***School of Arts & Science***
***BIOL 105 Introductory Marine Biology***
***Summer 2017***

# 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.*** *Additional field costs of approximately $70 for a charter boat trip should be budgeted.*
Prerequisites: English 12 or equivalent

| | | |
|---|---|---|
| **Lecture** | **T 9:30-12:20 in Y219**<br>**F 11:30-2:20 in Y201** | *Based on tides, field trip availability etc., some lecture and lab/field sections may be integrated or switched (see schedule p.2)* |
| **Lab/Field** | **W, Th 9:30-12:30**<br>**in F244 or TBA** | |

## 1. Instructor Information


| | |
|---|---|
| **Annette Dehalt**, *M.Sc.*<br>Office location: Fisher 248D<br>phone: 250-370-3432<br>e-mail: dehalt@camosun.ca | **Emrys Prussin,** *M.Sc.*<br>Office location: Fisher 344D<br>phone: 250-370-3506<br>e-mail: PrussinE@camosun.ca |
| **Office hours**: T, W, Th (1:00-2:00)<br>**Web site**: http://faculty.camosun.ca/annettedehalt<br>**D2L:** htttp://online.camosun.ca/ | |


## 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**

(a) Karleskint/Turner/Small: Introduction to Marine Biology, 4th ed. (3rd ed. ok)
(b) 3-ring binder with blank paper for extra notes and drawings (recycled grey paper ok; unlined for drawings), basic office supplies incl. stapler, white-out, ruler…
(c) Lecture note key points and lab/field materials will be posted on the web site, and should be downloaded/printed prior to class.
(d) Good profile shoes (that can get wet) for beach combing

**4. Course Content and Schedule**

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

| **Wk #** | **Dates T W Th F** | **Lecture Topics: T & F** with exceptions | **Lab/Field Exercises: W & Th** with exceptions ***(FT = field trip)*** |
|---|---|---|---|
| **1** | May 2-5 | T: Introduction<br>Ways of Knowing about the Sea<br>(Ch. 1 excerpts & readings)<br><br>F: Basics of Ecology (Ch. 2) | W: Microscopes, Tide Tables, Compass<br><br>*Th: Traditional Ecological Knowledge: Tsawout First Nation (FT- Bus)* |
| **2** | May 9-12 | T: **Quiz 1**<br>Basics of Biology (Ch. 5)<br><br>F: Marine Habitat (excerpts Ch. 3&4) | *W: Surfriders Clean-up/Analysis (FT- Bus)*<br><br>*Th: Clover Point Intertidal Zone (FT- Bus)* |
| **3** | May 16-19 | T: **Test 1**<br>Marine Fishes (Ch. 10)<br><br>F: Marine Reptiles, Birds & Mammals (Ch.11&12 excerpts) | W: Vertebrate Lab - **Seminar topic due**<br><br>Th: *Marine Mammal Cruise (FT)* |
| **4** | May 23-26 | T: **Quiz 2**<br>Marine Ecosystems<br>(Ch. 13-18 excerpts)<br><br>**Wed**: (Sea) Food and Environment<br>(excerpts Ch. 19 & readings) | Th: **LAB/FIELD EXAM 1**<br><br>**Fri**: *Sandy Beach Survey (FT - Bus)* |
| **5** | May 30 - June 2 | T: Marine Primary Producers<br>(Ch. 6 excerpts; Ch. 7)<br><br>**Thurs: Test 2**<br>Marine Invertebrates (Ch. 8) | W: Algae Lab<br>**Seminar outline due**<br><br>**Fri** *: Fisheries Management –*<br>*Institute of Ocean Sciences (IOS) Open House (FT- car pool or bus rental)* |
| **6** | June 6-9 | T: Marine Invertebrates (Ch. 9)<br><br>F: **Medicine Wheel Seminar** – Marine Issues | W: Invertebrate Lab 1<br><br>Th: Invertebrate Lab 2 |
| **7** | June 13-16 | **Wed: Quiz 3**<br>Oceans in Jeopardy (Ch. 20)<br><br>**Fri:** Oceans in Jeopardy *cont.* | **Tues***: Cattle Point Intertidal Zone (FT)**<br><br>**Thurs: LAB/FIELD EXAM 2** |
| 8 | June 19-21 | **Final Exam**<br>date/time set by Registrar (check CAMLINK May 19) | |

## 5. Basis of Student Assessment

2 Tests 2x10%.....20%
2 Lab Exams 2x10%.....20%
3 Quizzes 3x5.....15%
Assignments .....10%
Seminar Presentation..... ..5%
Final Exam..... 30%

Lecture tests, quizzes and lab exams will be unit exams (i.e. *not* cumulative; however, tests include all material covered since the last *test*, not quiz).
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 4) will focus on a current issue concerning one or more marine species. It will include a 10-15 minute oral presentation in a circle format, as well as a 5 minute question and answer period (hand-out with details attached).

## 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

## *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 Safety Policies, which will be provided in lab.
**Cheating or plagiarism will not be tolerated in any form, and will result in "0".**

**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:** 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 come to lab prepared**: carefully read each lab exercise, cross-reference the material with lecture notes and text, and look up any unfamiliar terms.

**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 2 hours study time *per hour in class* as a general rule of thumb. Joining a study group can help this make more fun. Some **study hints are posted on the course web site.**

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.

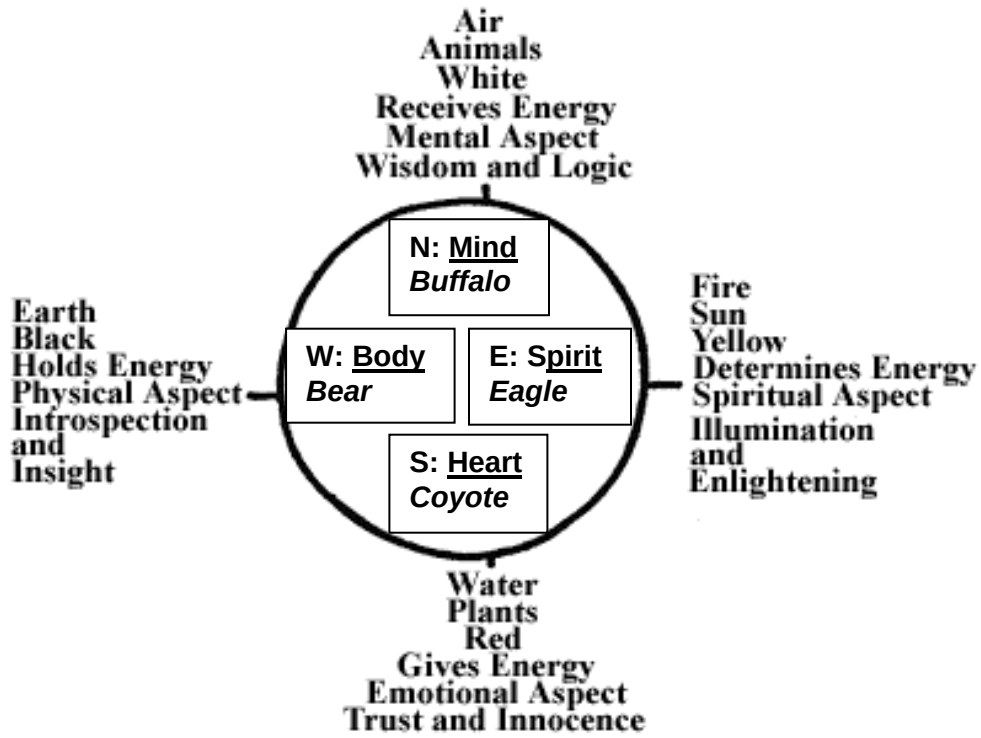
Exam questions will be based on material covered or pointed out in class. However, studying additional details in the corresponding textbook sections will help you understand the material more thoroughly. It is not sufficient simply to memorize point-form notes! Please keep up with your readings, and take advantage of office hours if you need extra clarification and help, or simply would like to discuss a topic a little further.

## Bio 105 Marine Biology "Medicine Wheel" Seminar: *Marine Issues*

This assignment requires a 10-15 minute oral presentation in circle format, followed by a 5+ minute question and answer period and class discussion. This is done in groups of 4 students; the topic is your choice of a current, human-caused problem affecting marine life. The notion is to study and empathize with a marine organism and its challenges of survival or well-being, using aspects of an aboriginal, more holistic, approach. This is in accordance with Camosun College's goal of integrating indigenous content across the curriculum. It is an opportunity to gather and present information on the causes and potential solutions regarding a particular issue 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 marine organisms in question, and focusing on the organisms' 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.

# COURSE OUTLINE
## Grading Systems

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. Depending on species and issue, some or all of the following guidelines may apply.

1. W: "Physical"Aspect: Issue Definition
   Introduce your chosen organism(s), including a *brief* background on its biology and ecology *as it pertains to the issue*. Define and explain the concrete problem facing this organism, 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 does this issue evoke, e.g. compassion, frustration, urge to take action etc.? Do co-presenters have similar or different sentiments regarding the chosen organism or issue? Do you know which position on this issue is representative of the population at large?

3. E: "Spiritual"Aspect: Underlying Values
   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 have led to this issue, e.g. greed, carelessness, anthropocentrism etc.? Are there underlying societal values or belief systems that may have to be re-evaluated or 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 marine organism? 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, more along the lines of sharing around a campfire. This means that your speech should be as free from references to written notes as possible.

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.

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. Content: 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<br><br>a. Physical | |
| b. Emotional | |
| c. Spiritual | |
| d. Mental | |
| 2. Outreach: the issue and potential solutions were presented convincingly, with respect, empathy and engagement; the audience felt compelled to listen and learn | |
| 3. Delivery: free speech, good projection, clear pronunciation, appropriate opening and closing statements, smooth transitions between sub-topics; talk flowed well | |
| 4. Visual Aid(s): well-chosen and informative, attention to ease of viewing and handling, no distracting details such as extensive writing; well-integrated into talk | |
| 5. Timing: time used efficiently and evenly; no unnecessary pauses or "fillers;" time limit observed (10-15 minutes) - minus 1 mark for each minute over or under | |
| 6. Questions: questions from the audience were answered knowledgably and honestly, showing involvement with the subject beyond information given in talk | |
| 7. Audience: As audience members, presenters were part of circle, respectful, paid full attention to presenters, and – optionally - asked valid questions | |
| **TOTAL SCORE** | ……../**100** |