

**Information and application packet for
Marine Biology 3682.03**

Tropical Marine Biology, April-May 2017

Please read the information contained in the attached documents (as numbered below) and contact Dr. Nancy McAllister-Irwin (email: irwinn@dal.ca, phone: 902-494-3818) if you have any questions. Dr. McAllister-Irwin will be your contact person for anything pertaining to this course:

- 1. Course poster**
- 2. MARI 3682.03 Syllabus with draft schedule for 2017**
- 3. Fee statement for MARI 3682**
- 4. Traveler information for Belize** (including health information from the CDCwebsite)
- 5. Pre-course check list** (what you need to do before the course starts)
- 6. Checklist of what to bring to Belize** (don't wait until the course starts to prepare)

To apply for this course, please 1) fill out the online SEASIDE application form and 2) send the forms in this packet to Dr. Nancy McAllister-Irwin, Co-instructor of MARI 3682, as soon as possible (space in the course is limited):

- 7. Acknowledgement of Risk Form**
- 8. Personal and Medical Information Form**

- The information in this form is confidential. You may wish to mail it (Nancy McAllister-Irwin, Biology Dept., Dalhousie University, 1459 Oxford Street, PO Box 15000, Halifax NS B3H 4R2, Canada) or hand-deliver it to me (office: LSC Biology wing, room 6130) or put in my mailbox in the Biology Department main office.
- If you are not accepted, the form will be destroyed. If you do take the course, the form will be destroyed after we return from Belize.

MARI 3682.03 - Dalhousie University summer course with a tropical field component

Tropical Marine Biology

April 27 – May 17, 2017

(Field Trip to Belize, May 8 –17)



A blue tang feeding on the reef

Spend time in Belize, Central America, in this hands-on course, studying tropical marine fish, coral reefs, seagrass and mangrove ecosystems

Mari 3682.03 course description: This course provides a practical introduction to tropical marine biology, including a multi-day field trip to tropical marine ecosystems (reef, mangrove, seagrass). Identification of species, ecological interactions and tropical marine conservation will be discussed. Evaluation includes, but is not limited to, lecture and field tests, presentations, field observations and reports.

Credits: 3 credit hours (equivalent to one semester-long course) at the third-year level

Cost: Tuition for a regular 3-credit hour Biology course PLUS an auxiliary fee to cover airfare, travel and living expenses in Belize (for details, please contact irwinn@dal.ca ; ph: 902-494-3818).

Prerequisites: Animal Diversity (BIOL 2003), and Introductory Ecology (BIOL 2060) or similar courses or instructor's permission. An introductory stats course would be useful, but not required.

Instructors: Dr. Margi Cooper (mhcooper@dal.ca), Dr. Nancy McAllister-Irwin (irwinn@dal.ca)



Further details: The first 10 days in Halifax will introduce students to coral reef, seagrass, and mangrove habitats, focusing on their interconnections and conservation. Identification of fish species and coral types will also be emphasized. We travel to Belize, spending 6 days at Billy Hawke Cay <http://www.billyhawkcaye.com/home.htm>, exploring patch reefs, seagrass beds, and mangrove ecosystems, and conducting student research projects. We will also tour Carrie

Bow Caye field station, operated by the Smithsonian <http://ccre.si.edu/CarrieBowCay/CarrieBowCay.html>, and perhaps swim with whale sharks in Gladden Spit. Our last day in Belize will be spent at the T.R.E.E.S. field station <http://treesociety.org/>, where students will complete work on final reports and field journals. Evaluation includes a lecture test, field quizzes, field journals, assignments, labs, student presentations and class projects.

To apply or request more information, please contact:
irwinn@dal.ca

Application deadline:
January 27, 2017

Course is offered through SEASIDE, Dalhousie University's summer field course program.

See: <http://seaside.science.dal.ca>



**DALHOUSIE
UNIVERSITY**

Inspiring Minds



Faculty of Science Course Syllabus
Department of Biology, SEASIDE Program
MARI 3682.03 Tropical Marine Biology
Summer 2017

Instructor(s): Margi Cooper mhcooper@dal.ca 902-494-8436 Room 4014
Nancy McAllister-Irwin irwinn@dal.ca 902-494-3818 Room 6130

Lectures and Labs: Classroom at Dalhousie April 27 – May 7 0905 – 1655 LSC 4012

Field Trip to Belize: May 8 - 17

Course Description

This course provides a practical introduction to tropical marine biology, including a multi-day field trip to tropical marine ecosystems (reef, mangrove, seagrass). Identification of species, ecological interactions and tropical marine conservation will be discussed. Evaluation includes, but is not limited to, lecture and field tests, presentations, field observations and reports.

Course Prerequisites

BIOL 2003 and BIOL 2060 or equivalent courses; or Instructor's permission. An introductory course in statistics and familiarity with spreadsheets (e.g. Excel) will be useful.

Course Objectives/Learning Outcomes

Students will be able to:

- Identify a variety of marine organisms
- Quantify marine habitats and relate them to wildlife species
- Apply problem solving and research skills
- Discuss marine conservation issues as they pertain to Belize

Course Materials

Required articles to read for discussion will be posted on the course website.

Humann, P., and N. DeLoach. 1995. Snorkeling Guide to Marine Life: Florida Caribbean Bahamas. New World Publications.

Additional Details

This course aims to provide students with a foundation in tropical marine biology and first-hand experience with related ecosystems in Belize. Students will learn through lectures, labs, readings, discussions, guided field trips, field exercises and research projects.

The first ten days will be spent in Halifax, with lectures and assignments focused on coral reef, seagrass, and mangrove habitats, as well as ecological interactions among these habitats. Species identification, marine conservation issues, and habitat monitoring protocols will also be emphasized. Students will participate in group discussions, labs and presentations and have a field trip to the pool to become familiar with sampling protocols underwater. There will be a lecture examination the last day in Halifax.

In Belize we will travel to TREES (Toucan Ridge Ecology and Education Society) and spend the first night there on our way to Dangriga where we will meet our boat to Billy Hawke Caye. On the cay, the class will

be intense and meet all day (typically more than 8 hours per day). See the tentative schedule for details of each day's activities. Note that the schedule may need to be modified due to weather and other unforeseen circumstances. We will explore the coral, seagrass, and mangrove ecosystems. There may be an opportunity to swim with whale sharks to observe behaviour. Fish species will be visually sampled over patch reef areas and compared to local data from previous years as part of a class project. A Reef Species ID quiz will take place prior to this sampling project. An additional class project monitoring levels of predation and herbivory at the patch reef sites is planned. We will spend 6 nights at Billy Hawke Caye, and then transfer back to TREES for a day on our way to the airport in Belize City.

Other class materials needed for Belize

- * Students will be provided with write-in-the-rain field notebooks to record observations and comments. To write in these field notebooks, we recommend using pencils. Bring several pencils and erasers.
- * To write lecture notes students should have notebook paper and a covered clipboard. Using a pencil is a good idea in case notes gets wet, and the covered clipboard should keep paper in better condition.
- * For the trip, students will be able to check out a fold-out pocket Belize field guide from Rainforest publications on Belize Marine Life (reef fish, marine mammals, sport fish, and sea turtles).
- * A small tablet (e.g., iPad or similar) or small portable computer would be helpful, but is not essential. One of these or a cell phone can be used for checking email when we have access to wireless. Keep in mind that wireless is not very reliable in Belize. Students should not expect to get or send a message at a certain time of day or even on a particular day.

Course policies

1. It is important to keep up with work. Late assignments will be deducted at a rate of 10% per day.
2. Attendance is mandatory. Students are expected to attend all lectures, other activities and field trips. Deductions will be made for unexcused absences (1% per day or 0.5% per half day). Excused absences include those for sickness or emergencies, but do NOT include those due to work or attending other classes. Please contact the instructor about any absences as soon as possible.
3. Students are expected to participate and to cooperate in all class activities and follow rules at the field station, field trip locations and those provided by the guides. Deductions may be made for students who do not follow the rules and therefore put themselves and others at risk.
4. Students MUST adhere to all safety guidelines presented. Whenever out of sight of the instructors or the field stations, students must stay in groups of 2 or more--AND inform the instructors of where they are going and when they plan to return. Life jackets will be worn at all times when travelling in boats. **For everyone's safety, consumption of alcoholic beverages is NOT permitted on the field trip. This is a university policy and cannot be ignored for any reason.**

Conversion of numerical grades to Final Letter Grades follows the Dalhousie Common Grade Scale

A+ (90-100)	B+ (77-79)	C+ (65-69)	D	(50-54)
A (85-89)	B (73-76)	C (60-64)	F	(<50)
A- (80-84)	B- (70-72)	C- (55-59)		

Course Assessment

<u>Component</u>	<u>Weight (% of total grade)</u>	<u>Date</u>
Tests		
Lecture Test	30	May 7
Reef Species ID Quiz	5	May 10
Class projects		
Patch Reef Fish Survey Report	20	May 16
Herbivory and Predation Report	5	May 16
Other		
Class participation	10	Throughout
Discussions	10	Various
Lab activities	7.5	Various
Presentations	7.5	May 1
Field Journal	5	May 15

Course component details

Lecture test

The class will have a test on lecture material from Dalhousie before leaving on the trip to Belize and will cover all the material from lectures up to that point in time.

Reef Species ID Quiz

While in Belize, a reef species ID quiz will assess students' ability to identify important components of the reef community.

Class projects

In Belize, students will conduct a survey of fish diversity and size in areas of patch reef around the caye. They will also monitor levels of herbivory and predation at the same patch reef sites. They will analyze the class data and make comparisons with previous fish surveys in the same or similar areas. Students will submit their individual papers on the final day of the course while in Belize.

Class participation:

Participation is encouraged and required for full marks and is based on performance in the following categories: participation in discussions led by other students, being on time for classes and field trips, working as an effective, safety-conscious team member, being engaged on field trips and overall participation in other components of the course.

Discussions

Students will lead a discussion on one or more articles on marine biology/ecology. Part of this assignment includes submitting discussion questions on the articles.

Lab work

There will be three assessments based on lab work – 1) benthic cover identification; 2) reef fish identification; 3) sampling techniques and size estimation.

Presentations

Students will create and deliver a presentation on one of the functional groups of reef fish (e.g. herbivores, detritivores, piscivores)

Course content and tentative schedule (subject to change)

Date	Day	Time	Activity
Apr 27	Thurs	09:05–10:25	Introduction to the course
		10:35-11:55	Lecture: Introduction to Mesoamerican Barrier Reef System
		1305-1455	Lecture: Coral reef habitat
		1505-1655	Lecture: Reef Ecosystem Functioning: Microbial and Sponge loops
		Evening	Read article 1
Apr 28	Fri	09:05-9:55	Discussion of article 1
		10:05-10:55	Lecture: Coral identification and coral health
		11:05-11:55	Lecture: Benthic organisms
		13:05-16:55	Lab: Coral health and benthic cover identification
		Evening	Read article 2
Apr 29	Sat	09:05-9:55	Discussion of article 2
		10:05-11:55	Introduction and discussion of functional group assignments
		13:05-16:55	Lab: Reef fish identification
		Evening	Read articles 3 and 4
Apr 30	Sun	Off	Independent work Preparation for functional group presentations
May 1	Mon	09:05-11:55	Presentations: Functional groups
		13:05-14:55	Discussion of articles 3 and 4
		15:05-16:55	Lecture: Seagrass habitat
		Evening	Read article 5
May 2	Tues	09:05-9:55	Discussion of article 5
		10:05-11:55	Lecture: Mangrove habitat
		13:05-13:55	Lecture: Crocodiles
		14:05-16:55	Lecture: Manatees
		Evening	Read article 6
May 3	Wed	09:05-9:55	Discussion of article 6
		10:05-11:55	Lecture: Marine conservation
		13:05-13:55	Lecture: Belize Fisheries: Lobster and Conch
		14:05-16:55	Lecture: Marine Protected Areas
		Evening	Read article 7
May 4	Thurs	09:05-9:55	Discussion article 7
		10:05-11:55	Lecture: Population assessment sampling
		13:05-13:55	Lecture and demonstration: Safety protocols with John Lindley
		14:05-16:55	In the pool: Lab - Sampling protocols and fish size estimation
		Evening	Read article 8
May 5	Fri	09:05-9:55	Discussion of article 8
		10:05-10:55	Lecture: Bottlenose Dolphins
		11:05-11:55	Lecture: Whale Sharks
		13:05-16:55	Study for final lecture exam
May 6	Sat	Off	Study for final lecture exam
May 7	Sun	09:05-11:55	Exam
		Afternoon	Final preparations and packing

Date	Day	Time	Activity
May 8	Mon	TBD	Meet at Halifax Stanfield International Airport – students should arrange their own transportation to the airport
		TBD	Overnight on the way to Belize
May 9	Tues	TBD	Arrive in Belize, clear customs, meet with the bus and travel to Dangriga. Meet boat and travel to Billy Hawke Caye; Possible afternoon snorkel orientation; Meet to discuss fish seen Prepare for Herbivory and Predation (H&P) experiments
May 10	Wed	08:00-9:00	Reef Species ID Quiz
		9:00-12:00	Site 1: Patch reef sampling and set up H&P experiment
		13:30-17:30	Site 2: Patch reef sampling and set up H&P experiment
		19:30-21:00	Data entry and group discussion of day's activities
May 11	Thurs	08:00-9:00	Site 1: H&P experiment data collection
		9:00-16:00	Tour of Carrie Bow Caye; Site 3: Patch reef sampling and set up H&P
		16:00-17:30	Site 2: H&P experiment data collection
		19:30-21:00	Data entry and group discussion of the day's activities
May 12	Fri	08:00-9:00	Site 3: H&P experiment data collection
		9:00-12:00	Site 4: Patch reef sampling and set up H&P experiment
		13:30-17:30	Seagrass habitat sampling
		19:30-21:00	Data entry and group discussion of the day's activities
May 13	Sat	08:00-9:00	Site 4: H&P experiment data collection
		9:00-12:00	Mangrove habitat sampling
		13:30-17:30	Work on data analysis and report
		19:00-20:00	Question and answer session with local fisherman
May 14	Sun	08:00-21:00	Whale shark photo-ID snorkel Drumming and goodbye dinner
May 15	Mon	TBD	Field Journal Due Return to Dangriga – spend an hour shopping Transfer to T.R.E.E.S. Work on final reports
May 16	Tues		Final Reports Due We will head to Belize City this day and be in Halifax the following day (May 17).

ACCOMMODATION POLICY FOR STUDENTS

Students may request accommodation as a result of barriers related to disability, religious obligation, or any characteristic protected under Canadian Human Rights legislation. The full text of Dalhousie's Student Accommodation Policy can be accessed here:

http://www.dal.ca/dept/university_secretariat/policies/academic/student-accommodation-policy-wef-sep-1--2014.html

Students who require accommodation for classroom participation or the writing of tests and exams should make their request to the **Advising and Access Services Centre (AASC)** prior to or at the outset of the regular academic year. More information and the **Request for Accommodation** form are available at www.dal.ca/access.

ACADEMIC INTEGRITY

Academic integrity, with its embodied values, is seen as a foundation of Dalhousie University. It is the responsibility of all students to be familiar with behaviours and practices associated with academic integrity. Instructors are required to forward any suspected cases of plagiarism or other forms of academic cheating to the Academic Integrity Officer for their Faculty.

The Academic Integrity website (<http://academicintegrity.dal.ca>) provides students and faculty with information on plagiarism and other forms of academic dishonesty, and has resources to help students succeed honestly. The full text of Dalhousie's **Policy on Intellectual Honesty** and **Faculty Discipline Procedures** is available here:

http://www.dal.ca/dept/university_secretariat/academic-integrity/academic-policies.html

STUDENT CODE OF CONDUCT

Dalhousie University has a student code of conduct, and it is expected that students will adhere to the code during their participation in lectures and other activities associated with this course. In general:

"The University treats students as adults free to organize their own personal lives, behaviour and associations subject only to the law, and to University regulations that are necessary to protect

- the integrity and proper functioning of the academic and non – academic programs and activities of the University or its faculties, schools or departments;
- the peaceful and safe enjoyment of University facilities by other members of the University and the public;
- the freedom of members of the University to participate reasonably in the programs of the University and in activities on the University's premises;
- the property of the University or its members."

The full text of the code can be found here:

http://www.dal.ca/dept/university_secretariat/policies/student-life/code-of-student-conduct.html

SERVICES AVAILABLE TO STUDENTS

The following campus services are available to help students develop skills in library research, scientific writing, and effective study habits. The services are available to all Dalhousie students and, unless noted otherwise, are free.

Service	Support Provided	Location	Contact
General Academic Advising	<p>Help with</p> <ul style="list-style-type: none"> - understanding degree requirements and academic regulations - choosing your major - achieving your educational or career goals - dealing with academic or other difficulties 	<p>Killam Library Ground floor Rm G28 Bissett Centre for Academic Success</p>	<p>In person: Killam Library Rm G28</p> <p>By appointment:</p> <ul style="list-style-type: none"> - e-mail: advising@dal.ca - Phone: (902) 494-3077 - Book online through MyDal
Dalhousie Libraries	<p>Help to find books and articles for assignments</p> <p>Help with citing sources in the text of your paper and preparation of bibliography</p>	<p>Killam Library Ground floor</p> <p>Librarian offices</p>	<p>In person: Service Point (Ground floor)</p> <p>By appointment:</p> <p>Identify your subject librarian (URL below) and contact by email or phone to arrange a time:</p> <p>http://dal.beta.libguides.com/sb.php?subject_id=34328</p>
Studying for Success (SFS)	<p>Help to develop essential study skills through small group workshops or one-on-one coaching sessions</p> <p>Match to a tutor for help in course-specific content (for a reasonable fee)</p>	<p>Killam Library 3rd floor</p> <p>Coordinator Rm 3104</p> <p>Study Coaches Rm 3103</p>	<p>To make an appointment:</p> <ul style="list-style-type: none"> - Visit main office (Killam Library main floor, Rm G28) - Call (902) 494-3077 - email Coordinator at: sfs@dal.ca or - Simply drop in to see us during posted office hours <p>All information can be found on our website: www.dal.ca/sfs</p>
Writing Centre	<p>Meet with coach/tutor to discuss writing assignments (e.g., lab report, research paper, thesis, poster)</p> <ul style="list-style-type: none"> - Learn to integrate source material into your own work appropriately - Learn about disciplinary writing from a peer or staff member in your field 	<p>Killam Library Ground floor Learning Commons & Rm G25</p>	<p>To make an appointment:</p> <ul style="list-style-type: none"> - Visit the Centre (Rm G25) and book an appointment - Call (902) 494-1963 - email writingcentre@dal.ca - Book online through MyDal <p>We are open six days a week</p> <p>See our website: writingcentre.dal.ca</p>

Fee statement for MARI 3682.03 (prepared December 2, 2016)

Tuition

This course is worth **3 credit hours** of upper-level Marine Biology (equivalent to a full-semester course). Therefore, the tuition is the same as that of a regular one-term, semester-long, 3-credit hour course at Dalhousie University.

Auxiliary fees

The auxiliary fee for this course is tentatively **\$2955**, pending approval.

This auxiliary fee will cover all transportation, including airfare and trip cancellation insurance, travel expenses in Belize, including charter bus for land transport, charter boat for water transport, three meals a day, accommodations, supplies (field notebooks and field guides), and most field equipment. If we have to stay in a hotel enroute between Halifax and Belize, this will also be covered.

Accommodations and meals will be provided at several sites. Our home base is Billy Hawke Caye, where we will stay in bunkhouses. We will also spend two nights at the field station operated by the Toucan Ridge Ecology and Education Society (T.R.E.E.S.) where we will also stay in bunkhouses.

The Canadian dollar has lost value compared to the US dollar, which increases the course expenses, most of which are in US dollars. This amount is tentative until approved by the university.

Deposit

The deposit for this course is tentatively **\$1000**, pending approval, and is **due February 7, 2017**. We anticipate this approval will be made before registration. If the fees and deposits are not yet approved, there may be a delay in time of registration. You will be notified by email when it is time to pay.

The deposit will allow us to purchase return air tickets from Halifax to Belize and with the ticket, trip cancellation insurance, which is required of all Dalhousie students who take a class out of the country. In most cases, this deposit is non-refundable. The deposit paid will be credited to the auxiliary fee for the course.

Items not covered by auxiliary fees

Baggage fees and any meals between Halifax and Belize are not covered. You will need to pay for any laundry services, snack food, and souvenirs.

Students are expected to obtain (purchase or borrow) all of the items listed on the Checklist of what to bring for Belize field course. Ask Nancy McAllister-Irwin irwinn@dal.ca if you have any questions.

Pre-course Check List for Mari 3682 (Belize field course)

1. Read the course syllabus and ask the instructors about any questions you have.
2. **READ** and sign “Acknowledgment of Risk” form and give it to Nancy McAllister-Irwin (remember you must have it witnessed – the witness must sign the form as well)
3. Obtain passport or check that your current passport is good for 6 months or more beyond the return travel date – make copies and leave a copy with someone remaining in Canada
4. Obtain international travel health insurance (this is required for Dalhousie students). Check to see if you have coverage under your parent’s policy. If not, the Dalhousie International Student Centre can tell you how to purchase it (one example is an online application with Medavie-Blue Cross)
5. If you are an international student, check if you need a transit visa. There will be a stop in the USA to transfer planes
6. Once you have done the above, fill out the Personal and Medical Information form and bring to Nancy McAllister-Irwin (LSC 6130)
7. Pay your \$1000 deposit for the course at Student Accounts when notified by Nancy or Margi that Students Accounts is ready to take your deposit. This will ensure your seat in the course. If you pay online, e-mail student.accounts@dal.ca that you have paid the deposit for MARI 3682; otherwise it will appear as a credit on your account.
8. Look into whether you are eligible for funding through the Study/Work International Fund (SWIF). We strongly encourage you to take advantage of this opportunity as it can offset the costs considerably. The application is due at the International Center at least 30 days prior to leaving – start the application by March 1, as there may be information required from your parents. Applications can be found here http://www.dal.ca/campus_life/student_services/international-centre/dalstudentsgoingabroad/financial-support/study-work-international-fund.html
9. Attend a pre-departure orientation course with the International Student Center that we will organize for you.
10. See your doctor (or travel health clinic) for any vaccinations or medications you may need no later than March 1
11. Pay the remainder of your auxiliary fee at Students Accounts when asked to do so
12. Check that you have all of the items on the “what to bring checklist” list

Traveler information for Belize

ENTRY INFORMATION

Government of Canada information: <http://travel.gc.ca/destinations/belize>

Canadians must present a passport to visit Belize, which must be valid for at least six months beyond the date of expected departure from Belize. Canadians do not need a tourist visa to visit Belize.

All visitors to Belize must possess a ticket for an onward or return journey.

Belize country information: <https://www.belize.com/belize-visa>

This website indicates which countries require more than a passport. For example, a Visitor Permit is required of nationals of China and India. You can check with the local Belizean Consulate, Belize Embassy, British Counsel, or contact the Department of Immigration and Nationality, Belmopan, Belize, Central America. *Telephone: (501-8-22611).*

Transit visas:

Most flights from Canada to Belize connect in the USA. Citizens of some countries outside of Canada and the USA may need transit visas for flights that connect in the USA. For more information, see: <https://ca.usembassy.gov/visas/>

Belize allows visitors a maximum of one month's stay in the country before they require an extension obtained through the Belize Ministry of Defense and Immigration. Longer stays can be granted on a monthly basis for ~ \$25 US per month, up to 6 months.

TRAVEL HEALTH INFORMATION

Government of Canada:

Consult a health care provider or visit a travel health clinic preferably six weeks before you travel. See the following webpages for more information:

<http://travel.gc.ca/destinations/belize>

Centres for Disease Control (CDC): <http://wwwnc.cdc.gov/travel/destinations/traveler/none/belize>

Travelers should ensure that their routine immunizations are up to date. These include measles-mumps-rubella (MMR) vaccine, diphtheria-tetanus-pertussis vaccine, varicella (chickenpox) vaccine, polio vaccine, and your yearly flu shot. For a schedule of recommended routine immunizations see:

<http://www.cdc.gov/vaccines/schedules/downloads/adult/adult-schedule-easy-read-bw.pdf>

Recommended travel vaccines for Belize specifically include:

- Hepatitis A
- Typhoid
- Hepatitis B
- Malaria (optional – see next page)

Malaria is a low risk in the parts of Belize we will visit. Malaria in Belize is almost exclusively the less severe *Plasmodium vivax* but chemoprophylaxis with chloroquine, mefloquine, atovaquone/proguanil or doxycycline may be considered. The decision about whether to take anti-malarial medication should be made by consulting your physician.

Malaria, Dengue, and Chikungunya are mosquito-borne diseases present in some parts of Belize. To prevent mosquito bites, it is important to cover exposed skin by wearing long-sleeved shirts, long pants, and hats.

Products with one of the following active ingredients can also help prevent mosquito bites. Higher percentages of active ingredient provide longer protection.

- DEET
- Picaridin (also known as KBR 3023, Bayrepel, and icaridin. Products containing picaridin include Cutter Advanced, Skin So Soft Bug Guard Plus, and Autan)
- Oil of lemon eucalyptus (OLE) or PMD (Products containing OLE include Repel and Off! Botanicals)
- IR3535 (Products containing IR3535 include Skin So Soft Bug Guard Plus Expedition and SkinSmart)

Zika virus

The latest information on the Zika virus can be found here:

<https://travel.gc.ca/travelling/health-safety/travel-health-notice/152>

Although Belize is not directly listed, nearby Guatemala is, as is Mexico in another report from November 2015. To avoid exposure to Zika (as well as malaria and dengue fever), take precautions against mosquito bites. Use mosquito head nets, bed nets, wear long pants, long sleeves, socks, shoes, insect repellent; treat clothing with permethrin. If you are pregnant you are advised to avoid traveling to areas that have the virus.

Checklist of what to bring for Belize field course

Pack light, but bring everything you may need. Goods purchased in Belize may be much more expensive and of inferior quality to those you are accustomed to purchasing. Remember, you will be limited to one checked bag on most American airlines and two small carry-on bags. We recommend packing light clothes. We recommend gear and clothes that dry quickly, either the wetness of the rainy season or the coastal humidity causes things to go moldy rapidly. Long pants and long-sleeved shirts are great at keeping the biting flies and sunburns away.

There are some thefts in Belize; while most incidents are in Belize City and crime is not directly targeted at tourists, we recommend that you take the usual precautions. The first tip is to not look flashy. Don't flaunt nice watches, purses, etc. Always carry your money and passport on your person when travelling.

Make a photocopy of the photo page of your passport and keep this in a separate place from your actual passport. This can aid in getting a new passport should you lose yours. Bring your driver's licence but leave your school ID and unnecessary credit cards at home. If it is difficult to replace, if you don't need it, or if you can't afford to lose it, leave it at home.

- **Passport** (and a photocopy, as well as a picture of the relevant pages on your cell phone), **driver's license** or other ID, **bank card** or **credit card** (for emergencies or souvenirs), and some **cash** (US or Belize dollars to buy sodas, snacks, laundry service, supplies, souvenirs)
- **Waterproof field notebook** (will be provided to you before departure) and pencils for writing in it
- **Water resistant day pack** for field work (to carry water, hat, sunglasses, field book and gear, first aid kit, rain jacket etc.)
- **Headlamp** and spare **batteries** (for night walks, early mornings, toilet trips at night, etc.)
- **Insect repellent** (see Traveler Information for Belize)
- **First aid kit**, personal size, that you will carry with you at all times
- **Safety whistle** (pea-less type, such as a FOX 40 Classic or Sharx will be provided to you before departure)
- **Drinking water containers** (e.g., 1-L bottle and/or a hydration system that fits in your backpack)
- **Sneakers** and appropriate **socks** (for when you want closed shoes)
- **Hiking sandals** (such as Keens or Tevas) that can be used in water
- **Rain jacket** (our trip coincides with late dry season/early rainy season; expect some downpours)
- **Warm top** (one sweatshirt or fleece for cool nights/mornings)
- **Long pants** (2-3 pairs; preferably light, quick-dry material with a tight-weave)
- **Long-sleeved shirts** (2-3; quick-dry, wicking; tight-weave shirts are best for avoiding mosquito bites)
- Other **summer clothes** (shorts and T-shirt, tank top) and **underwear** (at least a week's worth)
- **Swim suit(s)**, **beach towel**, and **long-sleeved sunguard top** (or t-shirts) to prevent sunburn when swimming
- **Snorkel gear**: mask, fins, snorkel, vest
- **Hat with a brim**, **sunglasses**, **sunscreen**, and **lip balm with sunscreen**
- **Prescription medicines and medical supplies (as they apply to you)**. Make sure you bring enough to last the entire trip as well as any potential travel delays.
 - **Your prescriptions**
 - **Antibiotics** - for possible infection (especially if you are prone to infections)
 - **Travelers' diarrhea** antibiotic (optional – see your doctor or travel health clinic)
 - **Suture/syringe kit** (for use by local health care provider; requires a letter from your doctor on letterhead stationery)
 - **Glasses and/or Contact lenses** - Consider packing spares in case yours are damaged

- **Diabetes testing supplies**
- **Insulin**
- **Inhalers**
- **Epinephrine auto-injectors (EpiPens)**
- **Medical alert bracelet or necklace**
- **Over-the-counter medicines and supplies to prevent illness or reduce discomfort**
 - **Antacid**
 - **Diarrhea medicine** (e.g., loperamide [Imodium] or bismuth subsalicylate [Pepto-Bismol])
 - **Oral rehydration salts** - these can be purchased at a pharmacy (e.g., gastrolyte)
 - **Antihistamine**
 - **Motion sickness medicine**
 - **Cough drops**
 - **Cough suppression/expectorant**
 - **Decongestant**
 - **Medicine for pain and fever** (e.g., acetaminophen, aspirin, or ibuprofen)
 - **Mild laxative**
 - **Mild sedative or other sleep aid**
 - **Saline nose spray**
 - **Bed net** - For protection against insect bites while sleeping
 - **Bug head net or bug jacket** – to keep away biting insects
 - **Earplug**
- **First-aid kit**
 - **1% hydrocortisone cream**
 - **Antifungal ointments**
 - **Antibacterial ointments**
 - **Antiseptic wound cleanser**
 - **Aloe gel** - For sunburns
 - **Insect bite treatment - Anti-itch gel or cream**
 - **Bandages - Multiple sizes, gauze, and adhesive tape**
 - **Moleskin or molefoam** - for blisters
 - **Elastic/compression bandage wrap** - for sprains and strains
 - **Disposable gloves**
 - **Digital thermometer**
 - **Scissors and safety pins**
 - **Cotton swabs (Q-Tips)**
 - **Tweezers**
 - **Eye drops**
- **Documents**
 - **Health insurance documents** - Health insurance card (your regular plan and supplemental travel health insurance plan) and copies of claim forms
 - **Copies of all prescriptions** - Make sure prescriptions include generic names. Bring prescriptions for medicines, eye glasses/contacts, and other medical supplies.
 - **Contact card** - Carry a contact card containing the street addresses, phone numbers, and e-mail

addresses of the following:

- Family member or close contact at home
- Health care provider(s) at home
- Lodging at your destination
- Hospitals or clinics (including emergency services) in your destination
- Embassy or consulate in the destination country or countries

- **Toiletries and related items**

- Towel, soap, shampoo/conditioner, toothbrush, toothpaste, hair brush/comb, hair ties, head band; bandana; hand sanitizer; bags to organize your stuff (e.g., ziplock bags, grocery bags)

- **Optional items**

- Camera with telephoto lens; tablet and/or smartphone/small computer (to access the web); headphones; power cords for your electronics; a good book to read, for those off times; any foods you can't live without (but remember there may be restrictions on what you can bring into the country)

Additional notes: Our drinking water will be filtered for purification, so you do not need to bring purification pills or equipment. Most places we will stay will have flush toilets and showers. T.R.E.E.S. has a laundry service (\$5 US per load). There are no convenience stores near any place we will stay, so don't expect to be able to get to one.

DALHOUSIE UNIVERSITY
ACKNOWLEDGMENT OF RISK

This document must be read and signed before you may take part in the event described below. The purpose of the document is to inform you of the risks inherent in participating in this event. By completing and signing this document, you acknowledge that you agree to and understand the terms below.

Participant's Name (Please print): _____

IN CONSIDERATION of being permitted to participate in the MARI 3682.03: Tropical Marine Biology Trip to Belize in May 2017, I understand and agree that:

1. I will not consume alcohol or illegal substances at any time during the Trip;
2. I am responsible for being on time to travel to and from Belize and for all travel within Belize and I acknowledge that my group may leave without me if I am not on time;
3. The Trip will include, but is not limited to, travel to and from various locations and wilderness sites within Belize, as are described in the Itinerary provided to me;
4. Although Dalhousie will endeavor to provide appropriate supervision, I recognize that there is an element of risk of injury in any activity associated with the outdoors. Injuries may result from, without limitation, traffic accidents, weather conditions, rough terrain, water-related accidents, the consumption of food or beverage, bodily contact with other persons, equipment malfunction, physical contact with insects and/or wildlife (including scorpions, tarantulas, and snakes), sunburns, slipping, tripping or falling, falling objects such as rocks, trees and branches, and/or other hazards inherent to the environment of the Trip;
5. I understand that all applicable rules for participation must be followed. My course instructor is not a professional leader, guide, or licensed first aid attendant. At all times during the Trip, the sole responsibility for my personal safety rests with me;
6. I will immediately notify my Dalhousie instructors who are attending the trip if at any time I observe any hazard or unsafe condition or I feel that I have experienced any deterioration in my physical, emotional or mental fitness, for continued safe participation in the Trip;
7. I understand and acknowledge that Dalhousie assumes no liability for personal injuries or property damage to me or third persons arising out of the Trip, except to the extent that liability is imposed by law. I agree to indemnify and to save Dalhousie harmless from any liability arising out of acts or omissions by me during the Trip, subject to any limitations against indemnification that are imposed by law; and
8. I declare that I am over the age of 19 and have read, understood and agree to the contents of this Acknowledgment of Risk document in its entirety and I sign it freely and voluntarily without any inducement.

Participant Signature: _____ Date: _____

Witness Signature: _____ Date: _____

PERSONAL AND MEDICAL INFORMATION FORM – Dalhousie University - MARI 3682.03

Full name of traveler (exactly as listed on passport): _____

Nationality & passport Number: _____

Passport expiration date: _____

Home address (as appears on Passport): _____

Local address: _____

Phone: _____ Email: _____

Tell us a bit about yourself: Your strengths, experience with groups, and reasons for applying to this course.

What are your expectations and hopes for this experience? What skills might you be able to offer to the group?

Tell us about your past travel experiences, either alone, with family, or with groups. Please indicate location, duration, year of travel, and who you traveled with.

Do you have first aid training? If so, what level? _____

Do you have any swimming certification? If so, to what level? If not, please describe your ability/comfort in the water.

Please provide the name and contact information of two referees who can be contacted to submit a reference on your behalf. Referees must not be related to the applicant, and one referee must be an academic reference. Applicants must make sure that their referees are aware they may be contacted.

Academic Referee:

Second Referee:

The following information will be used only for medical purposes, such as in the case of an emergency, on this trip. This form will be destroyed following the trip. Please use additional paper if required.

Emergency Contact(s) (Please list more than one if necessary)

Name & relationship to you: _____

Phone: _____

Home Address: _____

Medical Insurance Information - Provincial medical insurance: _____

Additional medical Insurance & policy#: _____

Primary care physician name & phone: _____

Allergies - Do you have any allergies? _____ If so, please indicate allergy and how serious the reaction:

Allergy:	Severity of Reaction:	Medication:	Yes	No
Allergy:	Severity of Reaction:	Medication:	Yes	No
Allergy:	Severity of Reaction:	Medication:	Yes	No

Diet - If you have any special dietary needs, please provide details: _____

Medical Conditions - Do you have any medical condition that could impact your participation in the trip or which otherwise requires special precautions, preparations or treatment? _____ Yes _____ No

If yes, please describe condition and indicate what you may require in the event of a medical emergency.

Please list any medications which may need to be taken in the event of a medical emergency and describe procedures for administering medication(s): _____

Other health issues (e.g., recent illness, surgery, joint problems) that your instructors should be aware of:

I certify that the above information is correct and complete to the best of my knowledge.

SIGNATURE _____ DATE _____