

Westminster College  
Department of Biology  
Spring, 2005

# Marine Biology

*Biology 341*

**INSTRUCTOR** Dr. Ann Throckmorton, Associate Professor of Biology

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Office Hours:    M F    11:40 - 12:30  
                          TR     9:20 - 11:00

## 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.

## COURSE OBJECTIVES

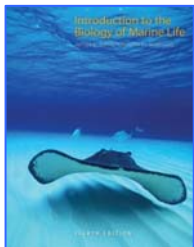
- To introduce students to the physical and biological components of marine biology
- To stimulate students to think about the complexities of the marine environment and to understand and appreciate the vast species richness of the ocean
- To describe and explain the evolutionary and ecological bases of adaptations of marine organisms
- To describe how human activities affect marine ecosystems and organisms

## LECTURE

T R 11:00 – 12:30  
228 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 TEXTBOOK



*Introduction to the Biology of Marine Life*  
by James L. Sumich and John F. Morrissey;  
Jones & Bartlett Publishers; 8th edition (April 23, 2004);  
ISBN 076373313X

## 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	30% of final grade
research paper	20% 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

Unless otherwise stated, 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 us prior to the exam and been excused. Valid excuses include such things as serious illness or injury and personal and family emergencies. We will give make-up exams only if you have notified us before the day of the test.

## 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. In addition to the textbook, I may place materials for you to read on reserve in the library.
3. Assignments: In most cases, assignments in the class will relate to the material that we will be discussing the next week. 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.

## 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.

TENTATIVE SCHEDULE OF TOPICS

DATE	TOPIC	TEXTBOOK READING
01/18	The Changing Marine Environment The World Ocean	Chapter 1, sections 1.1 -1.2
01/20	Properties of Seawater	Chapter 1, section 1.3
01/25	Properties of Seawater	Chapter 1, section 1.3
01/27	The Ocean in Motion: currents	Chapter 1, section 1.4
02/01	The Ocean in Motion: tides	Chapter 1, section 1.4
02/03	Classification of the Marine Environment	Chapter 1, section 1.5
02/08	Spatial Distribution Evolutionary Relationships and Taxonomic Classification	Chapter 2, sections 2.1 - 2.2
02/10	Trophic Relationships The General Nature of Marine Life	Chapter 2, sections 2.3 - 2.4
02/15	Phytoplankton Groups Adaptations for a Planktonic Existence Primary Production in the Sea	Chapter 3, sections 3.1 - 3.2
02/17	Primary Production in the Sea	Chapter 3, section 3.3
02/22	Exam #1	
02/24	Marine Plants	Chapter 4, sections 4.1 - 4.5
03/01	Marine Protozoans and Invertebrates: Acoelomates and Pseudocoelomates	Chapter 5, sections 5.1 – 5.2
03/03	Marine Coelomates	Chapter 5, sections 5.3 – 5.4
03/08	Marine Vertebrates	Chapter 6, section 6.1
03/10	Marine Fishes	Chapter 6, section 6.2
03/15	Marine Tetrapods	Chapter 6, section 6.3
03/17	Vertebrate Sensory Capabilities	Chapter 6, section 6.4
03/29	Temperate Coastal Seas	Chapter 8, sections 8.1 – 8.3
03/31	Intertidal Communities	Chapter 8, sections 8.4 – 8.5
04/05	Exam #2	
04/07	Coral Reefs	Chapter 9, section 9.1
04/12	Coral-Reef Fishes	Chapter 9, section 9.2
04/14	Some Tropical Marine Tetrapods	Chapter 9, section 9.3
04/19	Open oceans Vertical Distribution and Migration	Chapter 10, sections 10.1 – 10.4

04/21	Feeding, Buoyancy, Locomotion, and Orienting in the Sea	Chapter 10, sections 10.5 - 10.9
04/26	Living Conditions on the Deep-sea Floor Transfer of Oxygen and Energy	Chapter 11, sections 11.1 – 11.2
04/28	Life on Abyssal Plains Vent and Seep Communities	Chapter 11, sections 11.3 – 11.4
05/04	Reading Day	
05/05 11:30	Final Exam	

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