The University of the West Indies
Cave Hill Campus

Department of Biological and Chemical Sciences

RESEARCH PROJECTS

2023-2024

BIOL3990

ECOL3990

MICR3990

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PLEASE SUBMIT YOUR COMPLETED **APPLICATION FORM** AND **LABORATORY SAFETY REGULATIONS AGREEMENT** TO THE BIOLOGICAL & CHEMICAL SCIENCES DEPARTMENTAL OFFICE, GROUND FL., BIOLOGY BUILDING.

Course (s)	BIOL3990
Title	Investigation of Mosquito Bloodmeals in Barbados
Supervisor (s)	Dr. Shane Austin & Dr. Darren Browne

Background:
Mosquitoes are arthropods commonly found in tropical regions; they act as vectors for several known and novel viruses. Recent work in Barbados has indicated that many of these viruses have been previously unidentified [1]. Female mosquitoes can obtain bloodmeals from multiple sources, with research having identified domesticated animals, livestock and birds as bloodmeal sources. These bloodmeals are necessary for the reproductive process of mosquitoes, specifically egg-laying. To date and to the best of available knowledge, only one bloodmeal analysis of female mosquitoes has been done in Barbados by a previous BIOC3990 project student. This project seeks to extend on this project and provide further information to the Ministry of Health and Wellness.

Objectives:
Determine the bloodmeals of various mosquito species captured during the Ministry of Health and Wellness mosquito aspiration activities

Methods:
The project will require (1) identification of mosquitoes species using a provided guide based on morphological features (2) isolation of DNA from the captured mosquitoes (3) PCR analysis using the isolated DNA [2] (4) PCR clean-up and preparation of PCR amplicons for sequencing as needed (5) Analysis of PCR amplicons by gel electrophoresis.

Requirements:
Must be comfortable working with mosquitoes daily.

References:
1. Thannesberger, J., et al., Viral metagenomics reveals the presence of novel Zika virus variants in Aedes mosquitoes from Barbados. Parasites & Vectors, 2021. 14(1): p. 343.
2. Ngo, K.A. and L.D. Kramer, Identification of Mosquito Bloodmeals Using Polymerase Chain Reaction (PCR) With Order-Specific Primers. Journal of Medical Entomology, 2003. 40(2): p. 215-222.

Course (s)	BIOL3990
Title	Insecticide resistance in the *Aedes aegypti* mosquito population
Supervisor (s)	Dr. Shane Austin & Dr. Darren Browne

Background:
Mosquitoes are arthropods commonly found in tropical regions; they act as vectors for several known and novel viruses. The Ministry of Health and Wellness (MoHW) on Barbados performs routine surveillance on the various mosquito species found on the island. One of these species *Aedes aegypti* acts as a vector for numerous viral illnesses. Widespread use of insecticides on the island has led to insect resistance in the local mosquito population. One of the areas of interest to the Ministry of Health and Wellness is the population density and burden of insecticide resistance in the *A. aegypti* population on the island.

Objectives:
Determine the prevalence of insecticide resistance in the *Aedes aegyptyi* population on Barbados.

Methods:
The project will require (1) the identification of mosquitoes species using a provided guide based on morphological features (2) the placement of oviposition traps in the field (4) the cultivation of mosquito larvae into juvenile and adult mosquitoes (5) performance of insecticide resistance tests at the MoHW insectary.

Requirements:
Must be comfortable working with mosquitoes daily.

References:
1. Thannesberger, J., et al., *Viral metagenomics reveals the presence of novel Zika virus variants in Aedes mosquitoes from Barbados.* Parasites & Vectors, 2021. **14**(1): p. 343.

Course (s)	BIOL3990
Title	Assessment of the distribution of predatory terrestrial flatworms in Barbados
Supervisor (s)	Dr. Darren Browne

Background:
Over the past decade, the presence of invasive land planarians (flatworms) has been recorded on several Caribbean islands. The New Guinea flatworm, *Platydemus manokwari*, is one of the world's worst invasive species and has been identified in Martinique, Jamaica and recently, in Barbados. This predatory worm feeds on soil invertebrates and has the potential to influence soil ecology, the stability and health of agricultural land and the biodiversity of the island. Understanding the distribution of invasive alien species is an important first step in monitoring and managing their spread. A preliminary survey by a previous BIOL3990 student confirmed the presence of *P. manokwari* at several sites in the south of Barbados. This project aims to build upon this preliminary study by expanding the number of survey sites in collaboration with the Ministry of Agriculture and Food Security.

Objectives:
Determine the distribution of flatworms at sites across Barbados

Methods:
This project will involve (1) conducting flatworm surveys at private gardens, shade houses, greenhouses, plant nurseries and on agricultural land (2) assessment the distribution of land planarian species on the island (3) use of environmental and anthropogenic conditions to predict suitable flatworm habitat (4) identification of flatworm specimens using morphological characteristics (5) isolation of DNA from flatworm specimens (6) PCR analysis using the isolated DNA (7) Analysis of PCR amplicons by gel electrophoresis (8) PCR cleanup and preparation of amplicons for sequencing as needed.

Requirements:
Must be comfortable working with flatworms.

References:
Justine, J. L., L. Winsor, P. Barriere, C. Fanai, D. Gey, A. W. Han, G. La Quay-Velazquez, B. P. Lee, J. M. Lefevre, J. Y. Meyer, D. Philippart, D. G. Robinson, J. Thevenot, and F. Tsatsia. 2015. "The invasive land planarian *Platydemus manokwari* (Platyhelminthes, Geoplanidae): records from six new localities, including the first in the USA." *PeerJ* 3: e1037.

Hu, J., Yang, M., Ye, E. R., Ye, Y., & Niu, Y. (2019). First record of the New Guinea flatworm Platydemus manokwari (Platyhelminthes, Geoplanidae) as an alien species in Hong Kong Island, China. *ZooKeys*, *873*, 1.

Course (s)	ECOL3990
Title	Abundance and resource use of the monarch butterfly (*Danaus plexippus*) at Walkers Reserve
Supervisor (s)	Dr. Henri Vallès

Background:
The monarch butterfly is one of the most familiar butterflies of the Americas. Some of its populations on the northern range can migrate considerable distances to overwintering sites, whereas other populations do not migrate. Monarch butterfly larvae feed on a wide range of latex-producing milkweeds and the adults are important pollinators. Some of its populations can be found as far south as the eastern Caribbean, including Trinidad and Tobago. In Barbados, they can be regularly observed at the Walkers Reserve, on the northeastern side of the island. However, little is known about the factors that drive the abundance and distribution of this iconic species in Barbados over time.

Objectives:
This project will seek to (1) map the distribution of food plants used by both the adults and larvae of monarch butterflies and (2) assess changes over time in the abundance of monarch butterfly larvae and adults at the Walkers reserve. These data will be used as baseline to assess changes in the future.

Methods:
This project will entail regular georeferenced field surveys at the study site to quantify the abundance of monarch butterfly adults and larvae and their food plants.

Requirements:
This project will require a student with good data handling and analysis skills. The student will spend considerable time in the field collecting data.

References:

- Walker, A.; Thogmartin, W. E.; Oberhauser, K. S.; Pelton, E. M.; Pleasants, J. M. (2022). "*Danaus plexippus*". IUCN Red List of Threatened Species. 2022: e.T159971A806727. doi:10.2305/IUCN.UK.2022-1.RLTS.T159971A806727.en.

- Nail, Kelly R. (2019). "Butterflies Across the Globe: A Synthesis of the Current Status and Characteristics of Monarch (*Danaus plexippus*) Populations Worldwide". Frontiers in Ecology and Evolution. 27: 362. doi:10.3389/fevo.2019.00362.

- Pocius, Victoria M.; Debinski, Diane M.; Pleasants, John M.; Bidne, Keith G.; Hellmich, Richard L. (2018). "Monarch butterflies do not place all of their eggs in one basket: oviposition on nine Midwestern milkweed species". Ecosphere. 9 (1): 1–13. doi:10.1002/ecs2.2064.

Pleasants, John M.; Oberhauser, Karen S. (2012). "Milkweed loss in agricultural fields because of herbicide use: effect on the monarch butterfly population". Insect Conservation and Diversity. 6 (2): 135–144.

Course (s)	MICR3990
Title	Molecular characterization of the microbiome of *Sargassum* waste
Supervisor (s)	Dr. Bidyut Mohapatra

Background: In recent years, two floating species of *Sargassum*, *S. fluitans* and *S. natans*, have caused large blooms annually in the coastal regions of the Caribbean, Mexico, the USA, West Africa and South America[1]. *Sargassum* bloom is a blow to the regional economy since it adversely affects the coastal biodiversity as well as the seafood and tourism industries. The coastal inundation of *Sargassum* biomass is also a public health concern owing to the emission of toxic hydrogen sulfide and insect infestation which can cause skin irritation[2]. Recently, there has been a growing industrial interest in the use of *Sargassum* waste as a feedstock in biorefinery for the production of third generation biofuels[3]. Biorefining of *Sargassum* waste requires sustainable and cost-effective production of microbial biocatalysts[4]. Microbiome-colonizing *Sargassum* waste plays an important role during the natural biodegradation process. Therefore, it is crucial to characterize the microbiome of *Sargassum* waste.

Objectives: The objectives of this research project are to (1) characterize the microbiome of *Sargassum* waste inundated off Barbados' coast; and (2) evaluate the biocatalytic efficacies of *Sargassum* waste-associated microbiome.

Methods: The microbiome will be characterized via next-generation sequencing and their biocatalytic efficacies will be assessed via CAZy mapper.

References:

1. Gower J, King S. (2019) Seaweed, seaweed everywhere. Science. 365: 27.
2. Dabor R, Ruddy V, Rémi N, et al. (2018) *Sargassum* seaweed on Caribbean islands: an international public health concern. Lancet 392: 2691.
3. López-Contreras, A.M., van der Geest, M., Deetman, B., et al. (2021). Opportunities for valorization of pelagic *Sargassum* in the Dutch Caribbean. Wageningen Food & Biobased Research: Wageningen, The Netherlands.
4. Mohapatra, B.R. (2023 Solid-state fermentation conditions optimization, homology modeling and molecular docking of β-mannanase of a novel *Streptomyces* species LB66 isolated from *Sargassum* seaweed waste. Biocatalysis and Biotransformation 41: 187–197.

Course (s)	MICR3990
Title	Exploring the metagenome of *Sargassum* waste for biologically active compounds
Supervisor (s)	Dr. Bidyut Mohapatra

Background: Global climate and land-use changes have been identified as the causal agents for induction of massive blooms of two floating species of *Sargassum*, *S. fluitans* and *S. natans*[1]. *Sargassum* bloom is a threat to the regional economy since it adversely affects the coastal biodiversity as well as the seafood and tourism industries. Recently, there has been a burgeoning research interest to valorize *Sargassum* waste into value-added products to be used in agriculture and pharmaceutical industries[2]. *Sargassum* waste is enriched with proteins, minerals, carbohydrates and vitamins. It is expected that the complex chemical structures of *Sargassum* waste favor the prevalence of diverse microbial populations with potential biotechnological applications[3]. Therefore, exploring the metagenome of *Sargassum* waste will not only provide information on the microbial species diversity but also their metabolic potentials in production of bioactive compounds[4].

Objectives: The objectives of this research project are to (1) characterize the metagenome of *Sargassum* waste inundated off Barbados' coast; and (2) assess the metabolic functions of the metagenome of *Sargassum* waste.

Methods: The metagenome of *Sargassum* waste will be analyzed via next-generation sequencing and annotated via KEGG and MG-RAST.

References:

1. Gower J, King S. (2019) Seaweed, seaweed everywhere. Science. 365: 27.
2. López-Contreras, A.M., van der Geest, M., Deetman, B., et al. (2021). Opportunities for valorization of pelagic *Sargassum* in the Dutch Caribbean. Wageningen Food & Biobased Research: Wageningen, The Netherlands.
3. Miranda, J.L.L., Celis, L.B., Estévez, M., Chávez, V., van Tussenbroek, B.I., Uribe-Martínez, A., Cauich-Kantun, C. (2021). Commercial potential of pelagic *Sargassum* spp. in Mexico. Frontiers in Marine Science, 8: 768470.
4. Breitwieser F.P., Lu J, Salzberg S.L. (2019). A review of methods and databases for metagenomic classification and assembly. Briefings in Bioinformatics 20: 125-1136.

SOME ADVICE FOR STUDENTS

The Research Project courses afford students the opportunity to carry out research themselves and to add to our knowledge of the world. Research is time-consuming, often frustrating, but also exciting and undertaking a project gives you a chance to see whether a research career is for you. Several students before you have carried out projects to such a high standard and with novel results that these have been published in internationally refereed journals!

CARRYING OUT THE PROJECT WORK

Before commencing work, it is important that you have a clear picture in your mind of what you are setting out to achieve. Discuss the project fully with your supervisor(s) and ensure you are clear as to the aim(s) of the project. Your research should not just be an open-ended exercise that finishes when you have a sizeable body of data but must have clear, realistic goals. It is you, not your supervisor, who will have to defend the project design so be prepared to be critical of any aspect of the planned study at this early stage. Your supervisor will help you plan your work schedule. **Regular consultation between the two of you on your progress is vital to project success**. You may need certain keys to the building and these can be obtained by paying a deposit to the Departmental Secretary and completing the necessary form. It is important you keep a record of all your project work in a notebook dedicated to the purpose, not scraps of loose-leaf paper. Success in this course is based on the effort you put in.

Your supervisor will advise you on the best way to commence writing up your research but you are encouraged to start writing the Methods (also termed Materials & Methods) section of the report as you go along. You will early on be directed to certain key references to help you understand the nature of the problem you are investigating. This literature review will also be vital to the writing of the Introduction section of your report. On completion of the experimental work, cleaning up of your work area is mandatory. Your project will not be considered complete unless this has been done and you will receive a low mark for your quality of work. Also, your key deposit will not be refunded unless your supervisor indicates that you have cleaned your work space.

THE PROJECT SEMINAR

On completion of your practical work you will be required to present your findings to members of the department. This will be assessed and contributes 15% toward your final mark. In the case of year-long projects, you are also required to present an initial seminar outlining what you are setting out to do. This is not for credit but will help you build confidence for the final assessed seminar and may provide valuable feedback on your project intentions.

It is vital when presenting your work that you explain to the audience early on what is the aim of your project. Surprisingly, such a key aspect of a presentation is often overlooked. In the time available you should explain why this is a problem that needs investigating, e.g. by referring to previous studies. The methods you have used should be presented in sufficient detail to allow the audience to understand what you have done. You should then present your results, interpret

these and maybe suggest future work. The audience will then ask you questions arising out of what you have presented.

You should practice your talk beforehand ensuring you keep to the allotted time. Ideally, you should speak to your visual aids rather than read word for word from notes. Ensure you're your audience can easily read your slides. Simple with a single idea is best. Try to avoid complicated backgrounds. These can be distracting and/or make the slides difficult to read. Check that your presentation will run adequately on the system in the Demonstration Room and that your slides look good when projected. Colours do not always look the same as on your computer screen. A trial should be carried out the day before.

THE PROJECT REPORT

NB: This particular format might not be the best for your project. Your supervisors will advise you. This works for most biological projects.

The grade you receive in this course will depend largely on the quality of your Project Report since it accounts for 70% of your mark. Good presentation is important, but an attractive report that says nothing will not give you a passing grade. Likewise, fantastic results scrappily presented and shoddily written up will not give you even a passing grade. It will take time to compose and type the Report, prepare figures and have it bound. The submission deadline is final so ensure you budget 2-3 weeks for this. **THE PENALTY FOR LATE SUBMISSION IS 5% PER DAY.** Your report must be written in the format of a scientific paper and your supervisor will provide you with a sample paper and or previous report to guide you as to what is appropriate. Your supervisor will help you in planning how to write the report and will comment on draft portions to ensure you are on the right track. You must write in Standard English, carefully proof-reading the final draft. For all sections incorrect spelling and grammar will be penalised. Do not depend on a spell checker to find all spelling errors or a grammar checker to correct your grammar. Your Report will be graded in accordance with the enclosed marking scheme.

Abstract: The abstract summarizes your findings and possibly your interpretation of your results. Look at Abstracts from several papers related to your study and ensure you understand what constitutes an Abstract. It is usually about three-quarters of a page of your report. The most common fault here is that the student does not understand what an abstract is and writes what amounts to a mini-Introduction.

Introduction: The Introduction sets the scene. It provides a literature review of the area and explains the nature of the problem to be investigated. It will often include the socio-economic reasons why this investigation is warranted. It is important in reviewing the literature to get the balance right, e.g., an introduction to a project looking at the biochemistry of softening in mango fruit might have a sentence explaining that mango is but one species of the genus *Mangifera* but to spend a page reviewing the taxonomy of mango would be inappropriate in this case. Another common mistake is in the citing of the literature. Firstly, you must credit

the sources of the information you present and you must do so correctly (see References section overleaf). Another common error is to cite the reference but then not list this in the reference section. If you have read about a study by Jones (1990) in a paper by Smith (1999) but not actually read the Jones paper it is incorrect for you to cite the Jones paper directly. Instead, you should cite this as (Jones, 1990, cited by Smith, 1999). Remember plagiarism is a serious offence that can be avoided by citing sources correctly and paraphrasing what you have read. **Give the objectives of the experiments in the introduction.**

Materials & Methods: Anyone reading this section should be able to repeat what you have done (and get the same results). The focus for this section is therefore accuracy and completeness. Look at relevant scientific papers as a guide to how this section is written. Where you are following a published method cite the reference. It is normal in this section that the full scientific name of the organism being studied is given if it has not appeared first in the Introduction. At the first mention of the scientific name the authority for the name must also be included (but dropped thereafter). This last rule does not apply to prokaryotic organisms. Also avoid all sorts of abbreviations that you have not previously defined in the text.

Results: A Results section is not simply Figures or Tables of data. In this section the results obtained are stated, though usually not interpreted. For this reason there is not usually any citing of the literature in this section. In this section, where appropriate there should also be the results of statistical analysis of the data. Raw data is more appropriately included in an Appendix to the report. Your supervisor will guide you on this. Figures and Tables should each bear a legend which provides enough information to make the Figure/Table intelligible without reference to the text. The Figures and Tables are numbered in order of their appearance in the text, i.e. the first figure referred to, is Figure 1. Photographs are also considered Figures. The Figures and Tables should appear in the text rather than *en masse* at the end.

Discussion: This section constitutes your interpretation of your results, what the results suggest and how these relate to previous published studies. You will therefore be carefully citing the literature where appropriate in this section. Where there has been major experimental failure you will want to discuss here why this transpired and how you would repeat the study so as to actually get data. The supervisor may advise that you combine the Results & Discussion sections but even in such a case the foregoing comments apply. As a guide you could consider the following:

- **Give explanations for the results you obtained.**
- **Why did you obtain these results?**

- How do these results satisfy the objectives of these experiments?
- What were the difficulties encountered?
- How would you proceed to get better results?
- What can you conclude from your results?
- What else could be done to support these conclusions?
- How could these experiments be improved?
- Compare your results with similar results in the literature

References: The Reference section must list the References in a standard accepted format cite. References are usually arranged alphabetically by author and then by year but they may also be assigned a number and listed in the order in which they are cited in the text.

Consult with your supervisor as to what format you should follow. When you start using a format for your references, adhere to it. Students often do "copy-paste" of references from different journals that have different formats. Be careful to check that ALL your references are in the SAME format.

Acknowledgments & Appendices:

If you wish to acknowledge help given this should be done in an Acknowledgements section following the Discussion. If you have received substantial help from anyone this **must** be pointed out in the Acknowledgements section. If your project involved a survey you might want to include the Survey Form in an Appendix or if there are raw data that need including, the Appendix is an appropriate place for this. This optional Appendix will be the last section of the report.

SAFETY

General safety rules apply to all activities in laboratories. ***Food and drink must NOT be taken into any laboratory*.** Lab coats are mandatory for the experimental parts of most projects. If you are not certain, consult your supervisor.

SAFETY IN FIELDWORK

This section provides an outline of some of the issues that need to be considered when undertaking a project that includes an element of fieldwork. Further details can be found in the Department of Biological and Chemical Sciences Safety Manual.

DEFINITION OF FIELDWORK

Fieldwork is defined as any practical work carried out by staff or students of the University for the purpose of teaching and research in places which are not under University control but where the University is responsible for the safety of its staff and students and others exposed to their activities. The definition includes activities as diverse as archaeological digs, social survey interviews as well as more recognised survey/collection work.

GENERAL CONSIDERATIONS

Students with any medical condition likely to affect their ability to undertake fieldwork must inform in advance the member of staff in charge.

As a general rule, fieldwork by solitary individuals is **NOT** allowed. Exceptions to this rule **MAY** be permissible if the nature of the risks, degree of isolation, nature of the location and experience of the person involved allow. Undergraduate and Masters students will only be permitted to carry out fieldwork alone in exceptional, low risk, circumstances.

DO NOT go into the field without leaving contact details with a designated member of staff (usually the project supervisor) and preferably a map showing expected location and time of return. Report to this person on your return.

PREGNANCY

The Department of Biological and Chemical Sciences acknowledges that some laboratory environments may present possible medical hazards to an unborn child. The Department of Biological and Chemical Sciences is committed to the concept and principles of ALARA (as low as reasonably achievable) with respect to hazards that may be present in the course of instruction. As part of this effort, it is also the policy of The Department of Biological and Chemical Sciences to establish procedures to minimize the potential for adverse health effects to the unborn child of a mother who attends class in an environment in which reproductive hazards may be present.

It is important to note that certain chemicals and biological materials (such as viruses and bacteria) may pose a risk to an unborn child. A project student who works in an environment in which bio-hazardous materials or hazardous chemicals are used – or are suspected to be used - should **immediately** notify her Supervisor, Department Head or Dean once pregnancy is suspected. The Instructor, Head or Dean (with support from the Safety Committee) must evaluate the work environment for the presence of reproductive hazards and then determine and communicate the risks for the unborn child. Based on this evaluation, the Department of Biological and Chemical Sciences may recommend changes in the environment and activities of the pregnant student or an academic course, or other appropriate accommodation in which there is minimal exposure to the hazard.

PLAGIARISM

The University considers plagiarism a serious offence. The UWI Examination Regulations deal with this subject in section (B) Cheating under Regulation 97as follows:

(i) Cheating shall constitute a major offence under these regulations.

(ii) Cheating is any attempt to benefit one's self or another by deceit or fraud.

(iii) Plagiarism is a form of cheating.

(iv) Plagiarism is the unauthorised and/or unacknowledged use of another person's intellectual efforts and creations howsoever recorded, including whether formally published or in manuscript or in typescript or other printed or electronically presented form and includes taking passages, ideas or structures from another work or author without proper and unequivocal attribution of such source(s), using the conventions for attributions or citing used in this University.

These conventions should be those appropriate for science in work produced for science courses.

In these regulations, examination refers to any written material to be assessed as part of the final mark for a course including project reports.

The penalties for plagiarism are stated in Regulation 103 as follows:

> *…. the Committee shall disqualify the candidate from the examination in the course concerned, and may also disqualify him/her from all examinations taken in that examination session; and may also disqualify him/her from all further examinations of the University, for any period of time, and may impose a fine ….*

If you have not done so, you should also read
http://www.cavehill.uwi.edu/fpas/CurrentStudents/ plagiarism.htm and the links there.

ASSESSMENT OF RESEARCH PROJECTS
BIOL3990/ECOL3990/MICR3990

STUDENT'S NAME: **EXAM NUMBER:**

TITLE OF PROJECT:

SUPERVISOR:

SECOND EXAMINER:

CATEGORY	MARKS AWARDED		
	SUPERVISOR	SECOND EXAMINER	TOTAL
1.WRITTEN REPORT /70			
Abstract /5			
Introduction /10			
Materials & Methods /10			
Results /10			
Discussion /20			
References /5			
Style and Presentation /10			
2. WORK /15			
Quality of Work /10			
Ability to Work Independently /5			
3. SEMINAR /15			
General Presentation /5			
Content /5			
Ability to Answer Questions /5			
TOTAL MARKS AWARDED /100			

The University of the West Indies - Cave Hill Campus

FACULTY OF SCIENCE AND TECHNOLOGY

DEPARTMENT OF BIOLOGICAL & CHEMICAL SCIENCES

APPLICATION FOR RESEARCH PROJECT

NAME: _____ **STUDENT ID NO:** _____

RESEARCH PROJECT APPLIED FOR:-

BIOL3990 ☐ BIOC3990 ☐ CHEM3950 ☐ CHEM3955 ☐ MIRC3900 ☐

ENSC3020 ☐ ENSC3900 ☐ ECOL3990 ☐ BIOC3290 ☐

PROJECT CHOICES: -

FIRST CHOICE	
Supervisor(s):	
Project Title:	
SECOND CHOICE	
Supervisor(s):	
Project Title:	

Signature_____ **Date** _____

FOR DEPARTMENTAL USE

ACCEPTED FOR: 1st Choice ☐ 2nd Choice ☐

STUDENT HAS NECESSARY PRE-REQUISITES: Yes ☐ No ☐

COMMENTS:

RECEIPT NO: (For Summer Only) _____

APPROVAL: _____ _____

Course Co-Ordinator **Head of Department**

Laboratory Safety Regulations Agreement

Before proceeding to your first practical session, use the following link, or scan the following **QR code** on your smart device, to go online and complete the **Laboratory Safety Regulations Agreement**. Here you will indicate the course, your name, ID number and emergency contact information.

If you encounter any difficulties completing the form, please contact one of the following persons:

- your course/laboratory instructor,
- the discipline coordinator,
- the Head of Department, Professor Avril Williams (avril.williams@cavehill.uwi.edu) or
- the Dean of the Faculty, Dr. Jeanese Badenock (Jeanese.badenock@cavehill.uwi.edu) .

Link: https://forms.office.com/r/5F1MugBG2r

QR code:

PLEASE SUBMIT YOUR COMPLETED **APPLICATION FORM** AND **LABORATORY SAFETY REGULATIONS AGREEMENT** TO THE BIOLOGICAL & CHEMICAL SCIENCES DEPARTMENTAL OFFICE, GROUND FL., BIOLOGY BUILDING.