

# TROPICAL MARINE ECOLOGY - SYLLABUS - EBIO 3190 - FALL 2009

(TR 8:00 - 9:15am – RAMY N1B23)

<u>WK</u>	<u>DATES</u>		<u>LECTURE TOPICS</u>	<u>CHAPTERS</u>
1	Aug. 25 Aug. 27	T R	“Marine Biology” -- Course introduction/pedagogy/project paper <i>Sensational Seas</i> , 2004, 45-min. DVD, New World Pub. f/ www.REEF.org	1 - 2
2	Sept. 1-3	TR	Marine environment: Geological and physical oceanography	2 - 3
3	Sept. 8-10	TR	Chemical oceanography; Ecological concepts; Marine monerans; Protistans; Non-vascular and vascular plants; Porifera	3 - 7
4	Sept. 15-17 Sept. 18	TR F	Marine cnidarians: Hydrozoans; Scyphozoans; Anthozoans. <b>TITLE PAGE/LITERATURE CITED due by 4:00 pm, Friday</b>	7
5	Sept. 22 Sept. 24	T R	Corals conclusion; Ctenophores; Flatworms; Intro. to molluscs. <b>MIDTERM - EXAM I</b>	7
6	Sept. 29-Oct. 1	TR	Gastropods; Bivalves; Cephalopods	7
7	Oct. 6-8	TR	Octopuses conclusion; Polychaetes; Marine arthropods.	7
8	Oct. 13-15	TR	Marine crustaceans conclusion; Ectoprocts (bryozoans); Echinoderms	7
9	Oct. 19 Oct. 20 Oct. 22	M T R	<b>LIBRARY RESEARCH PAPER due by 4:00 pm, Monday</b> Echinoderms conclusion; Chordates: Tunicates; Vertebrates: Sharks. Marine bony fishes.	7 - 8
10	Oct. 27 Oct. 29	T R	Marine bony fishes. Marine reptiles.	8 9
11	Nov. 3 Nov. 5	T R	<b>MIDTERM - EXAM II</b> <b>No Class</b>	
12	Nov. 10-12	TR	Reptiles conclusion. Marine birds and mammals: Cetaceans.	9
13	Nov. 17-19	TR	Mammals (conclusion). Intertidal zones: Rocky shores.	9 - 11
14	Nov. 23-27	M-F	<b>CU Fall Break and Thanksgiving Vacation</b>	
15	Dec. 1-3	TR	Particulate shores; Estuaries; Salt marshes; Mangroves; Sea grass beds; Kelp forests; Coral reefs; Continental shelf; Epipelagic, mesopelagic and deep pelagic zones;	11-16
16	Dec. 8-10	TR	Deep benthic communities; Hydrothermal vents. Coral reef destruction; Rejuvenated reefs; Ocean contaminants: Trash; Oil; Heavy metals; Organic wastes; Radioactive wastes; Thermal pollution; Plastics; Sewage. Whaling and shark finning; Ocean food sources; EEZ; Third-world & Tokyo fish markets; Mariculture; Farming/ranching. Other marine resources: Oil; Salt; FW; Misc. chemicals and pharmaceuticals.	16-19
17	Dec. 15	T	<b>COMPREHENSIVE FINAL EXAM – TUESDAY, 7:30 pm – 10:00 pm</b>	

## TROPICAL MARINE ECOLOGY

**COURSE:** This course will be based on a lecture format with the substantial use of 2x2 images. One year of college biology is a prerequisite. The course emphasis will be on major marine communities and the organisms living there. Many of the symbiotic relationships among these organisms and the increasing environmental degradation being witnessed in marine communities will also be discussed. While tropical marine communities will be given greater emphasis, this course may more appropriately fit a “marine ecology” format.

**REQUIRED TEXT:** *Marine Biology*, seventh edition, 2008, by Peter Castro and Michael Huber. McGraw-Hill. New York, NY.

This text is to be used as background and supplementary information for the lectures. Note that some lecture topics are adequately covered in the text and some are not. While the lectures will be emphasized on the exams, there may be occasional exam questions taken from the required reading assignments.

**MIDTERM EXAMS (2);  
COMPREHENSIVE  
FINAL EXAM:**

General ecological marine concepts, generalized divisions of the marine environment and broad groupings of marine organisms will be emphasized and studied, using a variety of illustrative materials. Many of the illustrations/examples may be quite specific; therefore, general as well as specific questions may be expected on the exam.

See scheduled dates on the “Syllabus” for the **midterm exams**. These will be **critically** evaluated, short-answer, short-discussion exams -- each counting 20% of the course grade. Lecture material will be **very heavily emphasized**, and the second midterm will **not** be comprehensive. The proportion of questions on the midterm exams will approximate the proportional coverage of the subject matter in lecture. It is suggested that the importance of class attendance be judged on the basis of the score received on the first midterm exam.

The **comprehensive final exam** will be based on the same format as the hour exams and will count 35% of the course grade. Approximately one-third of this exam will cover material presented in the first two-thirds of the course.

**LIBRARY RESEARCH  
PAPER**

This paper will be written on some aspect of marine ecology – the student chooses his/her topic – and will count 25% of the course grade. Sign up for a paper topic during the first few weeks of the semester. See “Library Research Paper Guidelines,” attached.

Professor Barbara Losoff in Norlin Library will offer a help session on how to do an electronic search for scientific, refereed journal articles. Check your schedules/calendars to see which time works best for you. Only one session will be given and the time most convenient to the majority will be selected by vote during the first week of class. The two possible times are 4–5 pm in Norlin E305 on Wednesday or Thursday, September 9<sup>th</sup> or 10<sup>th</sup>. This voluntary help session has been very valuable to participants in the past, so you might think about freeing up time for it.

**GRADES:** A final grade distribution approximating 20% **As** and 40% **Bs** can be expected with borderline grades influenced by **absenteeism** and **tardiness**.

**PROFESSOR:**

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8/21/09

# TROPICAL MARINE ECOLOGY - LIBRARY RESEARCH PAPER GUIDELINES

## I. LIBRARY RESEARCH PAPER FORMAT

**TOPIC/PURPOSE/FORMAT:** This assignment is designed to follow the independent library research one might do for background information on his or her own research project. The paper may be either persuasive or argumentative in nature – not descriptive (*i.e.*, not like a book report). A marine ecology topic should be chosen which has not been previously selected, and it should be entered on the appropriate class “sign-up sheet.” It must be approved by the instructor. The **scientific** literature on this topic is to be researched and reported on in a manner understandable to a non-expert in the field. An abstract of the paper is not necessary.

**LENGTH:** six-ten, typed, double-spaced pages using a **minimum** of six scientific, peer-reviewed journal articles as references.

**DUE DATES/LATE POLICY:** Deadlines are **firm**. The library research paper is to be started early to avoid last-minute, unforeseen problems. There is a 10% loss in score for **each** week **either** assignment is late. This will be deducted from the final paper score (see PAPER EVALUATION, below). The “Title Page with Literature Cited Section” assignment and/or the finished “Library Research Paper” assignment can be turned in during class hours or office hours or it can be placed under the door of the professor’s office which is Ramaley C170. See the note below about a digital copy.

**- September 18, Friday, 4:00 pm:**

TITLE PAGE and LITERATURE CITED SECTION are due. The latter must include a **minimum** of six scientific, refereed journal articles which must actually be used in the final paper. Since some articles may be difficult to obtain, and others (on closer examination) inappropriate for the topic, it would be prudent to include significantly more than six appropriate references with this assignment. This part equals 15% of the paper grade.

**- October 19, Monday, 4:00 pm:**

LIBRARY RESEARCH PAPER, including an updated TITLE PAGE and LITERATURE CITED SECTION, is due. Additional references not included in the earlier submission may be used and included with the final paper along with the minimum of **six** scientific references submitted in September. In addition to a hard/printed copy of the paper, it is also required that you submit an electronic copy, either on a disc or via e-mail. This copy needs to be in a format which is compatible with Microsoft Word 2000, or later.

**PAPER EVALUATION** (Refer to Parts II, III, IV and V following):

- A. 65% PAPER CONTENT including: organization; strength and support of the argument/thesis; clarity; grammar; overall writing style; in-text citations (do not use

inappropriate second-hand citations -- *i.e.*, references that others have used and cited, but which you haven't read firsthand but included in your own **Literature Cited**).

- B. 15% TITLE PAGE and LITERATURE CITED assignment submitted in September.
- C. 10% BACKGROUND RESEARCH. This refers to the nature of the scientific references: Are they mostly peer-reviewed scientific journals? Are there a minimum of six? Are there six from the September assignment?
- D. 10% LITERATURE CITED SECTION. Does it follow the proper format? Is it complete and accurate? Are there inappropriate references; *i.e.*, ones not cited in the text of the paper? Are there in-text citations with no references here? Is there a lack of ambiguity between in-text citations and the references here?

**NOTE AGAIN: There is a 10% penalty on the paper score for each week either paper assignment is late.**

**II. RESEARCH METHODS/REFERENCES:** Since this is a scientific paper, the bulk of the resource materials must come from the scientific literature. Appropriate references can be accessed *via* **Chinook** at <http://libraries.colorado.edu/> CU Boulder's on-line catalog and **e-Resources** access. To retrieve journal citations (and in many cases full-text articles) click on **Find Articles & More**. From there select the subject areas or if you know the name of the database you can select from the A to Z list. Databases of interest:

**Biological Abstracts**--All aspects of biology, 1969 to present

**Cambridge Scientific Abstracts**

Click on Biological Sciences + to open complete database coverage including:

- Animal Behavior Abstracts – 1982 to present
- Ecology Abstracts – 1982 to present
- Toxicology – 1981 to present

**GEOREF**--All aspects of geology, including marine and environmental geology, 1966 to present. Includes water chemistry.

**Web of Science**--Science Citation Index, 1970 to present

It is acceptable to use a few "popular press" and/or internet references in addition to the peer-reviewed, scientific ones. However, using fewer than the minimum number of scientific references (six) or failing to use six scientific references from the September assignment will result in a reduction in paper score. Following the guidelines listed herein will eliminate these penalties and emphasize the importance of the "scientific" nature of this paper. Articles from such publications as *American Scientist*, *Science News*, *National Geographic*, *National Wildlife*, *Natural History*, *Wildlife Conservation*, *New Scientist*, *Discover*, *Sea Frontiers*, *Audubon*, *Ocean Realm*, *Underwater USA* and textbooks or books in general are "popular press" publications (not peer-reviewed, scientific publications) and **not** to be the primary references in this paper. This also applies to articles downloaded from the internet.

Be forewarned that some journal articles will not be locally available and will have to be ordered through interlibrary loan. They may not arrive in time to be used.

**CITATIONS/IN-TEXT:** Both the author(s) and the date must be used for a citation, and it must not be ambiguous. For example: a) “Smith and Jones in 1992 found that...” or b) “The reproductive behavior and physiology in sharks was discovered to be quite complex (Smith and Jones, 1992).” Use a semicolon to separate two or more in-text citations (*e.g.*, Smith and Jones, 1992; Jones, *et al.*, 1994a). Footnotes must **not** be used. The above, and following, examples are taken from the “Sample Format,” see Section IV, below.

In citing a **book**, it is necessary to include the page number from which the citation was taken, *e.g.*, (Jones, 1973, p. 421). Note: This page citation is **not** to be included with the reference in the “Literature Cited” section (see Jones, 1973). The page number is **not** to be included when citing a journal article; *e.g.*, “Hansen, *et al.*, 1992” would be sufficient. The use of “*et al.*” is to be used whenever three or more authors are involved.

**PLAGIARISM:** Researchers must be given credit (*via* citations) in the paper for the work they have done. Failure to do so is a form of plagiarism. Highest standards are expected for all work, and academic honesty is a part of this expectation from the students in the College of Arts and Sciences and from the students in this course. Refer to the *University of Colorado at Boulder, Catalog*, “Campus Policies-Academic Integrity,” and the university publication *Ralphie’s Guide to Student Life*, “Academic Honesty” and the “Honor Code.” Students should be aware that their paper will be evaluated through *TurnItIn.com*, a plagiarism service provided to the faculty members at UCB, and that this service retains a copy of the submitted paper for future comparisons.

### III. LITERATURE CITED SECTION NOTES:

A “LITERATURE CITED” section is to be added at the end of the paper and it is to include all references used in the text of the paper and **no** others. The format below (Section IV) must be strictly followed! The heading of this section should be “Literature Cited”; **not** something else like “References,” *etc.*!

The journal articles/references are to be alphabetically ordered by the last name of the first author. **Only** the **first** author of a paper will be last-name first!

Last names and initials of **all** authors must be used. “*Et al.*” may **not** be used here.

If there are multiple papers by a single author (or a team of authors), the most recent paper must be listed first.

If a single author is also the first author on a multiple-author publication, list the single-author reference first, regardless of the publication dates. Duo-authored papers follow single-authored papers and come before multiple-authored papers.

Ambiguity must be eliminated when multiple papers by a single author (or a team of authors with the same first author) are published in the **same year**. Adding an “a,” “b,” *etc.*, to the year as a suffix (*e.g.*, 1993a) will eliminate this ambiguity. The same suffix in the In-Text citation is to be used. See “Jones, 1993 (a & b)” and “Jones *et al.*, 1994 (a & b)” below in Section IV.

If multiple-authored papers with the same first author are published in different years, put the most recent one first regardless of the alphabetical listings of the secondary authors (“multiple authors,” here is interpreted as three or more). See “Jones *et al.*, 1995,” “Jones *et al.*, 1994a” and “Jones *et al.*, 1994b” below.

The authors’ names will be followed by the year of publication.

The title of the paper follows the year, and that is followed by a period (.) and then the name of the journal or publisher. The name of the journal or publication must be either *italicized* or underlined (see below in Section IV).

The name of the journal is immediately followed by the volume number, a colon, and the page numbers of the article. Some publications include an issue number in parentheses, *e.g.*, “(4),” or with an abbreviation, “No. 4,” after the volume number. This issue number is **NOT** to be included here.

If a book is used, the sample format below must be followed -- see “Jones, 1973,” or “Miller, 1991.” A book is a non-refereed publication and, if used, must be in addition to the minimum of six scientific references.

If a reference is taken from the internet it is **not** refereed and is considered to be a popular press publication. It may be used, but only in addition to the minimum of six scientific references. Include the date it was accessed. If a reference is not cited in the text of the paper, it is inappropriate to include it in the “Literature Cited” section.

#### **IV. LITERATURE CITED SECTION SAMPLE FORMAT:**

Black, A.B. and C.D. Davis. 1994. The mating behavior of sharks. *Journal of Experimental Marine Biology* 179:921-931.

Hansen, E.F., G.H. Johnson and I.J. Jones. 1992. The geographical distribution of the grey reef shark, *Carcharhinus amblyrhynchis*. *Ecological Monographs* 62:164-184.

- Jones, I.J. 1993a. The reproductive physiology of the great white shark. *Physiological Zoology* 66:771-780.
- Jones, I.J. 1993b. The reproductive physiology of the tiger shark. *The American Journal of Physiology* 74:131-145.
- Jones, I.J. 1975. Aggressive behavior in the shark family Carcharhinidae. *Science* 189:653-671.
- Jones, I.J. 1973. *Sharks of the World*. Harvard University Press. Cambridge, MA.
- Jones, I.J., K.L. Miller and E.F. Hansen. 1995. Tooth morphology of the white shark, *Carcharodon carcharias*. *Journal of Morphology* 226:279-283.
- Jones, I.J., K.L. Miller and A.B. Black. 1994a. Sexual dimorphism in the shark family. *Environmental Biology of Fishes*. 34:172-207.
- Jones, I.J., K.L. Miller and C.D. Davis. 1994b. Bottlenose dolphin (*Tursiops truncatus*) flight behavior from the great white shark (*Carcharodon carcharias*). *Marine Mammal Science*. 10:515-521.
- Miller, K.L. 1991. Shark mating behavior. In *Biology of Sharks*, ed. M.N. Richards and O.P. Rogers. Prentice-Hall Inc. Englewood Cliffs, NJ.
- Russell, Q.R. and S.T. Wagner. 1994. Shark intelligence. *Journal of Fish Biology* 45: 111-147.
- Smith, U.V. and I.J. Jones. 1992. Shark aggressive behavior. *Journal of Ichthyology* 32: 143-167.

## V. HELPFUL HINTS:

Since this is a take-home assignment counting **more** than an *hour exam*, it seems that starting early, following all the guidelines and submitting an “A” paper would be in one’s best interest.

The scientific literature is often difficult to understand. It should be read and re-read until its significance can be logically explained to someone else.

The paper topic should be thoroughly researched and a level of understanding reached such that the results and assumptions of the researcher can be questioned. One should be willing to challenge the researcher's conclusions.

Look for alternate premises and differing points of view. A scientific versus a less authoritative view might be argued. Additional popular press references may be helpful here. It is necessary to distinguish between facts and opinions. What one writes should reflect what he or she judges to be most logical and credible. Evidence from both sides of the argument should be included. Take a side, and use persuasion, logic and organization to defend it.

The thesis of this paper should be thoroughly defended and obviously reflect its author's own thoughts and ideas. Be reminded that this is not original research -- but a properly cited report on the research of others.

A significant amount of time should be spent on the organization of this paper. Pay particular attention to what is best for the audience. The audience should immediately realize where the paper is headed. Appropriate headings and transitions as well as attractive graphics will help hold the interest of your audience.

Only information (statements, figures, tables, photos, graphics, *etc.*) which is **necessary** for the support of the position/thesis should be integrated into the paper. Superfluous information (such as padded references in the "Literature Cited" and unnecessary graphics) is both confusing and inappropriate.

Be reminded that scientific names and foreign words such as "*et al.*," "*via*," "*i.e.*," "*in situ*," or "*El Nino*" wherever they are used are to be either *italicized* or underlined. The species name is never capitalized and the genus name is always capitalized. See correct usage in several examples of the previous "LITERATURE CITED SECTION SAMPLE FORMAT" (Section IV).

This paper is to be carefully organized, clearly and concisely written with correct grammar, and be free of typographical errors. It should evolve through several revisions and be proofread by both the author and one or more outsiders. Submit a clean, neat, originally printed paper including a "Title Page" with all of the pages numbered. On the title page include the paper title, author, date and the course name and number. A **few** ink corrections are acceptable. In addition to a hard/printed copy of the paper it is also required that you submit an electronic copy, either on a disc or via e-mail. This digital copy needs to be in a format which is compatible with Microsoft Word 2000, or later.

**IMPORTANT NOTE: MAKE SURE THIS SYLLABUS IS UP-TO-DATE.**

8/21/09