BIOLOGY OF MARINE ORGANISMS
BIOLOGY F3280
200401-F01-S2005

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Phone: 474-6295

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Phone: 474-5393

TEXTBOOK: 

SUPPLEMENTS: 

See book and Video Library in Bunn. Rm. 316!

HANDOUTS (HO): Free

LECTURE: 11:30 a.m. to 1:00 p.m. M & W, 409 Bunnell (w/Notes) Meets ORAL INTENSIVE communication requirement

PREREQUISITES: Upper division standing, Comm. 131 or equivalent and. A Biol. 105/106 knowledge-level is assumed.

COURSE DESCRIPTION:
Marine Biology, a 3-cr. "O" course, is designed to provide an in-depth introduction to the field of Marine Biology, in the broad sense, for the mid-level undergraduate student with interests in marine biological and oceanographic sciences. Assumed is a minimum background in basic chemical, physical, and biological sciences, but certainly no more than would be obtained from introductory ‘100’ level courses. Familiarity with the major invertebrate phyla is helpful. Some acquaintance with basic ecological concepts is also be helpful but, if lacking, may be obtained from primary and supplemental readings in ecology.

Our focus will place emphasis on those Ecological Processes and Adaptations that act to structure marine associations, ocean habitat, distribution, classification, and functional morphology of organisms that permit their persistence through time.

The course will not become a guided tour down the garden path toward knowing our Alaskan flora and fauna, necessarily. Where appropriate, information and data pertinent to Alaska will be provided. Unfortunately, the construct of our course, its relative proximity to marine systems, and the time of year, simply do not lend themselves to strong field or laboratory orientation. The 90-Min. class meeting times will allow for the use of traditional lectures supplemented with audiovisuals such as 35 mm color slides, VHS videos, occasional films, abundant overhead projections, preserved specimens, ‘thematic labs’ (e.g., larvae, animal phyla,
marine algae), and project oriented "laboratories". It is the intent of this instructor to duplicate our formal NOTE set for distribution and use during class discussions. Therefore, a 3-ringed notebook will be needed to contain myriad handouts in an organized manner.

You will be given opportunity to:
1) "search the literature" for supplemental READING,
2) make five 3min.CRITIQUES on marine subjects of interest (see the critique subject list),
3) write an ABSTRACT on a literature research project of interest, and
4) prepare information for presentation to the class in a 15min. oral presentation made in our 11th MARINE BIOLOGY COLLOQUIUM to be conducted, critiqued, and graded. (See Lect. Sched. For dates)

LEARNING OBJECTIVES:
It is the intent of your instructor and TA to introduce and have you develop a working knowledge of the following biological paradigms, dogma, principles and/or concepts in Marine Biological sciences: water properties, oceanography, ecology of marine ecosystems (high[rocky], medium [sandy], low [muddy] energy beaches), lagoons, estuaries and salt marshes, benthose [kelp forests, seagrasses, mangroves, coral reefs], organismal communities [larvae, benthic, deep sea, phyto- & zooplankton, nektom, and meiofauna], primary production, marine symbioses, and human impacts.

GRADING:
Grades will be based on total points (ca. 575) received from three lecture exams, Five Scientific Paper Critiques, the Abstract and Presentation at our Eleventh Marine Biology Colloquium. Circa 35% of your grade will be “oral” based.

Total points earned will conform to an Adjusted Point Total (APT = curved point total) that equals one half the difference between my Total Points Possible (TPP) and your highest Total Number of points earned in our course. The APT will then be set to the following % scale and superimposed such that:

A = 92-100 %
B = 82- 91 %
C = 72- 81 %
D = 65- 71 %
F = 0- 64 %

Point distributions will be made approximately as follows:

<table>
<thead>
<tr>
<th>POINTS</th>
<th>TASK</th>
<th>CHAPTERS</th>
<th>DATES</th>
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<tbody>
<tr>
<td>25</td>
<td>Sci. Paper Critique 1</td>
<td></td>
<td>Feb. 2</td>
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<tr>
<td>25</td>
<td>Sci. Paper Critique 2</td>
<td></td>
<td>Feb. 9</td>
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<tr>
<td>125</td>
<td>Lecture Exam 1</td>
<td>1,2,P,D &amp; Zooplankton</td>
<td>Feb. 16</td>
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<td>25</td>
<td>Sci. Paper Critique 3</td>
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<td>Feb. 23</td>
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<td>25</td>
<td>Sci. Paper Critique 4</td>
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<td>Mar. 2</td>
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<tr>
<td>25</td>
<td>Sci. Paper Critique 5</td>
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<td>Mar. 9</td>
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This instructor also reserves the right to include subjective “human element” considerations in determining final course grades; i.e., class attendance, improvement(s), extenuating and/or unforeseen circumstances, illness, motivation, effort, participation, and the general level of enthusiasm, to which points will not nor can they be assigned but can indirectly affect the outcome of semester grades very dramatically. Platonic discourse and questioning strategies are used such that this class will become a discussion! Keep up with the readings and, whatever you do, don’t miss lectures!

### Biology: Marine Organisms Lecture & Laboratory Schedule

<table>
<thead>
<tr>
<th>Dates</th>
<th>Discussion Topics</th>
<th>Assignments</th>
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<tbody>
<tr>
<td>JAN 17 M</td>
<td>Alaska Civil Rights Day</td>
<td>Closed Campus</td>
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<tr>
<td>JAN 20 R</td>
<td>FIRST DAY OF INSTRUCTION: Late registration &amp; financial aid begin</td>
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<td>JAN 24 M</td>
<td>LECTURE:</td>
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<td></td>
<td><strong>Introduction to the Marine Environment</strong></td>
<td>Read Ch. 1</td>
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<td>Syllabus</td>
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<td>Marine Biology Colloquium</td>
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<td></td>
<td>The Scientific Paper Critique &amp; Topics</td>
<td>(HO)</td>
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<td>Personal Data Card</td>
<td>(HO)</td>
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<td></td>
<td><strong>The Marine Environment</strong></td>
<td>Read Ch. 1</td>
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<td>Divisions of the Marine Environment</td>
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<td>Properties of Water</td>
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<td>Basic Oceanography</td>
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<td>VIEW VIDEO #1: Miracle Planet (Check out for Home viewing)</td>
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<td>JAN 26 W</td>
<td>LECTURE:</td>
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<td></td>
<td><strong>The Marine Environment</strong></td>
<td>Read Ch. 1</td>
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<td>Ecological Principles</td>
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<td>Larvae and Larval Ecology</td>
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<td></td>
<td>Comparisons of Terrestrial and Marine Ecosystems</td>
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<td>JAN 28 F</td>
<td>Last day for late registration, fee payment and 100% tuition refunds</td>
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<td>JAN 31 M</td>
<td>LECTURE/LABORATORY:</td>
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<td><strong>Marine Animal Phyla</strong>-The “Colonial Protists” &amp; Protostomes</td>
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<td></td>
<td>VIEW VIDEO #2: In Search of the Giant Squid (Check out for Home viewing)</td>
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FEB 2 W  LECTURE/LABORATORY:
   Marine Animal Phyla-The Deuterostomes
SCIENTIFIC PAPER CRITIQUE 1 w/ 3min. presentation  DUE
VIEW VIDEO #7: Cephalopods: Incredible Suckers (Check out for Home viewing)

FEB 4 F  Last day for student/faculty initiated withdrawal, Student & Faculty initiated drops and 50% refunds

FEB 7 M  LECTURE:
   Plankton and Plankton Communities
   Phyto- and Zooplankton
   Floatation Mechanisms
VIEW VIDEO #3: Season in the Sea (Check out for Home viewing)

FEB 9 W  LECTURE:
   Plankton and Plankton Communities
   Primary Productivity of the Biosphere
SCIENTIFIC PAPER CRITIQUE 2 w/ 3min. presentation  DUE
LECTURE/LABORATORY EXAM 1 Review Sheet  HO

FEB 14 M  LECTURE/LABORATORY:
   Plankton and Plankton Communities
   Factors Affecting Primary Production
   The Ocean Ecosystem:
   The Classic Model & A Changing Model

FEB 15 T  LAST DAY TO APPLY FOR SPRING 2003 GRADUATION
and deadline to apply for privately funded scholarships

FEB 16 W  LECTURE/LABORATORY EXAM 1  Chpts 1 & 2
   Protostomes and Deuterostomes,
   and ZOOplankton (Larvae)

FEB 21 M  LECTURE/LABORATORY:
   PHYTOplankton: The Micro- and Macro- Algae
   (Protista & Plantae)

FEB 23 W  LECTURE:
   Deep-Sea Biology
   Zonation
   Sampling the Deep Sea
   Environmental Characteristics
SCIENTIFIC PAPER CRITIQUE 3 w/ 3min. presentation  DUE

FEB 25 F  Low grade reports for Freshman due!
FEB 28 M LECTURE:
Adaptations of Deep-Sea Organisms
Community Ecology of the Benthos
Mid-water Community Ecology

VIEW VIDEO #4: Deep Sea (Check out for Home viewing)

MAR 2 W LECTURE: OCEANIC NEKTON
Adaptations of Oceanic Nekton
Ecology of Nekton

SCIENTIFIC PAPER CRITIQUE 4 w/ 3min. presentation DUE

MAR 7 M LECTURE:
SHALLOW-WATER SUBTIDAL BENTHIC ASSOCIATIONS
Environmental Conditions
Unvegetated Sedimentary Environ
Rocky Subtidal Communities

MAR 9 W LECTURE:
Kelp Beds and Forests
Seagrass Communities
Special Communities

SCIENTIFIC PAPER CRITIQUE 5 w/ 3min. presentation DUE
LECTURE/LABORATORY EXAM 2 Review Sheet

MAR 12-20 SPRING BREAK

MAR 21 M Last day for Student/Faculty initiated withdrawals with “W” grade
LECTURE:
MEIOFAUNA
Environmental Characteristics, Adaptations & Ecology
Composition of Interstitial Assemblages
Sampling and Extracting

MAR 23 W LECTURE:
TROPICAL COMMUNITIES
Coral Reefs

VIEW VIDEO #5: Under the Emerald Sea (Check out for Home viewing)

MAR 28 M LECTURE:
LECTURE/LABORATORY EXAM 2

Chpts. 4, 3, 5, 7,
& PHYTO plankton (Algae)

MAR 30 W LECTURE:
Coral Reefs cont.

Read Ch. 3
Read Ch. 5
Read Ch. 9
DUE
DUE
HO

Mangrove Forests

**VIEW VIDEO #6: Treasures of the Great Barrier Reef**
(Check out for Home viewing)

**APR 4 M** LECTURE:

**Intertidal Ecology**
- Environmental Conditions
- Adaptations of Intertidal Organisms

**APR 6 W** *Registration and fee payment for Fall semester 2005 begins*
LECTURE:
- Rocky Shores
- Sandy Shores
- Muddy Shores

**COLLOQUIUM TIME SLOT**

**APR 11 M** LECTURE:

**Estuaries and Salt Marshes**
- Types of Estuaries
- Physical Characteristics
- Biota of Estuaries

**APR 13 W** LECTURE:

**Estuaries and Salt Marshes**
- Adaptations of Estuarine Organisms
- Ecology of Estuaries
- Salt Marshes

**APR 18 M** LECTURE:

**Symbiotic Relationships**
- Symbioses of Algae and Animals
- Symbioses among Animals

**COLLOQUIUM ABSTRACT DUE**

**APR 20 W** LECTURE:

**Human impact on the Sea**
- Fisheries
- Mariculture
- Pollution
- Drugs from the Sea
- Global Warming and Sea Level

**Colloquium Abstract Due**
LECTURE/LABORATORY EXAM 3 Review Sheet

**APR 25 M** LECTURE EXAM 3 (our “final”)

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**Read Ch. 6**

**Read Ch. 6**

**SIGN UPS**

**Read Ch. 6**

**Read Ch. 8**

**FOR EC!**

**Read Ch. 10**

**Drop Dead Date**

**HO**

**Chpts. 6,8,9,10,11**
APR 27 W  11th MARINE BIOLOGY COLLOQUIUM 10 min. student presentations
          Sessions 1 & 2.

APR 29 F  Nanook SpringFest, No Classes:

MAY  2 M  11th MARINE BIOLOGY COLLOQUIUM 10 min. student presentations
          Sessions 3 & 4

MAY  4 W  11th MARINE BIOLOGY COLLOQUIUM 10 min. student presentations
          Sessions 5 & 6

MAY  6 F  LAST DAY OF INSTRUCTION
          11th MARINE BIOLOGY COLLOQUIUM 10 min. student presentation
          Completions if need be.
          Marine Biology All Phyla Feeding Frenzy: Fishes and Loaves
          Location to be announced, 6 p.m.

MAY  9-12  FINALS

MAY 15 S  COMMENCEMENT

MAY 18 W  Spring Semester grades DUE to Registrar

VIDEOS: View at your own discretion, in the lab. or check out for take-home viewing in the
        comfort of your own dwelling. See suggested Syllabus viewing dates blocks.

       Don’t forget the popcorn!
1. Miracle Planet
2. In Search of the Giant Squid
3. Season in the Sea
4. Deep Sea
5. Under the Emerald Sea
6. Treasures of the Great Barrier Reef
7. Cephalopods: Incredible Suckers