



School of Arts & Science

**BIOL 105 Introductory Marine Biology
Winter 2012**

COURSE OUTLINE

Introduction to the basic principles of ocean science, with emphasis on marine biodiversity and integration of marine species into coastal and offshore ecological processes. Human impact on marine life will be explored, exemplified by local and global case studies. Shore and boat-based field-trips required.

Prerequisites: English 12 or equivalent.

Section	A	B
Lecture	M, T, F 11:30-12:20 in F 202	
Lab/Field	W 9:30-12:20 in F224 or TBA	W 1:30-4:20 in F224 or TBA

1. Instructor Information

Instructors: **Annette Dehalt**, M.Sc. and **Donna Ogden**, M.Sc.

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2. Intended Learning Outcomes

- Explain basic biological and ecological concepts, including evolution, food web structure and population dynamics, as well as the nature of the scientific process
- Assign defining characteristics to the major categories of marine biodiversity, including taxonomic and ecosystem diversity
- Explore and evaluate the role of abiotic (geological, chemical, physical) factors in determining the distribution and abundance of marine species
- Describe the ecological niches of major marine life forms
- Discuss current environmental issues in the marine environment, and examine the multi-disciplinary aspects (scientific, social, political, legal and indigenous) of these problems
- Develop and employ critical thinking and problem-solving skills regarding scientific inquiries, field situations, and environmental problems
- Demonstrate practical skills regarding marine sampling methods and materials, tide and current calculations, basic concepts of coastal navigation and marine safety

3. Required Materials

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- (a) Karleskint/Turner/Small: Introduction to Marine Biology, 3rd ed.
 (b) 3-ring binder + blank sheets (recycled “grey” paper ok!) for drawings
Lab/field materials will be handed out prior to the exercise.

4. Course Content and Schedule

The following tentative schedule is subject to change if deemed necessary by the instructor.

Wk #	Wk of	Lecture Topics	Lab/Field Exercises (FT = field trip)
1	Jan 9	Ways of Knowing about the Sea (Ch. 1 + readings)	Lab and Field Safety Use of Microscopes Tide Tables – plan for extra-curricular Fri or Sat evening tide-pool FT early in semester!
2	Jan 16	Basics of Biology (Ch. 5)	Algae Lab
3	Jan 23	Basics of Ecology (Ch. 2)	Eelgrass Assessment (guest lecture & indoor/outdoor demo)
4	Jan 30	Marine Habitat (Ch. 3&4 excerpts)	Invertebrate Lab
5	Feb 6	Test 1 (Mon) Marine Primary Producers (Ch. 7 & excerpts ch. 6)	Vertebrate Lab
6	Feb 13	Marine Invertebrates (Ch. 8) <i>No class Fri (reading break)</i>	Ocean videos & class discussion
7	Feb 20	Marine Invertebrates (Ch. 9)	LAB EXAM 1
8	Feb 27	Test 2 (Mon) Marine Fishes (Ch. 10)	Traditional Ecological Knowledge: First Nations Fisheries (FT)
9	Mar 5	Marine Reptiles, Birds & Mammals (Ch.11&12 excerpts)	Marine Bird Field Identification - Esquimalt Lagoon (FT)
10	Mar 12	Test 3 (Mon) Coastal Marine Ecosystems (Ch.13&14&15 excerpts)	Marine Biodiversity – Shaw Ocean Center (FT)
11	Mar 19	Oceanic Ecosystems (Ch. 16&17&18 excerpts)	Medicine Wheel Seminar – Relationships with Marine Organisms
12	Mar 26	Harvesting the Ocean’s Resources (Ch. 19) <i>No class Good Friday</i>	Fisheries Management – Tour of Institute of Ocean Sciences and R/V Vector if in port (FT)
13	Apr 2	Oceans in Jeopardy (Ch. 20)	LAB EXAM 2
14	Apr 9	<i>No class Easter Monday</i> Catch-up/Review (Wed) Test 4 (Fri)	Marine Mammal Cruise – Race Rocks (FT)

Final Exam during final exam period – scheduled by registrar - check CAMLINK

Avoid making travel or work plans during the final exam period, as you are expected to give priority to your exam schedule!

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5. Basis of Student Assessment

4 Tests 4x10%.....	40%
2 Lab Exams 2x15%.....	30%
Lab/Field Assignments.....	5%
Seminar Presentation.....	5%
Final Exam.....	20%

Lecture tests and lab exams will be unit exams (i.e. *not* cumulative). The final lecture exam will be cumulative, with proportionately greater emphasis on the last unit not covered by the previous midterm. Midterm and final exams will be a mix of multiple choice and short answer/short essay questions. Lab exams are set up as a series of “stations” consisting of equipment, data and/or specimens, with accompanying questions testing both practical and theoretical knowledge.

The seminar presentation (done in groups of 2 or 3) will focus on a current issue concerning one or more marine species. It will include a 10 minute oral presentation in a circle format, as well as a question and answer period (hand-out with details provided).

6. Grading System

The following percentage conversion to letter grade will be used:

A+ = 90 - 100%	B = 73 - 76%	D = 50 - 59%
A = 85 - 89%	B- = 70 - 72%	F = 0 - 49%
A- = 80 - 84%	C+ = 65 - 69%	
B+ = 77 - 79%	C = 60 - 64%	

Temporary grades are assigned for specific circumstances and will convert to a final grade according to the grading scheme being used in the course. See Grading Policy E-1.5 at camosun.ca for further information.

7. Recommended Materials or Services to Assist Students to Succeed Throughout the Course

STUDENT CONDUCT POLICY

There is an Academic Conduct Policy. It is the student's responsibility to become familiar with the content of this policy. The policy is available in each School Administration Office, Registration, and on the College web site in the Policy Section.

www.camosun.bc.ca/divisions/pres/policy/2-education/2-5.html

LEARNING SUPPORT AND SERVICES FOR STUDENTS

There are a variety of services available for students to assist them throughout their learning. This information is available in the College Calendar, Registrar's Office or the College web site at

<http://www.camosun.bc.ca>

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ADDITIONAL INFORMATION

Academic Conduct: Be sure that you are familiar not only with the Student Conduct Code (s.a.), but also with the General Department Policies, which are stated in the lab manual.

Cheating or plagiarism will not be tolerated in any form, and will result in "0".

Each student is required to sign and hand in a Laboratory Safety Contract prior to commencing laboratory work in the course.

Attendance: You are expected to attend all classes, labs and field-trips, and be on time. It is your responsibility to acquire *all* information given during a class missed, incl. notes, hand-outs, assignments, laboratory or field data, changed exam dates etc.

Exams: Exams have to be written when scheduled. There are no make-up exams during the term. **A missed exam results in "0" except in case of documented emergency or illness** (doctor's note required stating that student is too sick to attend class during a specified time period). Valid documentation of illness/emergency needs be received **within 1 week** of the illness/emergency. With a valid excuse, the weighting of the missed exam will be added to the final exam, along with additional questions on course material of that unit. **Please bring a pen and soft pencil to all exams. No programmable devices are allowed in exams.**

Lab/Field: You need to attend labs and lab exams during your assigned section (A or B). Switching between sections on a permanent or temporary basis requires instructor's permission. Lab assignments can only be handed in for labs actually attended (except in cases of documented illness/emergency). You are encouraged to discuss assignments with your lab partner, however, **each assignment has to be your individual work – beware of plagiarism.** It is absolutely necessary to read and mentally **work through each exercise before coming to lab.** Otherwise you may not be able to finish on time, annoy your lab partner, or flunk a pre-lab pop quiz.

Assignments: Unless otherwise stated, all assignments are due by the **beginning** of the lab/class of the due date. The first late assignment/term is penalty-free – otherwise a **10%/day non-negotiable late penalty** (rounded to the nearest full mark) applies except in cases of documented illness/emergency. Late assignments will **not** be accepted after marked assignments have been returned to the rest of the class one week after the due date. A **professional format** is expected, i.e. a neat, legible, clean copy. If the assignment is more than one page, separate pages must be **stapled**. "Rough" drafts risk rejection and a subsequent late penalty or reduced marks.

Study Habits: You will probably find this course not very difficult, but surprisingly labor-intensive. Good (and regular!!) study habits are required to do well in this course. You should plan on a **minimum of 6 hours** outside of scheduled class time for the completion of assignments and for general studying. Joining a study group can help this make more fun. Some **"study hints" are posted on the course web site**, and the college also offers study skill courses and individual consultations.

Lecture notes will be provided in point form and posted on the web for you to print prior to class. These should be used as a guideline, not as your sole source of information! You will need to write down additional notes of examples and explanations given during lecture. It is also recommended practice to transcribe these notes into a study-friendly format after each lecture, incorporating additional information from your textbook and other sources. Study these notes before the next class to prepare yourself for new material, which will often build on previously covered material.

Exam questions will be based on material covered or pointed out in class. However, studying additional details in the corresponding textbook sections will help you understand the material more thoroughly. It is not sufficient simply to memorize point-form notes! Please keep up with

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your readings, and take advantage of office hours if you need extra clarification and help, or simply would like to discuss a topic a little further.

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Marine Biology “Medicine Wheel” Seminar: *Marine Issues*

This assignment requires a 10 minute oral presentation (done in groups of 3, preferably from the same lab section) on a current issue concerning a marine species or group of species of your choice. The idea is to study and empathize with a marine organism and its challenges of survival using aspects of an aboriginal, more holistic approach, in accordance with Camosun College’s goal of integrating indigenous content across the curriculum. This is an opportunity to gather and present information on the causes and potential solutions regarding a particular problem facing a marine organism that you care about, by integrating science and personal involvement.

Topics may include environmental or ethical issues, for example: endangerment of a species through habitat destruction, climate change, pollution, or over-exploitation, welfare concerns regarding marine animals killed for human consumption, marine animals in captivity, issues regarding poaching, trade in species (parts), fishing methods and regulations, or the effect of an introduced species on a Native species, etc. There is a wide range of possible topics, but the basic premise is a bio-centric approach, i.e. deconstructing the issue from the point of view of the animal(s) in question, and focusing on the organism’s best interest. Please check with your instructor if your topic choice and angle fits the scope of this assignment before you proceed with your research (see course outline for deadlines).

Format and content of this presentation is supposed to be holistic in nature and is loosely based on the concept of a generalized First Nations medicine wheel:



In your presentation, you are therefore expected to present not only the physical and mental aspects of the issue (see West and North), but also the emotional and value-based/spiritual aspects (see South and East) to the same extent.

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Please present your talk in the following sequence:

Briefly introduce yourself and your topic, and then address the 4 basic aspects of your chosen issue by going around the medicine wheel.

1. W: "Physical" Aspect: Issue Definition, introduce your chosen species, including a *brief* background on its biology and ecology as it pertains to the issue. Define and explain the concrete problem facing this species or group of species, keeping in mind that this may be the first time your audience has heard about this issue. Condense your background research into a precise yet concise, readily comprehensible summary. If relevant, mention other species affected by the issue.
2. S: "Emotional" Aspect: Personal Engagement
Why do you care about this species, this particular issue? What is the story behind your choice? What emotions and opinions were shared by your co-presenter (if applicable) or other discussion partners when researching this issue? Did other people share your position or not? Do you think/know whether your (group's) position on this issue is representative of the population at large?
3. E: "Spiritual" Aspect: Value-based Solutions
What do you perceive to be the root of the problem? How did the status quo come to be? What ethical principles or choices may need to be re-evaluated? Are there underlying societal values or belief systems that may have to be changed in your opinion to allow for support for any type of practical solution? What other societies/cultures/value systems can we learn from in this regard, incl. Traditional Ecological Knowledge and Wisdom (TEKW)? You could discuss some of the values and attitudes you would like to foster.
4. N: "Mental" Aspect: Practical Solutions
What should be done, in your opinion, to fix or ameliorate the problem facing your chosen species? What can different levels of society contribute to the solution, e.g. government, NGO's, industry, academia, organized religion etc. and what actions can you and your class mates take to support your solutions? Give specific examples. You may cite published solutions that you support, or think outside the box to come up with your own answers to the problem.

A different path around the medicine wheel may be more suitable to your presentation – please discuss the best sequence or integration of aspects with the instructor. Conclude your talk with a short statement referring to future hopes or plans and thank your audience. (Note: "that's all we got" or "I guess that's it..." is *not* a good concluding statement!)

You need to know the material well enough to speak freely as well as answer questions for approx. 5 minutes following your talk (*know more than you present!*). The presentation itself will take place in circle format around a replica of a medicine wheel, i.e. the presenters are seated along with the audience in a circle. If necessary, a room other than the lab will be booked for this purpose. Therefore, you will not have to stand in front of the class, and **you are not required to prepare overheads or power-points – this really is an oral presentation**, and it is meant to provide a different presentation and learning experience. This means that your speech should be as free from references to written notes as possible. A recipe card with point form notes for memory aid is permitted, while reading a prepared paper will result in a maximum 50% mark.

You are also required to bring a visual aid to be passed around, e.g. a good quality picture or replica or otherwise relevant object (1 minimum and 3 maximum visual aids per presentation). Aids should be user-friendly and add to your talk but not distract from it; written materials are usually not suitable. Please also have a list of references handy, in case you may be asked about the sources of presented information. Although not a requirement, you are free to integrate original elements of the visual, musical, healing or performing arts as well as aspects of your cultural or spiritual practices that you are able to share.

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It is important to practice the talk several times beforehand, in order to feel comfortable speaking freely, to allow for smooth transitions, and to keep within the time limit of 10-15 minutes in fairness to all other students in the same lab period. However, in alignment with common indigenous practice, speakers will be allowed – within reason – to complete their presentation regardless of time.

As a member of the audience, you are expected to be respectful to the speaker by following the talk with focus and an open mind, so you may be able to contribute a question at the end of the talk. While a class mate is presenting, it is unacceptable to review your own notes, carry on a conversation or leave the circle early. Being a disrespectful listener may affect your overall mark for this project.

Evaluation of Oral Presentation:

CRITERIA	SCORE (0-10)
1. <u>Content</u> : biocentric, not anthropocentric perspective maintained; all 4 sub-topics addressed adequately and with appropriate details in each category; evidence of broad background research and in-depth contemplation of the issue	
a. Physical	
b. Emotional	
c. Spiritual	
d. Mental	
2. <u>Outreach</u> : the issue and potential solutions were presented convincingly, with respect, empathy and engagement; the audience felt compelled to listen and learn	
3. <u>Format</u> : appropriate opening and closing statements, smooth and clear transitions between sub-topics; the talk flowed well, trains of thoughts were followed through	
4. <u>Delivery</u> : free speech, referred to notes only very briefly or not at all, used good voice projection, clear pronunciation, suitable intonation	
5. <u>Timing</u> : timing appropriate for subject matter, without rushing or unnecessary pauses or “fillers;” time limit (15 minutes +/- 2 minutes) observed (-3 marks for each additional minute over or under)	
6. <u>Visual Aid(s)</u> : well chosen and informative, attention to ease of viewing and handling, no distracting details such as extensive writing, well-integrated into talk	
7. <u>Questions</u> : questions from the audience were answered knowledgeably and honestly, showing involvement with the subject beyond the information given in the talk	
TOTAL SCORE/100