

Westminster College
Department of Biology
Spring, 2009

Marine Biology

Biology 463

COURSE DESCRIPTION

This course is an in-depth study of marine ecosystems, organisms, and biological systems. It begins with a description of ocean basins and an overview of important physical characteristics of marine systems: properties of water, salinity, waves, and tides. After that we will discuss important groups of marine organisms, from the tiniest plankton to the largest marine vertebrates, and discuss adaptations of those organisms from evolutionary, ecological, and physiological points of view. Then we will discuss major marine ecosystems such as coral reefs, open ocean, coastal oceans, the deep-sea floor, and estuaries. Finally, we will talk about how marine organisms and ecosystems are affected by human activities and about the future of oceanic resources on this planet.

INSTRUCTOR Dr. Ann Throckmorton, Professor of Biology

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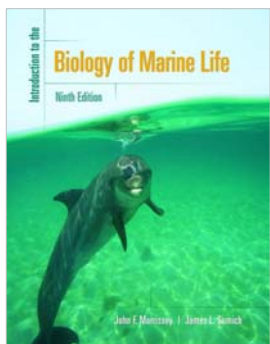
Office hours: 10:30 - 11:30 Monday, Wednesday
2:00 - 3:00 Tuesday
or by appointment

LECTURE 6:30 – 8:00 p.m., Monday, Wednesday

150 Hoyt Science Center

Attendance in class is expected. If you miss class, it is your responsibility to find out what you have missed and to make arrangements for getting lecture notes and making up assignments. If you know ahead of time that you will be absent, you should contact me so we can make arrangements for making up what you will miss.

REQUIRED MATERIALS



Introduction to the Biology of Marine Life by James L. Sumich and John F. Morrissey; Jones & Bartlett Publishers; 9th edition, © 2009; ISBN-13: 9780763753696

In addition, required reading material may be placed on reserve in Mack Library and/or on the r-drive.

COURSE OBJECTIVES

- To introduce students to the physical and biological components of marine biology and to describe how marine organisms interact with, influence, and are influenced by their environment
- To stimulate students to think about the complexities of the marine environment and to understand and appreciate the vast species richness of the ocean
- To describe and explain the evolutionary and ecological bases of adaptations that marine organisms possess
- To describe how human activities affect marine ecosystems and organisms and to speculate about the future of marine ecosystems and organisms

METHODS OF INSTRUCTION

1. Lectures and discussion: These will follow the tentative schedule printed below. I expect you to attend class, pay attention, and participate actively in discussions by answering questions, asking questions, and making comments. You will get more out of the lecture if you have done the reading ahead of time.
2. Reading: The textbook I have chosen provide a good general introduction to marine biology. Most of the topics that we will approach in the class are covered by the book. Thus, it will serve to augment lecture and to provide material for discussion.
3. Assignments: In many cases, assignments in the class will relate to the material that we will be discussing the next class period. Their purpose is to prepare you for the discussion or to give you more information or a different viewpoint on the material that is covered in the reading.
4. Exams: there will be three exams in the class. In addition to lecture material, the final will also include questions related to assignments. You should expect multiple choice, short answer, and essay questions on the exams. The final exam is not comprehensive.
5. Research paper: Each person in the class will write an individual paper (minimum 14 pages) that will be due on the last day of class. It will involve an in-depth description and analysis of some topic related to marine biology.

GRADING

Your grade in this course will be based on lecture exams, assignments, and an individual paper, weighted as follows:

lecture exams (3)	50% of final grade
assignments	25% of final grade
research paper	25% of final grade

Your final grade in the course will be based on the following scale:

Above 93%: A	87% - 90%: B+	77% - 80%: C+	67% - 70%: D+	Below 60%: F
90% - 93%: A-	83% - 87%: B	73% - 77%: C	63% - 77%: D	
	80% - 83%: B-	70% - 73%: C-	60% - 73%: D-	

COURSE POLICY ON EXAMS AND ASSIGNMENTS

In most cases, assignments should be turned in by 5:00 p.m. on the day that they are due. Late assignments will be accepted but a late penalty will apply; the number of points subtracted will vary in proportion to the time elapsed since the due date. You must take the exams at the scheduled time unless you have talked to me prior to the exam and been excused. Valid excuses include such things as serious illness or injury and personal and family emergencies. You may take make-up exams only if you have notified me before the day of the exam.

STATEMENT OF ACADEMIC INTEGRITY

Academic integrity is central to the purpose and pursuit of any academic community. In this class, I expect you to adhere to the principles of academic integrity stated in the Westminster College handbook and to maintain the highest standards of academic honesty and integrity, in keeping with the philosophy and purposes of the College.

“Academic dishonesty is a profound violation of this expected code of behavior. It can take several forms, including, but not limited to, plagiarism, cheating, purposely altering the work of another (without that person’s permission), misrepresentation of attendance in class or at a College event, misrepresentation of work, facts or experimental results, unauthorized use of or intentional intrusion into another's computer files and/or programs, intentional damage to a computer system, unauthorized use of library materials and privileges, or engaging in any activity which attempts to alter or harm another’s academic standing.” (Westminster College Handbook, p. 84)

I expect students to work independently on exams and assignments. Plagiarism on assignments or cheating on exams will result in a failing grade on that particular assignment or exam and a written report will be sent to the Dean of Academic Affairs. More than one incident



TENTATIVE SCHEDULE OF TOPICS

DATE	TOPIC	TEXTBOOK READING
01/21	Introduction to the course	
01/26	The Changing Marine Environment The World Ocean	Chapter 1, sections 1.1 -1.2
01/28	Properties of Seawater	Chapter 1, section 1.3
02/02	Properties of Seawater	Chapter 1, section 1.3
02/04	The Ocean in Motion: currents The Ocean in Motion: tides	Chapter 1, section 1.4 Chapter 1, section 1.4
02/09	Classification of the Marine Environment	Chapter 1, section 1.5
02/11	Spatial Distribution Evolutionary Relationships and Taxonomic Classification	Chapter 2, sections 2.1 - 2.2
02/16	Trophic Relationships The General Nature of Marine Life	Chapter 2, sections 2.3 - 2.4
02/18	Phytoplankton Groups Adaptations for a Planktonic Existence Primary Production in the Sea	Chapter 3, sections 3.1 - 3.2
02/23	Primary Production in the Sea	Chapter 3, section 3.3
02/25	Marine Plants	Chapter 4, sections 4.1 - 4.5
03/02	Exam #1	
03/04	Marine Heterotrophs and Invertebrates: Protozoans and Fungi	Chapter 5, sections 5.1 – 5.2
	Marine Heterotrophs and Invertebrates: Animal characteristics Marine Acoelomates and Pseudocoelomates	Chapter 5, sections 5.3 – 5.4 Chapter 5, section 5.5
03/11	Marine Heterotrophs and Invertebrates: Marine Coelomates	Chapter 5, section 5.6
03/16	Spring break	
03/18	Spring break	
03/23	Marine Vertebrates and Fishes	Chapter 6, sections 6.1 – 6.2
03/25	Marine Tetrapods	Chapter 6, section 6.3
03/30	Vertebrate Sensory Capabilities	Chapter 6, section 6.4
04/01	Exam #2	
04/06	Temperate Coastal Seas	Chapter 8, sections 8.1 – 8.3

DATE	TOPIC	TEXTBOOK READING
04/13	Coral Reefs	Chapter 9, section 9.1
04/15	Coral reefs (continued)	
04/20	Coral-Reef Fishes	Chapter 9, section 9.2
04/22	The Open Sea The Pelagic Division Patterns of Distribution	Chapter 10, section 10.1 Chapter 10, sections 10.2 - 10.4
04/27	The Open Sea Migration, Feeding, Buoyancy , Locomotion, and Orienting	Chapter 10, sections 10.5 – 10.9
04/29	The Deep-sea Floor Transfer of Oxygen and Energy	Chapter 11, sections 11.1 – 11.2
05/04	Life on Abyssal Plains Vent and Seep Communities	Chapter 11, section 11.3 Chapter 11, section 11.4
05/06	Reading Day	
05/10 6:30 – 8:00 p.m.	Final Exam	