

Call for Applications
**Summer Field Course “Introduction to Field Oceanography”
In the North Atlantic (Halifax, Canada)**
Supported by the Schulich Ocean Studies Initiative



The Schulich Ocean Studies Initiative

The Schulich Ocean Studies Initiative is a new collaboration supported by The Schulich Foundation which brings together marine scientists and researchers from Israel and Dalhousie University in Canada to undertake joint marine research projects, student internships and field courses in both countries (<http://www.iui-eilat.ac.il/SchulichInitiative/Default.aspx>). The differing ocean environments of the Red Sea and the North Atlantic, together with similar phenomena (strong vertical mixing, spring blooms, animal migration and dispersal among rich benthic communities, etc.), as well as shared interests and expertise among Dalhousie and Israeli researchers in both basic marine science and aquaculture, indicate a high potential for innovative science.

Course description (see Syllabus below)

This course is intended for upper level undergraduate students. The maximum number of students is 24, eight of whom will come from Israeli universities. Prerequisites for the course include an introductory oceanography course or other introductory courses in natural sciences.

Class will meet six days a week for 14 days. Class will last the entire day and is split into a morning and afternoon session, each lasting about three hours. Sessions are spent either on the water, in the lab, or at a lecture. Students will possess a basic knowledge on biological oceanographic processes and how these processes interact with the Ocean's physical and chemical environment. Outstanding problems currently facing biological oceanographers will be discussed, as well as current attempts and methodologies to address them. The focus of the course is largely field based, on small vessels operating in Bedford Basin, Halifax Harbour, Canada. Students will learn to use modern sea-going equipment to approach hypothesis-driven oceanographic problems. Laboratories will focus on analysis of samples and data from this local marine environment. Students will demonstrate their accomplishment of these

objectives by satisfactory performance in writing a group scientific manuscript based on the results from the field experiments, and by satisfactory participation in at-sea activities and class discussion. Students will present their work in a group-written scientific manuscript.

Scope

This call is made to solicit applications for the above described course being offered as an accredited course at each of the seven participating universities in Israel through the Interuniversity Institute for Marine Sciences in Eilat (IUI). This fully funded opportunity will cover the costs of travel, accommodation, food, and extra course costs. Students must have valid health insurance which covers international travels. The course will be hosted by Dalhousie University, Halifax, Canada.

Course dates:

Monday, 27 July 2015 – Tuesday, 11 August 2015

Eligibility

The course is open only for registered, upper year undergraduate students and MSc students at the first year of study from any Israeli university or college with background in ocean sciences, marine biology, or other physical sciences. High level proficiency in English (speaking, reading, and writing) is mandatory. Preference will be given to students who plan to continue or are studying for a higher degree in any field of marine sciences.

Application Process

Interested eligible students are asked to complete the [application form](#), to be submitted with a CV and a list of courses taken at the university and their grades. Letters of recommendation are optional and should be directly sent by the recommending person(s) to Dr. Simon Berkowicz (simonb@mail.huji.ac.il).

Selection Process

Eight students will be selected for the 2015 course. Applications will be evaluated based largely on academic success and the applicant's suitability for the program. The selection panel will consist of professors and administrators participating in the Schulich Initiative.

Timeline

Deadline for applications: Monday, 2 March 2015

Interviews of shortlisted applicants via Skype (optional): Wednesday, 4 March 2015

Decision: Sunday, 8 March 2015

Course Offering: 27 July-11 August 2015

Contact information for Israeli applicants:

Dr. Simon Berkowicz, International Projects Coordinator, The Interuniversity Institute for Marine Sciences of Eilat, E-mail: simonb@mail.huji.ac.il , Tel. 054-8820-073

Syllabus

Dalhousie University
Department of Oceanography
OCEA 3003.03, BIOL 3003.03, MARI 3003.03

Introduction to Field Oceanography

Summer 2015

July 27-August 11, Su-F 08:30-16:30

Course Description

This course is 3 credit hours and is intended for 3rd and 4th year undergraduates. The maximum number of students is 24; this number is firm as it is based on the capacity of the vessel we use. Prerequisites for the course include an introductory oceanography course (e.g., OCEA 2000) or other introductory courses in natural sciences.

Class meets six days a week for 14 days. Class will last the entire day and is split into a morning and afternoon session, each lasting about three hours. Sessions are spent either on the water, in the lab, or at a lecture. When out on the water we will be operating on a small vessel in Halifax Harbour and Bedford Basin. Students will use a variety of instruments to collect data and samples in the field. Back in the lab, students will analyze the samples collected and workup their data. Lectures will provide background information necessary to interpret the data. Students will present their work in a group-written scientific manuscript.

Course Objectives

At the conclusion of this course, students should possess a basic knowledge of field methods used across the breadth of ocean science disciplines. This is a hands-on class and focuses on how we study the ocean and interpret data as oceanographers. Basic concepts in seamanship will be introduced and students will participate in data and sample collection and analysis. In this course, students will gain experience in field sampling methods, using oceanographic instruments, performing laboratory procedures, analyzing data, writing scientific reports, and working in collaboration with others.

Required Text

This class uses a custom lab manual that will be provided to students.

Content Delivery

Students must have access to a computer (preferably a notebook or other portable device) to complete the required work. Additionally, data and other files will be shared online.

Course Requirements and Assessment

Assessment	Weighting
Participation	40%
Manuscript	60%
Total	100%

Participation

Students will be assessed on their active involvement in sea-going, laboratory, and discussion activities. This includes satisfactory demonstration of learned seamanship skills such as knot tying and knowledge of vessel safety and emergency procedures.

Manuscript Students will be assessed on their contribution to a group-written scientific manuscript. The manuscript should include all data collected during the course and should be written in the style of the journal *Limnology and Oceanography*. *Literature review should supplement the background and discussion sections. The manuscript is due before midnight on August 13, 2015, and can be submitted by email to laura.degelleke@dal.ca in Microsoft Word, Google Docs, or PDF format.*

Late Work

Manuscripts will be penalized 10% per day past the due date to a maximum of three days. Manuscripts submitted more than three days late will not be accepted.

Attendance Policy

Students are required to be in class. An unapproved absence will result in a deduction to the participation portion of a student's assessment. Students should inform their instructor of any absence due to illness or emergency as soon as possible.

Academic Integrity

Dalhousie provides policies and procedures that every member of the university community is required to follow to ensure academic integrity. We must all work together to prevent academic dishonesty because it is unfair to honest students. The following are the ways that you will achieve academic integrity in this class.

- Make sure you understand [Dalhousie's policies on academic integrity](#) .
- Contribute equally to the work done by your group.
- Do not falsify data or lab results.
- Use citations and give credit where credit is due.
- Sharing data, figures, etc., is acceptable if the collaboration is clearly indicated
- If you are unsure about any aspect the academic integrity policy, contact your instructor or TA.

Student Accessibility and Accommodation

Students may request accommodation as a result of barriers related to disability, religious obligation, or any characteristic under the Nova Scotia Human Rights Act. Students who require academic accommodation for either classroom participation or the writing of tests, quizzes and exams should make their request to the Office of Student Accessibility and Accommodation (OSAA) prior to or at the

outset of each academic term (with the exception of X/Y courses). Visit the [Accessibility website](#) for more information and to obtain *Form A - Request for Accommodation*.

Provisional Course Schedule

Date	Day	Session	Type	Activities and Topics
27-JUL	M	AM	Lab	Course introduction
		PM	Field	Field introduction and natural history
28-JUL	Tu	AM	Field	Bathymetry and CTD casts
		PM	Lab	Bathymetry mapping
29-JUL	W	AM	Lecture	Physical background
		PM	Lab	CTD data plotting
30-JUL	Th	AM	Field	Optical measurements and water sampling (Niskin bottles)
		PM	Lab	Nutrients
31-JUL	F	AM	Lecture	Optics, phytoplankton, and nutrients
		PM	Lab	Secchi disk and PAR meter data analysis
1-AUG	Sa		NO CLASS	
2-AUG	Su	AM	Field	Phytoplankton and pigment samples (Niskin bottles), plankton net tows, deploy sediment traps
		PM	Lab	Plankton microscopy
3-AUG	M	AM	Lecture	Respiration, grazing, BOD
		PM	Lab	Pigment analysis
4-AUG	Tu	AM	Field	Deploy BOD bottles, benthic grabs, sediment coring
		PM	Lab	Sediment sample processing
5-AUG	W	AM	Field	Recover BOD bottles, recover sediment traps, sediment coring
		PM	Lab	Oxygen measurements, sediment sample processing
6-AUG	TH	AM	Lecture	Vertical flux and benthos
		PM	Lab	Sediment sample processing
7-AUG	F	AM	Lecture	Biogeochemistry and sediment cores
		PM	Lab	Open lab for catch-up
8-AUG	Sa		NO CLASS	
9-AUG	Su	AM	Lecture	Fish and fisheries, marine mammals
		PM	Lab	Data analysis and writing
10-AUG	M	AM	Field	Fish and marine mammals, passive acoustics
		PM	Lab	Data analysis and writing
11-AUG	Tu		OPEN CLASS	Work on manuscripts
12-AUG	W		NO CLASS	Work on manuscripts
13-AUG	Th		NO CLASS	MANUSCRIPTS DUE before midnight!