-2018 - 20-DEC-2018
Gross pay: 380 USD / Month
Or within: -
Deduction to be expected: 0

Accommodation

Lodging will be arranged by: IAESTE ECUADOR
Estimated cost of lodging: 210 USD / Month
Estimated cost of living incl. lodging: 350 USD / Month

Additional Information

Nomination Information

Deadline for nomination: 31-MAR-2018
Please send nominations by Exchange Platform

Date: 18-JAN-2018
On behalf of receiving country: Andrea Penafiel, Escobar

International Association for the Exchange of Students for Technical Experience - IAESTE a.s.b.l.
51, rue Albert 1er, L-1117 Luxembourg / R.C.S. Luxembourg F1180
IAESTE PROJECT

1. Tutor Responsible:
   Name: Eva Lantsoght

   Name of the Project

   Torsion design of structural concrete members

   Description of the Project

   Development of a design example of a real-life case of a concrete member (reinforced or prestressed concrete) subjected to torsion. This example will be submitted for presentation and publication at the ACI Convention.

   Job description for the student
   The student will review the principles of design for torsion in structural concrete. Then, he/she will develop design tools (spreadsheets) to design the element, and report the results in written form.

   Personal Skills

   Being able to work independently, analytical skills, good oral and written communication skills.

   Specific knowledge or skills

   Mathcad, Matlab

   Academic Background

   Having passed Reinforced Concrete I (or a similar first course in the design of structural concrete)

   Study level (nivel de estudios)
   End (últimos semestres) X
   Master X
2. PROJECT

Tutor Responsible:
Name: Lionel Trojman

Name of the Project
Design of Integrated circuit in 65-nm CMOS technology for analog and digital application

Description of the Project
The project consist to design and develop Analog and Digital integrated circuit for real application. It is the reason why these circuits will follow rigorously the design rule of the technology of interest (65-nm) for an integration on Silicon in near future. This means the circuits must be completely functional and operative during the design and development step, where the student will be involved. We aim 2 applications. One analog with the design of a Current Conveyor and another for digital application: SRAM architecture.

Job description for the student
The student will have to use a TCAD (Synopsys) to help in the development of analog circuit (Current conveyor) and/or digital circuit (SRAM architecture). The student will be able to choose which project she or he prefer to contribute. The use of the TCAD will be done under the supervision of professors, expert in the field. Once designed, the circuit will go through a series of test and simulation to ensure the validity of the design and the degree of feasibility for integration with our partner in Europe.

Personal Skills
Leadership, Enterprising, Strong-minded, versatil, self-working and hard worker.

Specific knowledge or skills
40%: CAD, programing (C++), Mathlab, applied mathematics
40%: Electronics (20% Analog and 20% digital)
20%: Physics of the components

Academic Background
Electronics (analog and digital), applied mathematics, programing, Physics of semiconductor or Physics of the Components. Any student from Electrical Computer Engineering (ECE) career.
3. PROJECT

Tutor Responsible:
Name: Gabriela Vernaza

Name of the Project
Use of agroindustrial waste: obtaining biomaterials and functional ingredients

Description of the Project (explicación general del proyecto)
Agroindustrial remains are solid or liquid state materials generated from the direct consumption of primary products or its industrialization and that are not useful anymore for the original process that generated them, but are capable of being transformed and used for generating other products with economical use, comercial or social interest. With these backgrounds, different remains had been a mayor focus of investigation for researchers worldwide; this is because some of their constituents could become raw material for generating different products. The remaining substance and material of different industrial processes in fruit factories could be used in the obtention of material or applyable ingredientes in the food industries as thickening agento f sauces or eatable covering. The objective of this project is to make good use of the agroindustrial residues (process industries of fruit and beer) for the obtention of functional components to be used in the food industry.

Job description for the student
Obtentions of agroindustrial remains (fruit pulp industry), dry the residues, grind and use them for the development of a cereal base product with improved nutrional characteristics.

Personal Skills
Team work skills, capable of work in laboratories and pilot Factory. The most important part of this internship is to be able to work in a pilot model Factory at University San Francisco and the laboratories developing tests and products.

Specific knowledge or skills
Excel, statistics programs (design Expert, Statistica, Minitab, etc.)

Academic Background
Basic knowledges in the food analysis area, food science and food processing.

Study level
End
Master
4. PROJECT

Tutor Responsible: Sonia Aviles y Galo Mosquera

Name of the Project
Data Analysis, mathematical modeling and research

Description of the Project

Problems in logistics within various industries are being solved with mathematical modeling and results need to be analyzed to improve and make the models more robust. The objective is to complete the models for publication which involves research on the topics to support the assumptions made in the model.

Job description for the student
Research, simulate and innovate in the mathematical modeling field to solve real problems.

Personal Skills
Critical thinking, dependable, flexible, interpersonal and motivation

Specific knowledge or skills
AMPL, Python (not strictly necessary), research methodology

Academic Background
Mathematics, Industrial Engineering, Operations Research related courses

Study level
Middle
Master
5. PROJECT

Tutor Responsible: Dr.-Ing Daniela Almeida
Name: Daniela Almeida

Name of the Project

Study of the bioethanol yield by alcoholic fermentation of different organic residue source

Description of the Project (explicación general del proyecto)

The project aims the comparison of the ethanol yield during the alcoholic fermentation of organics residues with different nutrient composition, such as high in sugar, protein, lipid, fiber, starch, etc. For this purpose the different conditions for the fermentation process need to be investigated as temperature, composition, retention time, microorganisms load and nutrients availability. The aim of this investigation is to be able to define the optimal conditions for the alcoholic fermentation for each residue types.

Job description for the student (Explicación general del Proyecto a desarrollar por el estudiante)

- Literature review on the microorganisms that best suited for the alcoholic fermentation.
- Isolation of the different microorganisms and activation for the experiments.
- Characterization of the raw materials.
- Experimental set up
- Determination of ethanol yields, compound degradation and microorganisms growth.

Personal Skills
Group working and communication skills are imperative. Hardworking and able to work independently. Collaborative and respectful.

Specific knowledge or skills (Microsoft office, safety work at the laboratory

Academic Background

Chemical engineer, Biotechnology or related career.

End or masters
6. Project

Tutor Responsible: Gabriela Garcia
Name: Gabriela Garcia

Name of the Project

Sit-Stand-Walk work activities effects on muscle fatigue and performance.

Description of the Project (explicación general del proyecto)

The objective of this study is to determine the effects of sit-stand-move work distribution on long term muscle fatigue in order to define potential benefits on fatigue and symptoms reduction when posture alternatives are possible. So far, current activity rotation alternatives have been arbitrary and not derived from validation studies to reduce fatigue and symptoms. Two workday distributions of sit-stand-walk activities will be tested in 30 volunteers in a laboratory setting during this study. Physiological and vascular methods will be tested during and after the experimental days.

Job description for the student (Explicación general del Proyecto a desarrollar por el estudiante)

The student will be in charge of recruiting volunteers and running the experiments. The experiments include physiological and motor control test such as muscle twitch force with electrical stimulation, electromyography, lower leg volume change and tracking tasks. In addition, the students will contribute with the statistical analysis of the experimental data.

Personal Skills

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

Any Statistical Software. (SPSS, SAS, STATA, JMP or Minitab)

Academic Background
Students from any science or engineering program, students in the medical field are also welcome to apply.

**Study level (nivel de estudios)**
Middle (segundo, tercer año)
End (últimos semestres)
Master

7. **PROJECT**

The research is based on generalized Clifford algebras and separately Multi monogenic function in a Clifford depending on parameter functions.

- Computational algorithms implementation
- Numerical analysis
- Learn and apply generalized Clifford algebras

Knowledge in Matlab, Mathematicas and Sage

8. **PROJECT**

**Name of the Project**
Extraction and chemical modification of starch from *Ullucus tuberosus* (melloco), an Andean root
P.I: Jose Alvarez, PhD.

**Description of the Project** (explicación general del proyecto)

Starches are not only important ingredients in different diets all over the world, but they also represent important raw materials for varied industries such as textile and pharmaceutics, among others. Recently, starches have been used as biopolymers for different biomedical applications, especially in tissue engineering. Nevertheless, most of the research in this field concerns the use of potato, corn and cassava starches, both native and chemically modified. The Andes region has a great diversity of root and tubers that have been poorly studied. Melloco (*Ullucus tuberosus*) is a tuber widely present in the Ecuadorian popular diet, but its starch’s characteristics and properties are not known. The present project aims to extract, characterize and chemically modify *U. tuberosus* starch, and modify it, via oxidation, to assess its potential as a biomaterial.

**Job description for the student**

Collecting and selection of the tuber
Starch extraction and characterization
Hydrogen peroxide-mediated oxidation
Characterization of the modified starch

**Personal Skills**

Laboratory experience  
  b. Ability to work in teams  
  c. Good oral communication skills  
  d. Organization

**Specific knowledge or skills**  
Preferable, but not mandatory: experience with software in statistics.

**Academic Background**  
Chemistry, chemical engineering, food science, material science.

**Study level**  
  a. Middle (segundo, tercero año), end or masters
WELCOME TO IAESTE ECUADOR

IAESTE ECUADOR National Committee is located in Quito at Universidad San Francisco de Quito. Here all the administrative processes for your internship are arranged.

The members of the local committee will be responsible for picking you up from the airport or sending instructions by email to get to your accommodation.

Not all traineeships are based in large cities where you can find IAESTE local contact points. In this case, IAESTE is not in the position to contact you on regular basis. For a satisfactory working relationship between the company and the trainee, it is expected that the trainee has good social skills and is capable of taking initiative.

WHAT WE EXPECTED FROM TRAINEES:

IAESTE ECUADOR puts a lot of effort in raising IAESTE jobs in Ecuador. The Universities and Companies are assured of highly qualified and motivated students for the internship. Therefore, we kindly ask you to read the work offered carefully and apply only if you consider yourself qualified. Also, we know that travel is an important opportunity of this experience, but keep in mind that first priority is to obtain professional experience.

HOW TO APPLY:

Please in order to apply to the offer you will need to include the following documents:

1. Student Nominated Form: must be typed and please include the job reference number from the Form O.
2. Form O.
3. Cover letter to the employer.
5. *List of subjects studied in English.*


7. *Enrolment Certificate,* not only at the time of the nomination but also during the period of the internship.

8. *Official Letter of the University,* to confirm that this internship is an integral part of your study program and that the student will return to the university after the internship to complete the studies.


10. *Copy of your passport.*

    - The documents must be sent in one file in order as listed above. The file has to be in PDF format, with the maximum size not exceeding 3MB. Please name the file according to the scheme:

    - Ref No. Name_Surname. Example: ECUSFQ13_01_Tom_Smith.pdf

    - For Graphic design and Architecture the student should enclose an electronic version of your portafolio in spate file (not exceeding the 6MB).

**VISA AND LEGAL STATUS**

As a student you will be enrolled at Universidad San Francisco de Quito, who is the official sponsor of IAESTE Ecuador. Therefore your legal status in Ecuador will be as a student at Universidad San Francisco de Quito, 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,* foreign citizens who do not belong to countries of South America, can obtain an extension of time up to (90) ninety days, in the Immigration Support Services nationwide prior to the payment of the third part of the unified basic salary.

- The cost of the extension will be 125 dollars, but you can ask to the Embassy so you will confirm the price. Visit this website for Ecuadorian consulates around the world.
http://www.ministeriointerior.gob.ec/servicio-de-apoyo-migratorio/

HEALTH INSURANCE
Students must have Health Insurance in order to come, we recommend all the students to get a health insurance here in Ecuador with international cover, because most of international insurances are not working properly in Ecuador, and in case of any accidents or diseases, the Ecuadorian insurance will be really helpful and fast.

ACCOMODATION
Accommodation will be arranged by IAESTE ECUADOR; we will pick you up from the airport and take you to your host family or hostel. Make sure to confirm your information with us 2 days before your arrival.

MONEY
It is necessary to bring with you cash money for at least the first month, at the end of the month you will get the payment by the employer and that will only cover your room and transportation in most of the cases.

The salary you will receive will be per each month (the employer don’t pay by weeks) so is better to apply for full months.

The payment of the accommodation will be around $ 170 (shared room) to $ 240 (single room without bathroom) or $240 Single private room, depending on the place where you are assigned. Transportation is $ 0, 25 cts in the city. Taxis the minimum payment is $ 1,50 and a taxi from the airport is minimum 30 dollars daily hours. Food you can find cheap places for about $ 3, 50 each meal.

SECURITY
We totally recommend you to take care of yourself. Please avoid walking alone by night, also do not bring with you more than 20 dollars once you are walking.

When you are walking keep your Laptop or cell phone in a safe place to avoid the attention of robbers.
Regarding, your identification you will need a copy of your passport instead of the original, only when you travel take your original passport.

VACCINATIONS

If your traineeship will be done on the Amazon Region, employers require for Laboral purpose that all students must have vaccinations for the following:

- Hepatitis A
- Hepatitis B
- Typhoid
- Tetanus
- Yellow Fever

Finally we will like to wish you a pleasant and successful stay in Ecuador!!