

Field Methods: Life on the Ocean Wave Syllabus

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Objectives: The field course is designed to provide students the opportunity to collect, process and interpret oceanographic data. The field component of the semester program runs the entire duration of the semester and includes 6 cruises and 6 pier samplings. Students will collect physical (temperature, light penetration), chemical (macro-nutrient) and biological (bacterial, phytoplankton and zooplankton) data at 3 stations from within the Damariscotta River Estuary to the open ocean. *Field Methods: Life on the Ocean Wave* is split into two practical elements: 1) field work in the Gulf of Maine, 2) a lab-based independent research project at Bigelow Laboratory in collaboration with a Senior Research Scientist.

The Field Course will be graded and will include a Final presentation (1 hour total), during which students will discuss the field sampling and the data they collected during the 6 cruise dates and 3 pier samples.

The Independent research will be mentored. The students will have 5 “Roundtable on Research” (ROR) meetings that will be led by Field Course leaders. The Independent research will be graded. The grade will come under the Field course grade. It will account for 30% of the course grade.

Summary

Field Course Grade

20% Participation on Cruises
30% Sample Analysis
20% Final presentation
30% Independent Research

Independent Research grade:

10% Proposal
30% ROR participation
40% Mentor evaluation
20% Poster presentation

Dates for field work.

Cruise 1	9/10	Pier sampling	9/9
Cruise 2	9/17	Pier sampling	9/21
Cruise 3	10/1	Pier sampling	10/25
Cruise 4	10/15		
Cruise 5	10/29		
Cruise 6A	11/12		
Cruise 6B	11/25		

Final Presentation 12/6

Independent Research Dates.

Proposal Due 9/20 at 5pm
ROR-1 9/23
ROR-2 10/18
ROR-3 11/8
ROR-4 11/22 tentatively rescheduled for 11/25
ROR-5 12/12

Final Presentation 12/13

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FIELD COURSE Schedule

<i>Date</i>	<i>TASK</i>
September 6	Orientation Nautical Science – Intro to field course – sampling methods
September 9	Pier Sampling 1 – 2:08
September 10	Cruise 1(DF, JN) – Chief Scientist -
September 11	*Sample Processing Risk assessments. Introduction to sample processing (Zooplankton)
September 17	Cruise 2 (DF, JN) – Chief Scientist -
September 18	*Sample Processing Chl, Intro to FlowCAM (NP), Flow Cytometer (JM)
September 20	Research Proposal Due (5 pm) 3 pages (Intro and Methods)
September 23	ROR – 1 (1 pm) Present proposal – 3 Slides (Title, Intro, Methods). 5 minute time limit
DOWNEAST FIELD TRIP (September 26-27)	
October 1	Cruise 3 (DF, JN) – Chief Scientist -
October 2	*Sample Processing Chl, Intro to CTD data, Zooplankton ID (DF)
October 15	Cruise 4 (NP, JN) – Chief Scientist -
October 16	*Sample Processing
October 18	ROR – 2 (1 pm) 5 Slides (Title, Intro, Methods). 7 minute time limit (if necessary)
October 21	Pier Sampling 2 – 1:00
October 23	Fields Data Discussion
October 29	Cruise 5 (NP, JN) – Chief Scientist -
October 30	*Sample Processing

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November 8 ROR – 3 (1 pm)

Title, Intro, Methods, Preliminary data. 7 minutes
PACK FOR BOAT TRIP

Veteran's Day (Nov 11)

November 12 *Cruise 6 (NP, JN) – Chief Scientist –*

November 13 *Sample Processing

November 20 *Fields Data Discussion*

November 25 ROR – 4 (1 pm)

Title, Intro, Methods, Results 8-9 minutes, Poster design discussion

November 25 *Cruise 6B (DF, NP, JN) Cruise – 6B (weather date)*

November 25 *Pier Sampling 3 (assign Chl analysis) –??:00*

November 26 Sample Processing
Chl – Nutrient Analysis (CH)

THANKSGIVING HOLIDAYS (November 27-29)

December 4-5 *Field Data Discussion*

Practice final field data presentation (~45 minutes) - group

December 6 *Field Data PRESENTATION – ORAL – 1 hour (including questions)*

December 12 *POSTER PRINTING (9-12am)*
ROR – 5 (1 pm) *Poster walk through (Practice)*

December 12 *Research Final Poster Session (3-5 pm) + Reception*

*** Time set aside for students to analyze data. Instructors will not be present unless requested.**

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RISK ASSESSMENTS Required for Field Course

BOAT SAFETY

DOCK SAFETY

CHLOROPHYLL Sampling and analysis

ZOOPLANKTON Sampling (nets) and analysis

NUTRIENT Sampling

Flow Cytometry Sampling and analysis

CTD Deck Operation

CTD - Pier

PHYTOPLANKTON Tow Sampling

PROTOCOLS TO BE PROVIDED – To assist with Risk Assessments

- 1. Chlorophyll Sampling and Analysis***
- 2. Zooplankton Sampling and Analysis***
- 3. Nutrient Sampling***
- 4. CTD Operation***

Include the following MSDSs

- 1. Formaldehyde***
- 2. Acetone***
- 3. Alcohol***
- 4. Glutaraldehyde***
- 5. HCl***