

BIO K175
INTRODUCTION TO MARINE SCIENCE
THREE RIVERS COMMUNITY COLLEGE, NORWICH, CT

Instructor: Nicola Ricker

Meeting Times: Tuesdays & Thursdays, 2:30 – 3:45pm Room: C101

Office Hours (C270): Mon. 1pm- 2:30pm, Tues. 3:45pm – 4:30pm, & Thurs. 11am-12:30pm

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Required Text:

Intro to the Biology of Marine Life 10th edition, John F. Morrissey and James L. Sumich, 2012
ISBN: 9780763781606

Course Prerequisites:

Corequisite: ENG* K096 or higher or prerequisite ENG* K096 with a C or better.

Course Description:

This course is an introduction to marine science. Topics to be explored include general marine biology, intertidal ecology, plankton biology, marine communities, and the geomorphology of the New England coast. Some field work may be included.

Course Objectives:

Upon completion of this course, the student will be able to recognize terminology, specific biological facts, and utilize general principles associated with the marine environment. The student will also obtain a more fully developed ability to read, understand, and disseminate peer-reviewed journal articles. This course also stresses critical thinking skills which are designed to allow the student to develop more meaningful learning beyond rote memorization; extend beyond lower levels of learning (knowledge and comprehension) to higher levels of learning (application, analysis, synthesis and evaluation); apply concepts and principles to real world experience and situations; and enhance problem solving skills.

Attendance Policy:

Attendance at all class sessions is expected. If a class is missed due to circumstances beyond your control, please be sure to notify your instructor and make the necessary arrangements **with a classmate** for obtaining the notes. **You will be responsible** for the material.

Grading Overview:

Your grade is based on a 700 point scale.

Unit Tests (4 of them)	100	400
Final (1)	200	200
Quizzes (4 of them)	15	60
Journal Presentation (1)	40	40
		700 possible points

NO extra credit assignments will be given, so please do not ask.

Grading for Quizzes, Tests & Final

There are four quizzes before each unit test. Each quiz worth 15 points for a total of 60 points. Each quiz will consist of 15 multiple choice questions.

There are four unit tests each worth 100 points for a total of 400 points. Each test will consist of 100 multiple choice questions.

The final is worth 200 points. **The final exam is cumulative.** The final exam is scheduled for Tuesday, May 19th, 2:30 – 4:30. The final exam must be taken to pass this course.

Grading for Journal Presentation

There will be one journal presentation that will be assigned during the second week. The presentation will consist of the reading and description of a peer-reviewed professional journal article. The presentation must include the author's objectives, experiments, data, and conclusions. A PowerPoint presentation will be created with ALL necessary information included with tables and graphs. The presentations will be given on 5/12/2015. More information to come.

Make-ups:

Since the objective of the quizzes is to allow you to gauge your level of understanding of the material, quizzes cannot be made up once a unit test has been taken. Make-up of a quiz **MUST** be done prior to the Unit Test.

Make-up exams will be granted on an individual basis only following a conference with the instructor. **All make-up tests must be completed on the Friday following the exam at 10am – 11:20am.** Please be aware that the format of any makeup quiz/exam is at the discretion of the instructor. The format could be the same, oral, essay or combination, depending on the circumstances. Neither quiz nor Unit Test will not be the same one taken by the rest of the students in the class.

How to calculate your grade:

To determine your grade, I suggest creating 2 columns of scores. The first is the number of points each assignment is worth; the second is the points you earned on that assignment. To determine your grade, add up each column and divide **your points** by the **total points**.

A partial example:

Points assignment is worth	Points I earned
15 (a quiz)	8
100 (a test)	75
Total = 115	Total = 83

$83/115 = 0.721 (100) = 72\% = C-$

Final Grade Calculation:

- 93.5 or better = A
- 89.5 – 93.4 = A-
- 86.5 – 89.4 = B+
- 83.5 – 86.4 = B
- 79.5 – 83.4 = B-
- 76.5 – 79.4 = C+
- 73.5 – 86.4 = C
- 69.5 – 73.4 = C-
- 66.5 – 69.4 = D+
- 63.5 – 66.4 = D

College Withdrawal Policy:

The last day to withdraw is May 11th. Students who do not withdraw but stop attending class **will receive** a grade of "F" for the final grade. **Verbal withdrawals cannot be accepted.**

Accommodations for Disabilities:

If you need assistance or modification of class procedure owing to any type of disability, please let me know so that arrangements for accommodation can be made. In order to receive accommodations, you must register with Chris Scarborough, learning specialist at 860-823-2985 or a counselor in the Student Services Development Center.

Academic Misconduct:

Academic dishonesty and plagiarism will not be tolerated. Plagiarism, cheating, or any form of academic dishonesty is **prohibited**. Plagiarism includes any instance of copying words or ideas from another person (i.e. another student, author of a book, internet resource etc.) without properly acknowledging the source. Students guilty of academic dishonesty directly or indirectly will receive a **zero** for an exercise or exam and may receive an **F** for the course in addition to other possible disciplinary sanctions that maybe imposed through the regular institutional procedures.

Digication:

All students are required to maintain a learning portfolio in Digication that uses the (Three Rivers) College Template.

COURSE LEARNING OUTCOMES

After completing this course, the student will be able to:

- 1)** Understand the scientific method and be able to formulate and test a hypothesis.
- 2)** Know the subdisciplines of marine science (physical, biological, chemical, geological).
- 3)** Understand distribution of the World's Oceans, movements of large water masses, and estuarine circulation.
- 4)** Identify the properties of water and components of seawater.
- 5)** Understand pH and key chemical reactions in the ocean.
- 6)** Discuss the various biogeochemical cycles within the ocean.
- 7)** Classify living organisms of major phyla.
- 8)** Be able to use a taxonomic key to identify species.
- 9)** Be able to identify common organisms of Long Island Sound and the New England coast.
- 10)** Discuss adaptations and strategies of marine organisms for survival, reproduction, growth, mobility, defense, and competition.
- 11)** Identify and characterize pelagic, coastal, benthic, estuarine, and intertidal habitats.
- 12)** Understand ongoing ecological processes associated with oceanic habitats.
- 13)** Have a broad understanding of the relationship of the World's Oceans to the global ecosystem.
- 14)** Know the geological origins and present morphology of Long Island Sound.
- 15)** Explain the economic and ecological importance of algae in aquatic environments.
- 16)** Be aware of environmental threats to oceans, Long Island Sound, and coastal wetlands.
- 17)** Be aware of negative impacts on coastal and marine systems (i.e. pollution, overfishing, overpopulation, wetland destruction).
- 18)** Be aware of how choice lifestyle can minimize marine systems degradation.
- 19)** Discuss possible solutions for currently arising problems within marine systems.
- 20)** Gain a deep seeded respect and admiration for marine systems.

Topical Outline

- I** Introduction to the World's Oceans and Marine Science
 - A.** Disciplines within oceanography
 - 1) Biology and ecology
 - 2) Physical oceanography
 - 3) Chemical oceanography
 - 4) Geological oceanography
 - 5) Biological oceanography
 - B.** Historical timeline of marine science milestones
 - C.** Distribution of the World's Oceans
 - D.** Physical and chemical properties of seawater
 - E.** The ocean in motion
 - 1) Tides
 - 2) Currents
 - 3) Circulation

- II** Ecological and Biological concepts
 - A.** General nature of marine life
 - B.** Adaptations of marine life
 - C.** Basis ecological concepts
 - 1) Laws of thermodynamics and energy laws
 - 2) Food Webs
 - 3) Energy transfer

- III** Overview of Marine Organisms
 - A.** Systematic and taxonomic classification
 - B.** Plants: Primary Producers
 - 1) Phytoplankton
 - 2) Macroalgae
 - 3) Vascular plants
 - C.** Animals: Secondary producers + primary consumers
 - 1) Protozoans
 - 2) Porifera
 - 3) Cnidaria and Ctenophores
 - 4) Annelids and other wormlike phyla
 - 5) Mollusks
 - 6) Arthropods
 - 7) Echinoderms
 - 8) Chordates

- IV** Oceanic Habitats
 - A.** Benthic Communities
 - 1) Seafloor characteristics
 - 2) Deep-sea vents
 - B.** Coral Reefs
 - C.** Pelagic Communities
 - D.** Estuaries

- V Coastal Habitats**
 - A. Salt Marshes**
 - B. Mangroves**
 - C. The intertidal Zone**
 - 1) Sandy shores**
 - 2) Rocky shores**
 - 3) Mudflats**
- VI Humans and the sea**
 - A. Oceanic Resources**
 - 1) Food from the sea: fisheries + fish farming**
 - 2) Mining from the sea**
 - B. Coastal Management**
 - C. Oceanic Pollution**
 - 1) Sewage**
 - 2) Toxins**
 - 3) Oil spills**
 - 4) Floatables**

Marine Science Spring 2015

the syllabus is not set in stone and is open to revisions at any time deemed necessary

<u>Date</u>	<u>Lecture Material/Chapter to be covered</u>
Week 1 1/22	Hand Out Syllabus & Orientation Chapter 1 The Ocean as a Habitat
Week 2 1/27 & 1/29	Chapter 1 The Ocean as a Habitat Chapter 2 Patterns of Association
Week 3 2/3 No Classes 2/5	Chapter 2 Patterns of Association Chapter 3 Phytoplankton
Week 4 2/10 & 2/12	Chapter 3 Phytoplankton Quiz #1 (R) Chs. 1-3
Week 5 2/17 & 2/19	Unit Test #1 (chapters 1-3) (Tues.) Chapter 4 Marine Plants (Thurs)
Week 6 2/24 & 2/26	Chapter 4 Marine Plants Chapter 5 Microbial Heterotrophs and Invertebrates
Week 7 3/3 & 3/5	Chapter 5 Microbial Heterotrophs and Invertebrates Chapter 6 Marine Vert's I: Fishes & Reptiles
Week 8 3/10 & 3/12	Quiz # 2 (T) Chapter 6 Marine Vert's I: Fishes & Reptiles Unit Test #2 (R) Chs 4-6 Spring Break after UT #2
Week 9 3/24 & 3/26	Chapter 7 Marine Verts II: Seabirds and Marine Mammals Chapter 8 Estuaries
Week 10 3/31 & 4/2	Chapter 8 Estuaries Chapter 9 Coastal Seas
Week 11 4/7 & 4/9	Quiz #3 (T) Chapter 9 Coastal Seas Unit Test #4 (R) Chs. 7-9
Week 12 4/14 & 4/16	Chapter 10 Coral Reefs Chapter 11 The Open Sea
Week 13	Chapter 11 The Open Sea Chapter 12 The Deep-Sea Floor
Week 14	Chapter 12 The Deep-Sea Floor Chapter 13 Harvesting Living Marine Resources
Week 15	Quiz #4 (T) Chapter 13 Harvesting Living Marine Resources Unit Test #4 (R) Chs 10-13
Week 16	Journal Presentations Review for Final
Week 17	Final Exam Tuesday 5/19 at 2:30pm till 4:30 pm

