

# EOSC 473/573 - Oceanographic Methods

Spring 2016

## Calendar description

Methods of data acquisition, study and analysis required in solving oceanographic problems. The course includes a field school held during the mid-term break. A fee is to be paid by January 22<sup>nd</sup>. Open to third- and fourth-year students in Oceanography, or with permission of the Department Head.

## Schedule

Tu-Th 9:30-11:00 in EOS-Main 201, and Feb 14-20 at the Bamfield Marine Science Centre.

## Instructors

Prof. Stephanie Waterman (office: ESB 3053, tel: 604-827-2665, email: [swaterman@eos.ubc.ca](mailto:swaterman@eos.ubc.ca))  
Prof. Evgeny Pakhomov (office: ESB 2039, tel: 604-827-5564, email: [epakhomov@eos.ubc.ca](mailto:epakhomov@eos.ubc.ca))  
TA - Jan Finke (office: Beaty Biodiversity 307, tel : 604- 827-5715, email: [finke.jan@gmail.com](mailto:finke.jan@gmail.com))

## Web Page

<https://sites.google.com/site/eosc473/home>

## Philosophy

The purpose of this course is to introduce students to the techniques and processes of modern scientific investigation. In one term, all of the major steps in a research program will be carried out - preliminary fieldwork, the submission of a research proposal, focused fieldwork, the delivery of informal seminars, the preparation of a data report, the delivery of a formal conference-style presentation, and the submission of a final journal-style article. In addition, students will gain hands-on experience in the sampling techniques fundamental to the 3 major oceanographic sub-disciplines.

The course will be centered around a one week field trip to Bamfield Marine Science Centre during the spring break. The field trip will begin with a number of sampling exercises. Data gathered during these exercises will be analyzed and results will be submitted in the form of a final report. While at Bamfield, students will also submit a short research proposal and collect data for their individual research projects. For the remainder of the term, students will analyze and interpret their data, and communicate their results via a conference style oral presentation and a scientific journal style paper.

Due to the nature of this course, the workload will vary tremendously over the term. There is nearly nothing to do before the field trip, and a great deal of work to be done afterwards. Please plan accordingly!

## Course Cost

Transport and lodging at Bamfield is a significant cost. **A fee of \$420 per student is required** for this course which will cover all expenses (transport, lodging, food). You should be able to pay online. No money, no trip, no mark!

## Evaluation

Marks for the course will be allocated as follows. For more details on the expectations for the proposal, group data report, oral presentation and paper please see the "Report and Presentation Guidelines" page of the class website [here](#).

### 1. *Research Proposal (10%)*

- "pre-proposal" due Thu Feb 11th
- final proposal due Wed Feb 17th at 6pm in Bamfield
- 2 pages in length maximum including figures

### 2. *Fieldwork Participation (5%)*

- assigned by the instructors and TAs based on participation in the fieldwork and the quality of the informal evening seminars while at Bamfield

### 3. *Sampling Exercise Summary ("Group Data Report") (10%)*

- due in class Mar 1st
- 2 or 3 pages in length (not including figures) for each discipline (biology, chemistry and physics) giving a quick explanation of data recorded (good examples will be provided)
- 1 per group

### 4. *Final Oral Presentations ("Conference Presentation") (20%)*

- March 29 & 31st
- a 10 minute oral presentation

### 5. *Final Written Report ("Paper") (55%)*

- rough draft (5%) due March 24th
- final version (50%) due April 25th

Please note that 10% per day is deducted for any late report.

Detailed expectations will be given elsewhere but in general marks will be given on a letter scale with the meaning:

- A, Excellent
- B, Competent
- C, Passable
- D, Just barely acceptable
- F, Not acceptable

Although the coursework for graduate students in EOSC573 and undergraduate students in EOSC473 is the same, the quality of work expected for graduate students is higher. You can work on your own or in groups for any or the entire course, with two exceptions:

1. Graduate and undergraduates should not submit joint final reports except in special circumstances (this causes marking difficulties...)

2. Final oral presentations CANNOT be made as a group and each talk must “stand alone”.

If you wish to work with others, let the instructors know in advance.

**Course Outline**

<b>Date</b>	<b>Lecture</b>	<b>Instructor</b>
Jan 5	Course Introduction; Intro to scientific investigation & the funding of science	Waterman
Jan 7	Physics I	Waterman
Jan 12	Physics II	Waterman
Jan 14	Chemistry I	Waterman
Jan 19	Chemistry II	Waterman
Jan 21	Biology I	Pakhomov
Jan 26	Biology II	Pakhomov
Jan 28	Biology III	Pakhomov
Feb 2	Introduction to Barkley Sound	Waterman
Feb 4	Sampling Program Types & Design	Pakhomov
Feb 5	<b>PRE-PROPOSAL DUE</b>	
Feb 9	Writing a Research Proposal; Writing a Scientific Manuscript	Pakhomov
Feb 11	Navigation + Positioning	Pakhomov
Feb 14-20	Bamfield Marine Station FIELD TRIP <b>(PROPOSAL DUE FEB 17, 6 PM)</b>	Pakhomov & Waterman
Feb 23	no lecture	
Feb 25	no lecture	
Mar 1	Bamfield wrap-up ( <b>DATA REPORT DUE</b> )	Pakhomov & Waterman
Mar 3	no lecture	
Mar 8	no lecture	
Mar 10	no lecture	
Mar 15	no lecture	
Mar 17	no lecture	
Mar 22	no lecture ( <b>ORAL PRESENTATION TITLE/ABSTRACT DUE</b> )	
Mar 24	no lecture ( <b>DRAFT PAPER DUE</b> )	
Mar 29	<b>PRESENTATIONS</b>	Pakhomov & Waterman
Mar 31	<b>PRESENTATIONS</b>	Pakhomov &

		Waterman
Apr 5 & 7	no lecture	
Apr 25	<b>FINAL PAPER DUE</b>	