

BIOL 466: Frontiers in Marine Biology
THE DEEP SEA
January-April 2020

Course Schedule: Mondays and Thursdays, 1:00PM – 2:20PM
Clearihue Building D125

Instructor: Hugh MacIntosh
Office: Petch 108
Office hours: Mondays and Thursdays, 10:00AM – 11:00AM
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Description: This course explores new advances in topics related to ocean biology. This year we will focus on the deep sea with an eye on the tremendous challenges that face scientists and society over the next decade. Ocean change is rapid and unpredictable. Research programmes are struggling to understand species responses in the context of whole communities and ecosystems – and the effects on humans. We will explore contributions to this analysis by examining specific systems, approaches and ecosystem integration.

In addition, as the prospect of the “Blue Economy” grows larger, many issues around ocean governance on the high seas affect the two largest ecosystems on Earth. We will also explore just a few of the instruments that are now in development to exploit and/or protect marine environments and biodiversity.

Lectures: I offer a basic interactive lecture style to which I bring background preparation and deep-sea experience; you bring your ideas based in some reading and your interests. The “text” for this course is the paper by Ramirez-Llodra et al (*Deep, diverse and definitely different: unique attributes of the world’s largest ecosystem*); read it all.

I will also have some required readings that will be partly addressed in class. “Required” means that you are expected to contribute discussion and comment. Please read before the class, as you may be asked to discuss within groups and provide questions or comments.

We will have three guest lecturers to give you expert insight into specific topics. Please ‘exploit’ them with questions to acknowledge the time they invested in us.

Lectures and reading material will be posted to coursespaces.

Assessment:

Midterm	20
Data project 1: Background, objective	10
Data project 2: Results/Discussion	25
Presentation	5
Class participation	5
Exam (Take Home)	35

Project: The main assignment for the course is a project related to deep-sea exploration. You will gather data from deep-sea dives on seamounts in the Pacific conducted in 2017 by the NOAA Ocean Exploration Program. Each student is assigned their own dive. Your observations will have enough rigour to allow comparisons among your dives. Analysis will not be complex or beyond the skills you should have. You will be among the first to look at these beautiful unknown places; I hope you find it interesting.

There will be two reports submitted and a brief presentation on your results.

PROJECT DUE DATES:

Report #1 – Feb 1

Report #2 – Mar 15

- Reports are typed and include graphics. Please print to a PDF and email to me.
- I acknowledge receipt so if you don't hear, I missed it.
- I make comments on the PDF – look for the comment boxes.

Lecture Schedule
~ subject to updates ~

DDD= Deep, Diverse and definitely
Different

DATE	class	TOPIC	PRESENTER	Paper
Jan 6	1	Intro; Ocean exploration	HM	DDD
Jan 9	2	Deep Environment; Seatube	HM	DDD
Jan 13	3	Project Overview	HM	Handout
Jan 16	4	Deep-sea concepts	HM	Danovaro
Jan 20	5	Microbial processes	S. Murdock	Jorgensen
Jan 23	6	OMZ and hypoxia	HM	DDD; Breitburg
Jan 27	7	Chemosynthetic systems	HM	Tunnicliffe
Jan 30	8	Pelagic world Ocean Governance	HM	DDD
Feb 3	9	Carbon cycle and fish	HM	Drazen
Feb 6	10	Canyons	F. De Leo	Fernandez-Arcaya
Feb 10	11	Deep-sea diversity	HM	Woolley
Feb 13	12	TEST		
Feb 17-21		READING BREAK		
Feb 24	13	Seamounts	HM	Clark
Feb 27	14	Seamounts & conservation	HM	DDD
Mar 2	15	Hot Vents I	HM	DDD
Mar 5	16	Hot Vents II	HM	
Mar 9	17	Connectivity	HM	Gaines
Mar 12	18	Metapopulations	HM	
Mar 16	19	Ecosystem function/services	HM	Thurber et al.
Mar 19	20	<i>Presentations</i> EX1703&1706	class	
Mar 23	21	<i>Presentations</i> EX1708; Anthropogenic impacts	Class, HM	suggested
Mar 26	22	Anth impacts cont'd	HM	TBD

Mar 30	23	Vent mining	HM	Hein; Kim
Apr 2	24	Summary	HM	DDD

Other Information

UVic Grading Scale: A+ (90-100); A (85-89); A- (80-84); B+ (77-79)
 B (73-76) B- (70-72); C+ (65-69); C (60-64); D (50-59); F (0-49)

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Diversity: The University of Victoria is committed to fostering inclusive practices in and out of the classroom. As your instructor, I am also highly committed to inclusionary principles that not only tolerate differences in race/ethnicity, age, gender, sexuality, socio-economic status, first language, country of origin, ability, etc. but that welcome these differences as enriching to all members of this course and the wider community. Your diverse positions, identities and experiences will inform much-needed diversity in class discussions.

Feedback: The Course Experience Survey is a useful mechanism to communicate to me. Please give me, and the Department, your feedback.

www.uvic.ca/learningandteaching/faculty/resources/ces/