

Faculty of Science Course Syllabus
Department of Oceanography
OCEA 3003.03/BIOL 3003.03/MARI 3003.03
Introduction to Field Oceanography
Summer 2016
July 25 – August 9, Su-F 08:00-17:00

| | | | |
|---------------------|--------------------|--|-----------|
| Instructors: | Laura deGelleke | laura.degelleke@dal.ca | LSC O3621 |
| | Marlon Lewis | marlon.lewis@dal.ca | LSC O2616 |
| Lecture: | 6 x 4 hr sessions | LSC Biology Lounge (5 th floor) | |
| Lab: | 14 x 4 hr sessions | LSC B4012 | |
| Field: | 8 x 4 hr sessions | Jubilee Road Pier | |

Course Description

This course explores relationships between living organisms in the sea and the ocean environment. Biological processes are introduced in the context of the physical, chemical, and geological oceanography. The course emphasis is on sea-going field work and includes day trips in local marine waters and hands-on laboratory investigation.

Course Prerequisites

This course is intended for 3rd and 4th year undergraduates. Prerequisites for the course include an introductory oceanography course (e.g., OCEA 2000.06 – The Blue Planet) or other introductory courses in natural sciences.

Course Objectives/Learning Outcomes

1. Operate various common oceanographic instruments and equipment safely and effectively at sea and in the laboratory.
2. Analyse oceanographic samples in the laboratory using common techniques and protocols.
3. Explore data and samples collected and synthesize to identify trends.
4. Apply concepts introduced in the classroom to interpret data and samples collected.
5. Compare data and samples collected with those cited in published works.
6. Present data and sample analyses in written format using figures and tables.
7. Assess efficacy of sampling operations and offer suggestions for future work.

Course Materials

- There is no required text for this course; students will be provided with handouts.
- Students must have access to a computer to complete the required work. Additionally, data and other files will be shared online.
- Students should dress appropriately for field activities and bring drinking water. Be prepared for the weather as there is limited shelter on the boat. **Closed-toe shoes required.**

Course Assessment

| Component | Weight (% of final grade) | Due Date |
|---------------|---------------------------|---------------------------------|
| Participation | 26% | 2% per day |
| Exams | 24% | August 9, 2016 before midnight |
| Manuscript | 60% | August 11, 2016 before midnight |

Participation

Students will be assessed on their active involvement in field and laboratory activities as well as lecture discussion. Students must also satisfactorily demonstrate seamanship skills such as knot tying and knowledge of vessel safety and emergency procedures.

Exams

Students will complete online exams on course content from both lecture and field sessions. Exams are to be completed individually within the allotted time. All exams must be completed by midnight on the last day of class. No late exams will be accepted.

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 must be submitted by email to laura.degelleke@dal.ca in Microsoft Word, Google Docs, or PDF format.

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 Policies

- Late manuscripts will be penalized by 10% per day. No late manuscripts will be accepted after August 14, 2015.
- All absences will be penalized unless prearranged or proof of illness or emergency is provided. Students should inform the instructor(s) of any absence as soon as possible.

Course Structure

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 four hours with breaks. There will be a minimum of one hour for lunch between sessions. Sessions are spent either in the field, 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.

Provisional Course Schedule

| Date | Day | Session | Type | Activities and Topics |
|--------|-----|---------|------------|--|
| 25-JUL | M | AM | Lab | Course introduction, safety briefing, natural history |
| | | PM* | Field | Field introduction, safety briefing, bathymetry |
| 26-JUL | Tu | AM | Field | CTD casts |
| | | PM | Lab | Bathymetry mapping |
| 27-JUL | W | AM | Lecture | Physical background |
| | | PM | Lab | CTD data plotting |
| | | eve‡ | BBQ | Get to know your classmates and instructors! |
| 28-JUL | Th | AM | Field | Optical measurements and water sampling (Niskin bottles) |
| | | PM | Lab | Nutrients |
| 29-JUL | F | AM | Lecture | Optics, phytoplankton, and nutrients |
| | | PM | Lab | Secchi disk and PAR meter data analysis |
| 30-JUL | Sa | | NO CLASS | |
| 31-JUL | Su | AM | Field | Phytoplankton and pigment samples (Niskin bottles), plankton net tows, deploy sediment traps |
| | | PM | Lab | Plankton microscopy |
| 1-AUG | M | AM | Lecture | Respiration, grazing, BOD |
| | | PM | Lab | Pigment analysis |
| 2-AUG | Tu | AM | Field | Deploy BOD bottles, benthic grabs, sediment coring |
| | | PM | Lab | Sediment sample processing |
| 3-AUG | W | AM | Field | Recover BOD bottles, recover sediment traps, sediment coring |
| | | PM | Lab | Oxygen measurements, sediment sample processing |
| 4-AUG | Th | AM | Lecture | Vertical flux and benthos |
| | | PM | Lab | Sediment sample processing |
| 5-AUG | F | AM | Lecture | Biogeochemistry and sediment cores |
| | | PM | Lab | Open lab for catch-up |
| 6-AUG | Sa | | NO CLASS | |
| 7-AUG | Su | AM | Lecture | Fish and fisheries, marine mammals |
| | | PM | Lab | Data analysis and writing |
| 8-AUG | M | AM | Field | Fish and marine mammals, passive acoustics |
| | | PM | Field | McNabs Island, swimming |
| | | eve‡ | BBQ | Celebrate your accomplishments! |
| 9-AUG | Tu | | OPEN CLASS | Work on manuscripts |
| 10-AUG | W | | NO CLASS | Work on manuscripts |
| 11-AUG | Th | | NO CLASS | MANUSCRIPTS DUE before midnight! |

* boat departs @ 10:30; bring lunch, etc.

‡ optional

Field: Boat departs @ 08:00 from Jubilee Road Pier (unless noted otherwise)

Lecture: AM start @ 08:30

Lab: PM start following lecture @ 13:00, PM start following field @ 13:30

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 | Help with <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 | Killam Library Ground floor Rm G28 Bissett Centre for Academic Success | In person: Killam Library Rm G28 By appointment: <ul style="list-style-type: none"> - e-mail: advising@dal.ca - Phone: (902) 494-3077 - Book online through MyDal |
| Dalhousie Libraries | Help to find books and articles for assignments Help with citing sources in the text of your paper and preparation of bibliography | Killam Library Ground floor Librarian offices | In person: Service Point (Ground floor) By appointment: Identify your subject librarian (URL below) and contact by email or phone to arrange a time: http://dal.beta.libguides.com/sb.php?subject_id=34328 |
| Studying for Success (SFS) | Help to develop essential study skills through small group workshops or one-on-one coaching sessions Match to a tutor for help in course-specific content (for a reasonable fee) | Killam Library 3rd floor Coordinator Rm 3104 Study Coaches Rm 3103 | To make an appointment: <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 All information can be found on our website: www.dal.ca/sfs |
| Writing Centre | Meet with coach/tutor to discuss writing assignments (e.g., lab report, research paper, thesis, poster) <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 | Killam Library Ground floor Learning Commons & Rm G25 | To make an appointment: <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 We are open six days a week See our website: writingcentre.dal.ca |

