

BIO 312 001/200 MARINE BOTANY**SPRING 2011**

Michael J. Durako 962-2373, durakom@uncw.edu; <http://people.uncw.edu/durakom/index.htm>
Office hrs: Tue. & Thur. 8:30-9:30am, 11-12pm; Tue. 11-12:30pm **FR 1002A**

Lecture: Tue. & Thur., 9:30-10:45am **FR-3014**Lab: Tue, 2:00-4:50pm **FR-3104**

Texts: (A) Marine Botany, C. J. Dawes, Wiley
(B) The Botany Coloring Book, P. G. Young, Harper-Perennial.
Materials: Fine-line felt tip coloring pens, folder for herbarium sheets.

Evaluation: A=90-100, B=80-89, C=65-79, D=50-64, F=0-49

1. 150 Lab Practicals (3) 50 pts each.
2. 100 Herbarium collection (15 species, including at least 10 algal species - 10 pts each).
3. 100 Library work - Annotated bibliography: summaries of 10 research papers on marine or freshwater plants **published since 1990** from peer-reviewed scientific journals. Summaries must be complete and accurate with the complete citation (see format below). One per week for first ten weeks of course, due on Tuesday (10 pts each, graded for format, summary, spelling, syntax, and grammar).
4. 400 Lecture Exams (4) 100 pts each.
5. 50 Class participation and Lab work (discussions, lab homework, drawings, field trips)

- Herbarium collection:** 1) One species per sheet (your name **in pencil** on the back, lower left).
2) Specimen firmly attached to paper and aesthetically arranged (no overlapping tissues).
3) Herbarium label (**use only labels provided**) attached to lower right-hand corner of sheet .
4) Label must be **typed** and correctly state: a) *Genus species* Author, b) Family, c) Collector's Name, d) Collection Date, and e) Place of Collection.
5) Your 15 **best** specimens are **due** by the last day of class in order to be evaluated.

Annotated Bibliography: Typed or printed neatly, one summary per sheet, should be the size of a 5 x 8 Index card.

Format: Author Last Name, Initials. Year Published. Title (only first word and proper nouns capitalized). Journal title, volume(issue number):pages, inclusive.

Example: Runcie, J. W. and M. J. Durako 2004. Among-shoot variability and leaf-specific absorptance characteristics affect diel estimates of in situ electron transport of *Posidonia australis*. Aquatic Botany 80: 209-220.

This paper reported on the results of a study where virtually simultaneous replicated measurements of diel changes in effective quantum yields of eight *Posidonia australis* short shoots were obtained in situ over a two-day period using a multi-channel PAM fluorometer. Leaf-specific spectral absorptance was also determined on leaves from the same eight short shoots using a fiber-optic spectrometer. The results demonstrated diel variation in photosynthetic characteristics with highest yields recorded during the night and minimum values during mid-day. Among-shoot variability in yield was generally low, with a standard deviation about 10% of the mean, except during mid-day when variability rose to about 25% of the mean. Absorptance of PAR (400 to 700 nm) was about 68% of total irradiance, with about 7% reflected and 16% absorptance by non-photosynthetic tissues. The results indicated that reflectance and non-photosynthetic absorptance need to be taken into account when estimating electron transport rates from quantum yield measurements.

Course Goals: After taking this class students should be able to-

1. Explain how the marine environment and marine plants interact;
2. Recognize the main biochemical, morphological and life history characteristics that taxonomically separate marine and coastal plants;
3. Access and summarize scientific literature dealing with marine plants;
4. Utilize a dichotomous key to identify local marine macroalgae; and
5. Prepare properly labeled marine plant herbarium specimens.

Disabilities: The course instructor is happy to make accommodations to those students with disabilities. Students should first contact the Office of Disability Services in Westside Hall (3746). After obtaining your referral from this office, please contact the faculty in your course.

MARINE BOTANY, SPRING 2010

| WEEK/DATE | LECTURE | LAB ACTIVITY |
|-----------|---------|--|
| 1 | 1/13 | Light |
| 2 | 1/18 | Photosynthesis |
| 2 | 1/20 | Water |
| 3 | 1/25 | Seawater- 1st Annotated Bibliography Due |
| 3 | 1/27 | Aquatic habitats |
| 4 | 2/01 | Aquatic habitats,cont |
| 4 | 2/03 | Plant Classification |
| 5 | 2/08 | Intro to the Algae |
| 5 | 2/10 | Cyanobacteria |
| 6 | 2/15 | Cyanobacteria,Prochlorophyta |
| 6 | 2/17 | Exam I - Classification to Cyanobacteria |
| 7 | 2/22 | Chlorophyta |
| 7 | 2/24 | Chlorophyta cont. |
| 8 | 3/01 | Heterokontophyta/Phaeophyceae |
| 8 | 3/03 | Rhodophyta |
| 9 | 3/08 | Intro to Phytoplankton |
| 9 | 3/10 | Exam II- Procaryotes & Macroalgae |
| 10 | 3/15 | <i>SPRING VACATION</i> |
| 10 | 3/17 | <i>SPRING VACATION</i> |
| 11 | 3/22 | Phytoplankton ecology, etc |
| 11 | 3/24 | Fungi, Lichens, Bryophytes, etc. |
| 12 | 3/29 | Vascular Plant Overview |
| 12 | 3/31 | Coastal Plant Adaptations |
| 13 | 4/05 | Exam III - Phytoplankton to Vascular Plant Overview |
| 13 | 4/07 | Seagrasses |
| 14 | 4/12 | Seagrasses |
| 14 | 4/14 | Salt Marshes |
| 15 | 4/19 | Mangroves |
| 15 | 4/21 | <i>EASTER VACATION</i> |
| 16 | 4/26 | Mangrove cont. |
| 16 | 4/28 | Lithophytic communities |
| 17 | 5/10 | 8:00-11:00am Final Exam (IV) - Coastal Plant Adaptations to Lithophytic communities |