Internship Opportunities in Barbados
2019

Students may apply for the following internships and conduct projects under the supervision of mentors at the host organizations. The project tasks and dates listed are approved by the host organizations but are negotiable. Students may contact Dr. Donnelly for more information.

1. Preparation of Honey Bee Nectar and Pollen Calendar at Walker's Reserve

Host Organization: Walker's Reserve
For the last 50 years, Walker's Quarry provided sand to the island of Barbados. In 2011, they decided to return the quarry site to park land and started the regeneration project, transforming it into Walker's Reserve. Walker's Reserve will eventually house an extensive park.
Mentor: Mr. Shae Warren
Dates: Winter 2019; Summer 2019

Research Topic: Preparation of a honey bee nectar and pollen calendar
Background: A BITS student team initiated this project during summer, 2018.
Objectives:

- Winter (2019):

Continue the work of identifying flowering plants that can be added to the framework for a comprehensive bee nectar and pollen calendar. Determine a mechanism of quantifying nectar and pollen available to the new bee industry located at this site.

- Summer (2019):

This Internship will take place on-site at the Reserve in Barbados. A new residence is being created to house international students who participate in this and other projects at Walker's Reserve.

2. Management of Water Resources to Improve Sustainability at Walker's Quarry

Walker's Reserve
For the last 50 years, Walker's Quarry provided sand to the island of Barbados. In 2011, they decided to return the quarry site to park land and started the regeneration project, transforming it into Walker's Reserve. Walker's Reserve will eventually house an extensive park.
Mentor: Mr. Shae Warren
Dates: Winter 2019; Summer 2019

Project Description: The conversion of Walker's Quarry to a parkland has involved the creation of two large lakes, with extensive dune stabilization via permaculture plantings. Water engineers are invited to assist with on-going efforts to quantify these new water resources, determine their stability, and explore how water conservation techniques can be applied to improve the efficiency of water use at the facility.

Preference is given to students in Integrated Water Resources Management program.
Winter 2019; Summer 2019.

3. Solar Installation Policy and Regulations, Performance and Efficiency

Host Organization: Williams Solar
Williams Solar has a long and recognized role in the development of renewable energy in Barbados starting with the modern wind turbine 30 years ago to the over 3MW of Solar Photovoltaic capacity installed to date. Williams solar has designed, procured, installed and monitors photovoltaic installations throughout the island of Barbados for commercial and residential customers.
Mentor: Mr. Stephen Bob Worme
Dates: Winter 2019

- **Project 1: Investigation and Evaluation of Solar Installation Performance**

Background and Objectives:
Williams Solar has the largest database for PV Systems and performance in Barbados. The intern will have access to the database and conduct data collection in the field under the supervision of an engineer. The intern will evaluate the performance and efficiency of solar PV systems, and conduct research on the optimal orientation and positioning of solar panels in the context of Barbados and with different roof angles.
Requirements:
The Intern should have a background in engineering and preferably have knowledge of solar energy. The intern must be physically fit. Hard physical work is involved. This internship involves a minimum of 3 weeks of field work in Barbados, but the balance can be done either in Barbados or remotely. The starting date of this internship is flexible and can be discussed with the mentor.

- **Project 2: Renewable Energy Policies and Regulations in the Caribbean**

Background and Objectives:
The Caribbean has one of the highest rates of renewable energy consumption in the world. However, within the renewable energy sector there are knowledge gaps between government policies and regulations. This information has not yet been comprehensively compiled from the government of each country, large utility corporations operating in the Caribbean, or international organizations such as the Inter-American Development Bank.
Requirements:
This internship can be done remotely. The intern will be supervised by a mentor at William's Solar, and will be guided and assisted to contact different agencies and persons in Caribbean countries to compile a report that will enable better understanding of the big picture.
The intern should possess excellent communication and writing skills.

4. Plastic waste recycling strategies for SBRC in Barbados

Host organization: Sustainable Barbados Recycling Centre (SBRC)
Sustainable Barbados Recycling Center (SBRC, www.sbrcinc.com) is one of the largest

companies on the island of Barbados. The 25-acre facility processes Municipal Solid Waste (MSW), construction and demolition waste, green waste (landscape, coconut husks, and other plant debris), white waste (appliances), e-waste (TVs, computers, phones, etc.), and other municipal waste. It has a landfill operation, uses green and wood waste to produce mulch and composted materials, and salvages metal, e-components, batteries and other recyclables.

Background and Objective:
SBRC is trying to find a more effective and efficient way to recycle plastic wastes. In a study done by McGill student Sara Mikhail with the help of SBRC staff, it shows that 45% (by weight) of the plastic waste entering SBRC is recoverable, and can be separated into four main categories: 1) HDPE (30%), 2) PVC (8%), 3) PP (7%).
The intern is expected to conduct research on the plastic wastes at SBRC based on the sorting results mentioned above. The research will consider the potential uses and market value of different plastics that can be recycled. As a result, a set of strategies will be recommended to SBRC, to minimize the waste that goes into landfill and optimize the recycling operations.
This project can be done remotely without travelling to Barbados, but requires frequent online communications (emails, skype) with the mentor at SBRC. Access to internet and library resources would be necessary.
Dates: Winter 2019

5. Cassava Feed for Livestock (rabbits, sheep, goats)

Host organization: Central Agronomic Research Station, Ministry of Agriculture (Graeme Hall). The Central Agronomic Research Station (CARS) is the primary facility for Crop Research in Barbados where Research and Developmental work on field and vegetable crops are conducted. **Mentor:** Mr. Paul Lucas

Project background: In Barbados, there are over 206 acres of cassava planted and the average yield is 20 tons per hectare. Cultivars include 60 varieties imported from Columbia and four varieties brought in by the Caribbean Agricultural Research & Development Institute (CARDI). At this time, there are no mature plants at the CARDI Station as the germplasm has recently been replanted. Using external sources, CARDI would like to use cassava stems, leaves and
peels in the production of alternative feeds for animals and test these feeds on animals (rabbits, sheep, goats) at the Greenland Livestock Station. Interns would work with CARDI on the development of the feeds from cassava and the trials at Greenland to monitor growth rates of the animals feeding on the cassava products.
Dates: Winter 2019

6. Sheep and Goat Milk Products

Host organization: Greenland Livestock Research Station, Ministry of Agriculture.
Mentor: Ms. Debra Rollins (Herd Manager) & Mr. John Vaughn (Station Manager)

Project background: Currently, Barbados Blackbelly sheep and three breeds of dairy goats

(Seanan, Alpine, and Togenburg) are housed at the Greenland Livestock Research Station. In past years, McGill students have previously worked on development of value-added products. Interns would develop commercial procedures for sheep and goat milk products (yogurt, ice cream, butter, baked goods, etc.).
Dates: Winter 2019; Summer, 2019

7. Rabbit Breeding & Feeding

Host organization: Greenland Livestock Research Station, Ministry of Agriculture.
Mentor: Ms. Debra Rollins (Herd Manager) & Mr. John Vaughn (Station Manager)

Project background: Ministry of Agriculture, with the assistance of BITS project teams, have developed an efficient breeding program for improved meat rabbits that can be "finished" quickly to meet market demands. Project students will assist the ministry in importing rabbit breeds identified as being of particular interest to the industry and may have an opportunity to help with the ongoing breeding program and train industry participants.
Students interested in feeding trials will assist with formulating and pelleting *Leucaena* (grows wild in Barbados) and Mulberry (recent plantings) to meet dietary needs of rabbits and reduce conventional feed costs. Phytonutrient analysis for Leucaena and Mulberry needs to be performed, and different formulations of feed can be tested on rabbits housed at Greenland (weight gain /time). Students who work on this project will play an active role in conducting feeding trials in association with the Ministry.
Dates: Winter 2019; Summer 2019

8. Agri-tourism at Greenland Livestock Station

Host organization: Greenland Livestock Research Station, Ministry of Agriculture.
Mentor: Mr. John Vaughn (Station Manager)

Project background: Every year, workers at the Greenland Livestock Research Station give informal tours to students from camps and schools. Interns would design an agri-tourism tour package of the Livestock Station for students at the primary, secondary and tertiary levels indicating what is done at the station, the importance of the breeding programmes and linkages to other areas in agriculture.
Dates: Winter 2019

9. Emergency Water Preparedness - Government Analytical Services, Barbados

Host organization: Government Analytical Services, Ministry of Agriculture.
Mentors: Dr. Beverly Wood, Mr. Phil Beckles

Project Background: To further emergency preparedness during times of water scarcity, the Government of Barbados has deployed hundreds of water tanks in water scarce parishes in northern Barbados. Interns would work with Government Analytical Services (GAS) in their efforts to continually improve the system. Interns would assist with designs for improved

plumbing and monitoring of tank contents, ongoing water quality, and contribute to overall efficiency of the emergency preparedness system.

Preference is given to students in the Integrated Water Resources Management program.
Dates: Winter 2019; Summer 2019.