<table>
<thead>
<tr>
<th>WK</th>
<th>DATES</th>
<th>LECTURE TOPICS</th>
<th>CHPTRS.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Aug 29 &amp; 9/31</td>
<td>“Marine Biology” -- Course introduction/pedagogy/project paper. The Oceans and how they are studied.</td>
<td>1 &amp; 2</td>
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<tr>
<td>2</td>
<td>Sept 5 &amp; 7</td>
<td>The Oceans: geological and physical oceanography.</td>
<td>2 &amp; 3</td>
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<tr>
<td>3</td>
<td>Sept 12 &amp; 14</td>
<td>Chemical and biological oceanography: ecological concepts.</td>
<td>3 &amp; 7</td>
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<td>4</td>
<td>Sept 19 &amp; 21</td>
<td>Monerans; Protists; non-vascular and vascular plants; porifera; marine cnidarians: hydrozoans; scyphozoans; cubozoans. Sept 21</td>
<td>TITLE PAGE/LITERATURE CITED due by 4:00 pm</td>
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<tr>
<td>5</td>
<td>Sept 26 &amp; Sept 28</td>
<td>Anthozoa: corals through hard corals</td>
<td>7</td>
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<td>6</td>
<td>Oct 3 &amp; 5</td>
<td>Soft corals and miscellaneous information on corals; comb jellies; flatworms; introduction to molluscs: bivalves.</td>
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<td>7</td>
<td>Oct 10 &amp; 12</td>
<td>Gastropods and cephalopods.</td>
<td>7</td>
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<td>8</td>
<td>Oct 17 &amp; 19</td>
<td>Polychaetes; crustacea.</td>
<td>7</td>
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<td>9</td>
<td>Oct 24</td>
<td>LIBRARY RESEARCH PAPER due by 4:00 pm.</td>
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<td></td>
<td>Oct 24 &amp; 26</td>
<td>Bryozoa; echinoderms; lower chordates.</td>
<td>7</td>
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<td>10</td>
<td>Oct 31 &amp; Nov 2</td>
<td>Vertebrates: cartilaginous fishes.</td>
<td>8</td>
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<td></td>
<td>Nov 2</td>
<td>No Class</td>
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<tr>
<td>11</td>
<td>Nov 7 &amp; Nov 9</td>
<td>Vertebrates: bony fishes</td>
<td>8</td>
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<td></td>
<td>Nov 2</td>
<td>MIDTERM - EXAM I Thursday</td>
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<tr>
<td>12</td>
<td>Nov 14 &amp; 16</td>
<td>Marine reptiles and birds</td>
<td>9</td>
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<tr>
<td>13</td>
<td>Nov 20-24</td>
<td>CU Fall Break and Thanksgiving Vacation</td>
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<tr>
<td>14</td>
<td>Nov 28</td>
<td>Marine mammals</td>
<td>9</td>
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<td></td>
<td>Nov 30</td>
<td>Intertidal zones: rocky shores.</td>
<td>10 &amp; 11</td>
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<tr>
<td>15</td>
<td>Dec 5 &amp; 7</td>
<td>Particulate shores; estuaries; salt marshes; mangroves. Subtidal communities: seagrasses; kelp beds; coral reefs (size; distribution; classification; paleoclimatology). Continental shelf.</td>
<td>11 - 14</td>
</tr>
<tr>
<td>16</td>
<td>Dec 12 &amp; 14</td>
<td>Pelagic zones (epi-, meso- and deep pelagic zones). Deep benthic zones; hydrothermal vents. The trashings of, and deterioration of, the oceans. Destructive fishing practices. The oceans as a source of food; is it sustainable? Tokyo/Tsunji fish market. Mariculture; farming/ranching &amp; other marine resources.</td>
<td>15 – 19</td>
</tr>
<tr>
<td>17</td>
<td>Dec 16</td>
<td>COMPREHENSIVE FINAL EXAM Saturday – 7:30 pm – 10:00 pm</td>
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TROPICAL MARINE ECOLOGY

THE COURSE: This course will be based on a lecture format with the substantial use of visual 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. Many of the illustrations/examples may be quite specific; therefore, general as well as specific questions may be expected on the exams. There is to be absolutely no cell phone use of any kind, including texting or any other social networking; you may use your computer to access course lectures on D2L, only! You will be asked to turn it off and not bring it to class if you use it for any non-classroom function!

REQUIRED TEXT: *Marine Biology*, 8th or 9th edition, 2008 or 2010, by Peter Castro and Michael Huber. McGraw-Hill. New York, NY. Other editions and used texts are acceptable. 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): 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.

COMPREHENSIVE FINAL 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. In writing the paper follow the “Library Research Paper Guidelines,” attached.

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

DISABILITIES: If you qualify for accommodations because of a disability, please submit to the professor a letter from Disability Services by the end of the second week of classes so that your needs can be addressed. Disability Services determines accommodations based on documented disabilities. Contact: 303-492-8671, Center for Community, N200, and [http://www.colorado.edu/disabilityservices](http://www.colorado.edu/disabilityservices)

RELIGIOUS CONFLICT? If such occurs with any part of this course, bring it to the professor’s attention by the end of the second week of classes. See [http://www.colorado.edu/policies/fac_relig.html](http://www.colorado.edu/policies/fac_relig.html)

PROFESSOR: Mel Cundiff; Office: Ramaley C170; Office hours: TR 1:45 – 2:45 pm ABA; Phone: 303-492-8549; Cundiff@Colorado.EDU; [http://spot.colorado.edu/~cundiff/](http://spot.colorado.edu/~cundiff/)
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 high school 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. Do not submit an abstract.

LENGTH: Six-ten, typed, double-spaced pages using a minimum of six scientific, peer-reviewed journal articles as references. “Times New Roman” w/#12 font is preferred.

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 paper score for each week the title page or paper assignment is late, up to two weeks. If the paper is more than two weeks late it scores zero. 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 in Ramaley C170. See the note below about a digital copy.

- September 21, Thursday, 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 24, Tuesday, 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. It will be submitted to a very large database, Turnitin.com, to be evaluated for evidence of plagiarism.
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 references” -- i.e., references that others have used, but which you haven’t read firsthand, but have included in your Literature Cited.

B. 15% TITLE PAGE and LITERATURE CITED SECTION 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. A paper not turned in after two weeks scores a zero.

II. RESEARCH METHODS/REFERENCES: Since this is a scientific paper, the bulk of the resource materials must come from the scientific literature. Following are Norlin Library Resources which are available for helping you with your topic search:

Chinook http://www-libraries.colorado.edu is CU Boulder’s on-line catalog and e-Resources access.

Off-Campus Access VPN http://ucblibraries.colorado.edu/research/offcampusaccess.htm Best to use the Network Connect rather than the Web VPN. This is done through Office of Information Technology (OIT) and if you need help you can call 303-735-HELP

To retrieve journal citations (and in some cases full-text articles) click on Find Articles & More http://libraries.colorado.edu/screens/findarticles.html From there you can type in the database name, use the A-Z list, or select Find Database by Subject.

General All Subjects Databases:

Academic Search Premier http://libraries.colorado.edu/record=e1000006~S3 all subjects, full text. So, it’s sort of like Google but Full Text!!
Google Scholar http://libraries.colorado.edu/record=e1000945~S3 all subjects, NOT all Full-text.

Databases of Interest to Tropical Marine Ecology students:

Biological Abstracts (BIOSIS) http://libraries.colorado.edu/record=e1001381~S3 All aspects of biology

Animal Behavior Abstracts http://libraries.colorado.edu/record=e1000161~S3 EcologyAbstracts http://libraries.colorado.edu/record=e1000226~S3
GeoRef http://libraries.colorado.edu/record=e1000242~S3 Geology, geography, and oceanography

Web of Science http://libraries.colorado.edu/record=e1000285~S3
Science Citation Index which covers all aspects of science, but only the top tier research journals
FULL-TEXT DATABASES:

Science Direct http://libraries.colorado.edu/record=e1000063~S3
Database searching over 1200 journals in science and social science. Access for many (800-900 approx.) of the titles held by CU is 1997 and forward.

JSTOR http://libraries.colorado.edu/record=e1000019~S3
Geography, sociology and ecology, archive of full-text backfiles of important scholarly journals includes:

- Annual Review of Ecology and Systematics
- Ecological Monographs
- Ecology
- Journal of Ecology

ENVIROnetBase http://libraries.colorado.edu/record=e1000237~S3 Full text environmental reference books.

Other Resources for Research

Government Publications Library—Norlin Library 3rd Floor
http://ucblibraries.colorado.edu/govpubs/index.htm

Interlibrary Loan: from Chinook homepage under Interlibrary Loan.
http://ucblibraries.colorado.edu/ill/index.htm – traditional borrowing from other institutions, 2 weeks or less delivery of copies (paper or electronic) of articles, dissertations, books, etc. are sent at no cost.

Prospector – borrowing from Front Range Libraries, usually 3-5 days.

PASCAL – http://ucblibraries.colorado.edu/about/pascal_request.htm
(CU’s Offsite Storage Facility in Denver), Science journal articles pre-1980 are available on a 24-hr turn around, scanned copies under 50 pages.

What must be cited? http://ucblibraries.colorado.edu/how/citationstyle.htm
This is a web link to a Libraries page which gives general guide lines for when to cite.

RefWorks http://ucblibraries.colorado.edu/how/refworks.htm
A tool that allows users to create personalized databases of citations from which you can create bibliographies and format papers in hundreds of different citation styles in seconds. From
CHINOOK homepage select at the top of the page How Do I....
http://ucblibraries.colorado.edu/how/index.htm then click on the far right column for RefWorks. Set up your own user name and password. There are tutorials as well.
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) will result in a significant 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.

**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 *Academic Integrity Policy* and the *CU-Boulder’s Honor Code* (http://www.colorado.edu/policies/academic-integrity-policy). Students should be aware that their papers 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 appear 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 examples below in Section IV).

The name of the journal is immediately followed by the volume number, a colon with no space 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. Be thorough, but you may need to be creative in listing an internet source in the “Literature Cited” section and as an “in text” citation. For instance you might use “NOAA, 2013” as the “in text” citation for the following internet publication: “US Department of Commerce: National Oceanic and Atmospheric Administration. 2013. NOAA’s Coral Reef Conservation Program. <http://coralreef.noaa.gov>” and alter this as shown in the sample format below.

If a reference is not cited in the text of the paper, it is inappropriate for it to be included in the “Literature Cited.”

IV. LITERATURE CITED SECTION SAMPLE FORMAT:


**V. HELPFUL HINTS:**

Since this paper 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 the 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 photos and graphics not referred to in the text of the paper and superfluous references in the “Literature Cited”) is both inappropriate and confusing.

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 an electronic copy be submitted, either on a disc or via email. This copy needs to be in a format which is compatible with Microsoft Word 2000.

NOTE: MAKE SURE THIS SYLLABUS IS UP TO DATE!

30/Nov/2017