The University of the West Indies
Cave Hill Campus

Department of Biological and Chemical Sciences

RESEARCH PROJECTS 2016-2017

BIOC3950
BIOL3950
ECOL3950
ERSC3900
MICR3950

TABLE OF CONTENTS

Projects:

PROJECTS

Course (s)	BIOC3950
Title	Characterization of *Sphaceloma manihoticola* isolates in Barbados.
Supervisor (s)	Dr. Angela T. Alleyne

Cassava (*Manihot esculenta* Crantz) is an important tropical root and tuber crop grown in West Africa, Latin America and the Caribbean (Ceballos *et al.,* 2010). Projected growth worldwide is 1.1% per year and 23.0% by 2020 (Scott *et al.,* 2000) with growth in Latin Americana the Caribbean at 2.7%, only being surpassed by Sub-Saharan Africa at 16% (Scott *et al.,* 200). One of the more important diseases in Latin America and the Caribbean is Super-elongation disease caused by the fungus *Sphaceloma manihoticola* (Teleomorph: *Elsinoe brasiliensis*) (Reeder *et al.,* 2008, Ceballos *et al.,* 2010). Super-elongation disease of cassava is economically important, causing crop losses of more than 80% with the primary symptoms being necrotic leaf spots and cankers on stalks and petioles (Alvarez and Molina, 2000, Alvarez *et al .,* 2003). However only severely infected cassava plants show the hyperelongation of young internodes as a secondary symptom (Alvarez and Mejia, 2003). Infection with *S. manihoticola* causes the hyper-elongation of the internodes as a result of Giberellic acid production.
The objective of this project is to use the Polymerase chain reaction (PCR) diagnostic molecular methods to characterize fungal isolates of *S. manihoticola*. In this project the student will conduct field sampling of *S. manihoticola* isolates, establish pathogencity, and identify the pathogen using PCR primers designed to target the SmP450-2 gene Gen bank Accession (AM88960).

References:

Alvarez**,** E., and. Molina, M. L**.** (2000) Characterizing the *Sphaceloma* Fungus, Causal Agent of Superelongation Disease in Cassava. *Plant Disease,* 84: 423-428.

Alvarez, E. and Mejia, J-F. (2003) Molecular and Pathogenicity Characterization of *Sphaceloma manihoticola* isolates from South-Central Brazil. *Plant Disease,* 87:1322-1328.

Ceballos, H., Okogbenin, E., Pérez, J-C., L Augusto, L., López-Valle, B., and Debouck D., (2005) Cassava In: *Root and Tuber Crops*, *Handbook of Plant Breeding 7*, J.E. Bradshaw (ed.), Springer Science pp 53-96.

Reeder, R., Kelly, P.L., St. Hill, A.A. and Ramnarine K. (2008) Superelongation disease, caused by *Elsinoe brasiliensis,* confirmed on cassava in Trinidad and Tobago*. New Disease Reports 18, 18*

Scott, G. J., Rosegrant, M, W. and Ringler, C. (2000) Roots and Tubers for 21st century: Trends projections and Policy options, 2000, p1-71.

Course (s)	BIOL3950/ECOL3950
Title	DNA-barcoding approach for the identification of macro-organisms in Barbados.
Supervisor (s)	Dr. Angela Fields and Dr. Bidyut Mohapatra

DNA-barcoding is a widely used tool to study the phylogenomics of a region's biodiversity (Folmer et al. 1994; Hebert et al. 2003; Lobo et al. 2013). We propose to use this molecular technique along with a morphological approach to begin an inventory of the Barbadian fauna. The objectives of this project are (1) to extract DNA from invertebrates collected from nearshore rubble and hard-bottom environments of Barbados, PCR amplification of the COI gene and Sanger sequencing of PCR amplicons, (2) to produce a dichotomous key of the organisms, and (3) to develop a searchable database at UWI.

References:

Folmer, O., Black, M., Hoeh, W., Lutz, R. and Vrijenhoek, R. (1994) DNA primers for amplification of mitochondrial cytochrome *c* oxidase subunit I from diverse metazoan invertebrates. Mol. Mar. Biol. Biotechnol. **3:** 294–299.

Hebert, P.D.N., Ratnasingham, S. and deWaard, J.R. (2003) Barcoding animal life: cytochrome *c* oxidase subunit 1 divergences among closely related species. Proc. R. Soc. Lond. B (Suppl.) **270:** S96–S99.

Lobo, J., Costa, P.M., Teixeira, M.A.L., Ferreira, M.S.G, Costa, M.H. and Costa, F.O. (2013) Enhanced primers for amplification of DNA barcodes from a broad range of marine metazoans. BMC Ecology 2013, **13:** 34 (doi:10.1186/1472-6785-13-34).

Course (s)	ECOL3950
Title	The effect of experience on nest site selection and indices of nest success in hawksbills.
Supervisor (s)	Professor Julia Horrocks

Sea turtles exhibit philopatric breeding behavior, returning to nest on the beach they hatched on as breeding adults. Selection of a nest site and construction of a nest are the only forms of parental care exhibited by sea turtles. Both behaviours influence incubation success, emergence success and hatchling predation. The objective of this project is to assess whether physical and abiotic characteristics of nest sites and indices of breeding success differ with experience, through comparisons between first time nesters (Neophytes) and experienced nesters (Re-migrants) at the national index beach at Needham's Point.

Course (s)	ECOL3950
Title	Ecological status of remnant wetlands on the west coast of Barbados
Supervisor (s)	Professor Julia Horrocks & Professor C.M. Sean Carrington

Remnant areas of wetland exist along the west coast of Barbados at the mouths of gullies that drain rainwater from the highest part of the island. These areas of wetland are dynamic often flooding into the sea after heavy rainfall, and are now rare as a result of the trend over the past few decades of canalization of gullies along the west coast to reduce flooding of surrounding areas. Recently there has been interest in the restoration or 'greening' of some of these drains, to enhance the ecological services that could be obtained and to reduce inputs of pollutants from terrestrial sources into the marine environment. The primary objectives of the project will be to survey the remaining west coast wetlands to identify species diversity in relation to abiotic features of each wetland, and to provide recommendations on appropriate species to incorporate into restoration initiatives.

Course (s)	ECOL3950
Title	Investigating spatial and temporal patterns of crustacean settlement to the west coast of Barbados.
Supervisor (s)	Dr. Henri Vallès

Most coral reef organisms spend their larval stage in the open ocean. At some point, they will make their way back to a coral reef. The transition between the larval pelagic stage and the juvenile reef stage is called settlement and represents a key, but poorly known, phase in the population dynamics of all reef organisms. Between June 2003 and November 2004, the settlement of crustaceans was periodically monitored using standard units of habitat deployed along the west coast of Barbados. These data represent one of the longest uninterrupted time series of crustacean settlement anywhere to date.
In this project the student will use the aforementioned data to (1) describe spatio-temporal patterns of crustacean settlement along the west coast of Barbados, and (2) identify environmental factors (e.g. lunar phase, temperature, site location) associated with such patterns.

This project will require entering into Excel software, and then handling and analyzing a large data-set that is already available. It will also involve a review of the most recent relevant literature. No field work is anticipated. Proficiency in the use of Excel software and good quantitative skills would be an asset. Students will also develop basic knowledge on the use of statistical software such as SPSS or the R environment.

Relevant References:

Vallès H, Kramer DL, Hunte W (2006) A standard unit for monitoring recruitment of fishes to coral rubble. J Exp Mar Biol Ecol 336:171-183

Vallès H, Kramer DL, Hunte W (2008) Temporal and spatial patterns in the recruitment of coral-reef fishes in Barbados. Mar Ecol Prog Ser 363:257-272

Vallès H, Hunte W, Kramer DL (2009) Variable temporal relationships between environment and recruitment in coral reef fishes. Mar Ecol Prog Ser 379:225-240

Course (s)	ECOL3950
Title	Assessing spatio-temporal variability in the prevalence of marine excavating sponges on Barbados' reefs using video footage.
Supervisor (s)	Dr. Henri Vallès

Sponges are a prominent, and ecologically important, component of coral reefs. As global coral communities decline, sponges have replaced them as predominant habitat-forming organisms in many reefs. One group of sponges, the excavating sponges, plays a key role as bioeroders of reef structure.
Preliminary data indicate that excavating sponges appear to be quite prevalent on Barbados reefs, which suggests that bioerosion by these sponges might be unusually high, potentially accelerating rates of reef degradation. An ongoing research project is currently documenting distribution of these sponges at six reef sites subject to different environmental conditions along the coast of Barbados at 3-4 month intervals. This project is also producing video footage of the benthic composition of these sites. These video data will help supplement field measurements of sponge prevalence and growth as well as of substrate cover by other key components of the reef such as corals and algae. The ultimate goal is to identify environmental factors contributing to explain spatial and temporal patterns of excavating sponge prevalence and growth.
In this project the student will use the aforementioned video data to (1) quantify variation in benthic substrate composition (sponge, coral, algae) across sites and over time, and (2) help identify environmental factors associated with such patterns.
This project will require using image analysis software to help transcribe video data to numerical data into Excel. It will then require handling and analyzing such data to assess the aforementioned patterns of variation. It will also involve a review of the most recent relevant literature. No field work is required, but if the student is a certified SCUBA diver, there might be opportunities to participate in the video data collection. Proficiency in the use of Excel software and good quantitative skills would be an asset. Students will also develop basic knowledge on the use of statistical software such as SPSS or the R environment.

<u>Relevant References</u>:

Abdo, D., S. C. Burgess, G. Coleman, and K. Osborne. 2004. Surveys of benthic reef communities using underwater video. Long-term Monitoring of the Great Barrier Reef. Standard Operational Procedure Number 2, 3rd Revised Edition. Australian Institute of Marine Science.
MacGeachy, J. K. 1978. Geological significance of boring sponges in Barbados. PhD thesis. McGill University.

Safuan, M., W. H. Boo, H. Y. Siang, L. H. Chark, and Z. Bachok. 2015. Optimization of Coral Video Transect Technique for Coral Reef Survey: Comparison with Intercept Transect Technique. Open Journal of Marine Science **05**:379-397.

Course (s)	ECOL3950
Title	Abundance, distribution and social and feeding interactions of the spider *Metepeira compsa* on Barbados coastline.
Supervisor (s)	Dr. Henri Vallès & Dr. Angela Fields

The orb weaver spider *Metepeira compsa* is a common inhabitant of coastal vegetation in Barbados. Unlike most spiders, which tend to be solitary, *M. compsa* belongs to a genus of spiders that can live in large colonies. It is not well understood why spiders live in colonies, but some of the presumed benefits include group defence against predators and competitors as well as increases in prey capture efficiency. A previous study has shown that in Barbados, the distribution and size of *M compsa* colonies is strongly associated with prevailing wind exposure and certain types of vegetation. However, more work is needed to understand the ecological factors that contribute to explain variability in *M compsa* colony distribution and size.
In this project the student will (1) quantify the distribution and abundance of *Metepeira compsa* along Barbados coastline; (2) evaluate the relative roles of wind exposure, food availability, and physical structure of the habitat in determining colony size; and (3) assess the potential for establishing colonies in the laboratory to investigate questions about the costs and benefits of group living for this species.
This project will require field abundance surveys, behavioral observations of spiders, the handling of spiders, and attempting to set up a colony in the lab. It will also involve a review of the most recent relevant literature.

References:

Patrick, S. 2016. The abundance, distribution and feeding interactions of *Metepeira compsa* on the coastal vegetation of Barbados. Undergraduate ecology research project. The University of the West Indies at Cave Hill. 58 pages

Uetz, G. W. 2001. Understanding the evolution of social behaviour in colonial web-building spiders. Pages 110-132 in Dugatkin, L. A. (Editor) Model systems in behavioural ecology. Integrating conceptual, theoretical, and empirical approaches. Princeton University Press. Princeton and Oxford.

Course (s)	ECOL3950/BIOL3950
Title	Responses of turfgrass to molasses application under playing-field conditions
Supervisor (s)	Dr. Francis Lopez & Mr. Jeff Chandler

Recent projects at the University of the West Indies, Barbados, have provided very encouraging results on the use of molasses in combination with mineral nutrients for improvement of plant growth and water use efficiency in turfgrasses. Increased soil organic matter content and modifications of the carbon to nitrogen ratio can affect soil moisture retention and the activity of rhizosphere microorganisms, which may provide possible explanations for the observed effects. This project will build on the previous studies (which were all done with potted turf) and assess the effects of combinations of molasses and mineral nutrients on soil and turfgrass characteristics under playing-field conditions. Parameters of interest include turfgrass height, percentage green cover, greenness index and shear resistance, and soil water status, surface hardness and penetration resistance.

References:

Higa, T., and G. N. Wididana. 1989. The concept and theories of effective microorganisms. Paper read at First International Conference on Kyusei Nature Farming, October 17-21, 1989, at Khon Kaen, Thailand.

Holl, F. B., D. E. Aldous, and J. J. Neylan. 2005. Effect of organic amendments on microbial community activity in sand-based greens. : 102-107. International Turfgrass Society Research Journal 10 (Part 1):102-107.

Miller, A. R., and A. C. Gange. 2003. A survey of biostimulant use on football turf and effect on rootzone microbial populations. Journal of Turf grass and Sports Surface Science 79:50-60.

Mueller, S. R., and W. R. Kussow. 2005. Biostimulant Influences on turfgrass microbial communities and Creeping Bentgrass putting green quality. Hortscience 40 (6):1904-1910.

Tucker, B. J., L. B. McCarty, H. Liu, C. E. Wells, and J. R. Rieck. 2006. Mowing height, nitrogen rate, and biostimulant influence root development of field-grown `TifEagle' Bermudagrass. Hortscience 41 (3):805-807.

Course (s)	ECOL3950/BIOL3950
Title	Sargassum seaweed soil mix: Effects on soil properties and plant growth.
Supervisor (s)	Dr. Francis Lopez, Mr. Jeff Chandler Mr. Jabarry Belgrave

Addition of Sargassum seaweed to soil can help to reduce the amount of the material on our beaches while providing beneficial effects associated with increasing the organic matter content of our soils. A previous study found beneficial effects of Sargassum seaweed on soil properties when applied as a mulch. This project will investigate the effects of soil incorporation of Sargassum seaweed on soil properties and plant growth in a test crop. Observations will be made on soil moisture, electrical conductivity, pH and biological activity, and plant growth will be made at intervals of 1 to 2 weeks. Possible interactions with soil nutrient supply will also be investigated.

References:

Doyle, E. and J. Franks. 2015. *Sargassum Fact Sheet*. Gulf and Caribbean Fisheries. Institute. (Accessed September 2015). http://www.gcfi.org/Publications/GCFISargassumFactSheet.pdf

Hernandez-Herrera, R., F. Santacruz-Ruvalcaba, M. A. Ruiz-Lopez, J. Norrie, and G. Hernandez-Carmona. 2014. "Effect of liquid seaweed extracts on growth of tomato seedlings (Solanum lycopersicum L.)." Journal of Applied Phycology 26 (1):619-628. doi: 10.1007/s10811-013-0078-4.

Lavine, G. 2015. Sargassum Seaweed and Extracts: Evaluation of their potential use in Crop Production Systems in Barbados. (Accessed September 2015). http://www.agriculture.gov.bb/agri/images/Seaweed/seaweed_review.pdf

Zodape, S. 2001. "Seaweeds as a biofertilizer." Journal of Scientific and Industrial Research 60 (5):378-382.

Course (s)	ERSC3900
Title	
Supervisor (s)	Dr. Emma Smith

Environmental Science Projects:

Please contact Dr Smith (emma.smith@cavehill.uwi.edu) to discuss suitability as project student and whether any will be offered during the 2016/17 Academic Year.

Course (s)	MICR3950
Title	The Quality of Bottle Water Sold in Barbados
Supervisor (s)	Dr. M. Mota-Meira

Drinking bottled water has become very popular in modern society, including Barbados, and the quality of the water is of great importance to consumers. Bottled water is not bacteria free and there is a risk that this product can be contaminated with pathogenic bacteria. In June 2015, the Niagara bottling company issued a voluntary recall of 14 brands of bottled water due to possible contamination with *E. coli*. The majority of *E. coli* are not pathogenic bacteria and are part of the normal intestinal microflora of humans and other animals and for that reason are used as faecal indicator for the microbial quality of the water. However, some strains can cause diseases. *E. coli* belong to the faecal coliforms group and their presence in the water indicates the presence of faecal material and the possible presence of pathogens.
There are several international agencies that regulate the quality of drinks, including bottled water.

This project aims to test the microbial quality of diverse brands of bottled water sold in Barbados and tap water. Coliform, Faecal coliform, *Enterococcus* and total bacterial counts will be tested using the standard methods. Results will be compared with the international and national standards.

Reference:

Niagarawater.com. 2015. Niagara Spring Bottled Water Voluntary Recall.
http://www.niagarawater.com/consumer-notice/

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 Discussion 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.

<u>Acknowledgments & Appendices</u>:

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
BIOC3950/BIOL3950/ECOL3950/ERSC3900/MICR3950

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 & TECHNOLOGY

DEPARTMENT OF BIOLOGICAL & CHEMICAL SCIENCES

APPLICATION FOR RESEARCH PROJECT

NAME: ---

STUDENT ID NO: ---

RESEARCH PROJECT APPLIED FOR:- ---

BIOC3950 ❑ BIOL3950 ❑ CHEM3505 ❑ ECOL3950 ❑
MICR3950 ❑ ERSC3900 ❑

PROJECT CHOICES:-

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

Please indicate if you have ever completed a research project within the Department.

If "Yes", give the name of the project---

Signature----------------------------------- **Date** -----------------------------------

FOR DEPARTMENTAL USE

ACCEPTED FOR: 1st Choice ❑ 2nd Choice ❑ Neither ❑

STUDENT HAS NECESSARY PRE-REQUISITES: Yes ❑ No ❑

COMMENTS:

Proposed Supervisor

Laboratory Safety Regulations Agreement

1. I have received and read the **"Safety"** section on pages 14 & 15.
2. I agree to keep this safety section on hand in the laboratory and to abide by laboratory regulations and safety procedures.
3. I agree not to begin an experiment until I have studied and understood the purpose of the experiment, the procedures involved, and any particular hazards associated with the equipment and chemicals.
4. I understand that if I violate the laboratory regulations I may be asked to leave the laboratory.

7. I have given all important medical information to the coordinator of the course.

Emergency Contact Name and Number: ____________________________________

Printed Name: ____

Signature:__________________________________

Date:____

Course: ____

NB: Please return to Coordinator