BIOLOGY OF MARINE ORGANISMS
BIOLOGY F328O
33658-F01-S2008

E-mail: ffgal@uaf.edu Lab: 316 Bunn.
Office: 474-6295 474-5393


See other books and videos in Reserve Library (Bunn. 316 RES.)!

HANDOUTS (HO): Free

LECTURE: 10:30 a.m. to 12:00 p.m. M & W, 409 Bunnell (w/ Distributed Note sets)
Meets ORAL INTENSIVE “O” Comm. requirement for Graduation.

PREREQUISITES: Upper division standing, and Comm. 131/141 or an equivalent. Biol. 105/106 knowledge levels are assumed. Concurrent 106 registrn. is OK!

COURSE DESCRIPTION:

Marine Biology, a 3-cr. “O” intensive course, is designed to provide an in-depth introduction to the field of marine science, in the broad sense, for mid-level undergraduate students with marine biological and oceanographic interests. Assumed is a minimum background in basic chemical, physical, and biological sciences, but certainly no more than would be obtained from introductory ‘100/200’ level courses. Familiarity with the major invertebrate phyla will indeed be helpful. Some acquaintance with basic ecological concepts is also helpful. If lacking, ecological concepts may be obtained from primary and supplemental readings in ecology.

Our focus will place emphasis on Ecological Processes and Adaptations that act to structure marine association, ocean habitat, organismal distribution, classification, and functional morphology that permits their persistence through time.

Our course will not become a guided tour down the garden path toward knowing our Alaskan marine 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 engaging field or living-laboratory orientations. The 90-min. class meetings will allow for the use of traditional lectures supplemented with audiovisuals such as 35 mm color slides, VHS videos and Video-discs, occasional films, abundant overhead projections, preserved specimens, select “thematic” (e.g.,
It is my intent to duplicate formal NOTE sets 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 opportunities to:

1) “Search the literature” for supplemental READING;
2) Present five 3-min. scientific CRITIQUES on marine subjects of interest to you and hopefully to your classmates (see the critique subjects listing);
3) Write an EXTENDED ABSTRACT on a literature research project of interest; and
4) Prepare information for presentation to the class in a 15-min. oral presentation made during our 16th MARINE BIOLOGY COLLOQUIUM to be conducted, critiqued, evaluated and graded in part by you. (See Lect. Sched. for IMPORTANT dates.)

LEARNING OBJECTIVES:

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

GRADING:

Grades will be based on a total point accumulation (ca. 650) received from three lecture exams (375-pts.), Five Scientific Paper Critiques (175-pts.), and the Abstract and Presentation at our Sixteenth Marine Biology Colloquium (100-pts.). Circa 42% of your grade will be “oral-based”.

This instructor also reserves the right to include other 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 point accumulation and the outcome of semester grades very dramatically. Platonic discourse and questioning strategies are used such that this class will be discussional! Keep up with the readings and, whatever you do, you cannot afford to miss lectures!

I abhor cell phones, and especially those that go off in class!

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+= 98 – 100%
- A  =  93 – 97%
- A- =  90 – 92%
- B+=  88 – 89%
- B  =  83 – 87%
- B- =  80 – 82%
<table>
<thead>
<tr>
<th>POINTS</th>
<th>TASK</th>
<th>CHAPTERS</th>
<th>DATES</th>
</tr>
</thead>
<tbody>
<tr>
<td>35</td>
<td>Sci. Paper Critiq1, Pres. &amp; Ref.</td>
<td>Feb. 11M Bunn. 409</td>
<td></td>
</tr>
<tr>
<td>35</td>
<td>Sci. Paper Critiq2, Pres. &amp; Ref.</td>
<td>Feb. 18M Bunn. 409</td>
<td></td>
</tr>
<tr>
<td>35</td>
<td>Sci. Paper Critiq5, Pres. &amp; Ref.</td>
<td>Apr. 2W Bunn. 409</td>
<td></td>
</tr>
<tr>
<td>125</td>
<td>Lecture Exam 1</td>
<td>1, 2, P, D, Zoopl.</td>
<td>Feb. 27 W Bunn. 409</td>
</tr>
<tr>
<td>125</td>
<td>Lecture Exam 2</td>
<td>4, 3, 5, 7, Phytopl.</td>
<td>Apr. 2 W Bunn. 409</td>
</tr>
<tr>
<td>125</td>
<td>Lecture Exam 3</td>
<td>9, 10, 11</td>
<td>Apr. 21M Bunn. 409</td>
</tr>
<tr>
<td>25</td>
<td>Colloquium Sign Ups</td>
<td></td>
<td>Apr. 14</td>
</tr>
<tr>
<td></td>
<td>Colloquium Abstracts Due</td>
<td></td>
<td>Apr. 16-EC</td>
</tr>
<tr>
<td></td>
<td>Colloquium Abstracts Due</td>
<td></td>
<td>Apr. 18-DropDeadDate</td>
</tr>
<tr>
<td>50</td>
<td>Colloquium Presentations</td>
<td></td>
<td>Apr. 23, 28 &amp; May 5</td>
</tr>
<tr>
<td>25</td>
<td>Colloquium Other</td>
<td></td>
<td>Apr. 23, 28 &amp; May 5</td>
</tr>
<tr>
<td>$10</td>
<td>Phyla Feeding Frenzy</td>
<td></td>
<td>May 7 6pm</td>
</tr>
</tbody>
</table>

**650 TOTAL COURSE POINTS**
## Biology of Marine Organisms Lecture & “Laboratory” Schedule

<table>
<thead>
<tr>
<th>DATES</th>
<th>TOPICS OF DISCUSSION</th>
<th>ASSIGNMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>JAN 21 M</td>
<td>Alaska Civil Rights Day</td>
<td>Closed Campus</td>
</tr>
<tr>
<td>JAN 24 Th</td>
<td>FIRST DAY OF INSTRUCTION: Late registration &amp; financial aid begin</td>
<td></td>
</tr>
<tr>
<td>JAN 28 M</td>
<td>LECTURE:</td>
<td>Read Ch. 1</td>
</tr>
<tr>
<td></td>
<td>Introduction to the Course</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Syllabus</td>
<td>(HO)</td>
</tr>
<tr>
<td></td>
<td>Marine Biology Colloquium</td>
<td>(HO)</td>
</tr>
<tr>
<td></td>
<td>The Scientific Paper Critique &amp; Topics</td>
<td>(HO)</td>
</tr>
<tr>
<td></td>
<td>Personal Data Card</td>
<td>(HO)</td>
</tr>
<tr>
<td></td>
<td>The Marine Environment</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Divisions of the Marine Environment</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Properties of Water</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Basic Oceanography</td>
<td></td>
</tr>
<tr>
<td></td>
<td>VIEW VIDEO #1: Miracle Planet (Check out for Home viewing)</td>
<td></td>
</tr>
<tr>
<td>JAN 30 W</td>
<td>LECTURE:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>The Marine Environment Cont.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ecological Principles</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Larvae and Larval Ecology</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Comparisons of Terrestrial and Marine Ecosystems</td>
<td></td>
</tr>
<tr>
<td>FEB 1 F</td>
<td>Last day for late registration, fee payment and 100% tuition refunds</td>
<td></td>
</tr>
<tr>
<td>FEB 4 M</td>
<td>LECTURE/LABORATORY:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Marine Animal Phyla-“Colonial Protistans” &amp; Protostomes</td>
<td></td>
</tr>
<tr>
<td></td>
<td>VIEW VIDEO #2: In Search of the Giant Squid (Home viewing)</td>
<td></td>
</tr>
<tr>
<td>FEB 6 W</td>
<td>LECTURE/LABORATORY:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Marine Animal Phyla-The Deuterostomes</td>
<td></td>
</tr>
<tr>
<td></td>
<td>VIEW VIDEO #2: In Search of the Giant Squid (Home view)</td>
<td></td>
</tr>
<tr>
<td>FEB 8 F</td>
<td>Last day for student/faculty initiated withdrawal, Student</td>
<td></td>
</tr>
<tr>
<td></td>
<td>&amp; Faculty initiated drops and 50% refunds</td>
<td></td>
</tr>
<tr>
<td>FEB 11 M</td>
<td>LECTURE/LABORATORY:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>SCIENTIFIC PAPER CRITIQUE 1 w/3min. presentation DUE</td>
<td></td>
</tr>
<tr>
<td></td>
<td>VIEW VIDEO #7: Cephalopods: Incredible Suckers (Home view)</td>
<td></td>
</tr>
<tr>
<td>FEB 13 W</td>
<td>LECTURE:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Plankton and Plankton Communities</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Phyto- and Zooplankton</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Floatation Mechanisms</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Primary Productivity of the Biosphere</td>
<td></td>
</tr>
<tr>
<td></td>
<td>VIEW VIDEO #3: Season in the Sea (Home view)</td>
<td></td>
</tr>
</tbody>
</table>
FEB 15 F  LAST DAY TO APPLY FOR SPRING 2008 GRADUATION
and deadline to apply for privately funded scholarships

FEB 18 M  LECTURE:
            SCIENTIFIC PAPER CRITIQUE 2 w/3min. presentations  DUE
            LECTURE/LABORATORY EXAM 1 Review Sheet  HO

FEB 20 W  LECTURE/LABORATORY:
            Plankton and Plankton Communities
            Factors Affecting Primary Production

FEB 25 M  Summer Session Registration begins
            LECTURE/LABORATORY:
            Plankton and Plankton Communities
            Factors Affecting Primary Production
            The Ocean Ecosystem:
            The Classic Model & A Changing Model

FEB 27 W  LECTURE/LABORATORY EXAM 1  Chpts 1 & 2
            Protostomes and Deuterostomes,
            and ZOO plankton (Larvae)

FEB 29 F  Low grade reports for Freshman due!

MAR 3 M  LECTURE/LABORATORY:
            EXAM 1 return
            PHYTO plankton: The Micro- and Macro- Algae (Protista & Plantae)

MAR 5 W  LECTURE:  Read Ch. 4
            Deep-Sea Biology
            Zonation
            Sampling the Deep Sea
            Environmental Characteristics
            Adaptations of Deep-Sea Organisms
            Community Ecology of the Benthos
            Mid-water Community Ecology

MAR 8-16 Spring Break

MAR 17 M  LECTURE:  Read Ch. 3
            Oceanic Nekton
            Adaptations of Oceanic Nekton
            Ecology of Nekton
            VIEW VIDEO #4: Deep Sea (Home view)

MAR 19 W  LECTURE:
            SCIENTIFIC PAPER CRITIQUE 3 w/3min. presentation  DUE

MAR 24 M  LECTURE:  Read Ch. 5
Shallow-Water Subtidal Benthic Associations

Environmental Conditions
Unvegetated Sedimentary Environs
Rocky Subtidal Communities
Kelp Beds and Forests
Seagrass Communities
Special Communities

MAR 26 W LECTURE:
LECTURE/LABORATORY EXAM 2 Review Sheet HO
SCIENTIFIC PAPER CRITIQUE 4 w/ 3min. presentation DUE

MAR 28 F Last day for Student/Faculty initiated withdrawals with “W” grade

MAR 31 M LECTURE: Read Ch. 7
Meiofauna
Environmental Characteristics, Adaptations & Ecology
Composition of Interstitial Assemblages
Sampling and Extracting

APR 2 W LECTURE:
LECTURE/LABORATORY EXAM 2 Chpts. 4,3,5,7
& PHYTOplankton (Algae)
SCIENTIFIC PAPER CRITIQUE 5 w/ 3min. presentation DUE

APR 7 M LECTURE: Read Ch. 9
Tropical Communities
Coral Reefs
Coral Reefs cont.
Mangrove Forests

VIEW VIDEO #6: Treasures of the Great Barrier Reef (Home view)

APR 9 W LECTURE:
Tropical Communities
Coral Reefs cont.
Mangrove Forests

APR 14 M Registration and fee payment for Fall semester 2008 begins
LECTURE: Read Ch. 10
Symbiotic Relationships
Symbioses of Algae and Animals
Symbioses among Animals

COLLOQUIUM TIME SLOT SELECTION W/TITLES SIGN UPS
LECTURE/LABORATORY EXAM 3 Review Sheet HO

APR 16 W LECTURE: Read Ch. 11
Human Impact on the Sea
Fisheries
Mariculture
Pollution
Drugs from the Sea
Global Warming and Sea Level

**COLLOQUIUM ABSTRACT DUE FOR EC!**

APR 18 F  *Nanook Spring Fest, No Classes*
**COLLOQUIUM ABSTRACT DUE**  *Drop Dead Date!*

APR 21 M  **LECTURE:**
**LECTURE EXAM 3** (our “final”)
*Chpts. 9,10,11*

APR 23 W  **LECTURE:**
16th MARINE BIOLOGY COLLOQUIUM
**15 min. student presentations**  *Sessions 1 & 2.*

APR 28 M  **LECTURE:**
16th MARINE BIOLOGY COLLOQUIUM
**15 min. student presentations**  *Sessions 3 & 4*

APR 30 W  Dr. L. is on travel APR 29-MAY 4! *No class.*

MAY 5 M  **LAST DAY OF INSTUCTION & Course Evaluation**
16th MARINE BIOLOGY COLLOQUIUM
**15 min. student presentations**  *Sessions 5 & 6*

MAY 7 W  **MARINE BIOLOGY PHYLA FEEDING FRENZY: Fishes and Loaves**
Location to be announced, 6 p.m.

MAY 7-10 W-Sa  **FINALS**

MAY 11 Su  **COMMENCEMENT**

MAY 14 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. Treasures of the Great Barrier Reef
6. Cephalopods: Incredible Suckers