

FAS6176 ALGAE BIOLOGY AND ECOLOGY

Instructor: Professor Edward Phlips

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Office Hours: Mondays 4pm-5pm

Course Description: Covers the biology and ecology of aquatic algae, including evolution, classification, structure, photosynthesis, growth, and reproduction. Emphasis on the ecological role of algae in different aquatic ecosystems (e.g. open ocean, estuaries, coral reefs, rocky intertidal), their impacts (e.g. harmful algae blooms, food webs), and their applications (e.g. food, biochemical).

Prerequisites: Foundational biology coursework, as determined by instructor

Time and Place:

Lectures (Online): Lecture modules will be posted on the e-Learning web site for the course on Monday of each week, along with required reading and supplemental information. Each online distance learning program has a process for, and will make every attempt to resolve, student complaints within its academic and administrative departments at the program level. See <http://distance.ufl.edu/student-complaints> for more details.

Course Objectives: After completing the course, students will:

- be able to apply the principles of algal biology and ecology to solve problems, or identify opportunities;
- be able to identify algae management schemes which will address issues of eutrophication, human health, and global climate change;

Course Communication: This course will take advantage of e-Learning support to post course information and to allow you day-to-day access to your grades. Please visit <http://lss.at.ufl.edu> to access the course via the e-Learning link and for information on how use the e-Learning site (Please use the help desk as your first course of action if you have any difficulties). Lectures are based on PowerPoint presentations to facilitate the use of figures and visual aids. Not all the information for the class will be on the PowerPoint slides, therefore it is your responsibility to take notes and complete reading assignments.

Participation and Attendance: Participation and attendance is expected for all lectures, discussions, and special project presentations. Contact me as early as possible if you must legitimately miss a scheduled exam. If an emergency situation arises immediately before an exam, notify me as soon as the emergency is resolved. Make-up exams will not be given except for an excused absence with written substantiation (e.g., official University event, illness, family emergency, etc.).

Requirements for class attendance and make-up exams, assignments and other work are consistent with university policies that can be found at:

<https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>.

Required Readings: Course reading material will be composed of several foundational scientific papers, as well as recently published scientific and technical papers. These are five examples:

Cloern, J.E. 2001. Our evolving conceptual model of the coastal eutrophication problem. *Marine Ecology Progress Series* 210:223-253.

Litchman, E., and C.A. Klausmeier. 2008. Trait-based community ecology of phytoplankton. *Annual Reviews Ecology Evolution and Systematics* 39:615-639.

Nisbet, E.G. and N. H. Sleep. 2001. The habitat and nature of early life. *Nature* 409:1083-1091.

O'Neil, J.M., T.W. Davis, M.A. Burford and C.J. Gobler. 2012. The rise of harmful cyanobacteria blooms: The potential roles of eutrophication and climate change. *Harmful Algae* 14: 313-334.

Szmant, A. 2002. Nutrient enrichment on coral reefs: Is it a major cause of coral reef decline? *Estuaries* 25:743-766.

Course Format and Grading: This course is offered for three (3) credits in the spring semester. Exams will be based on material presented in the lectures and the required readings. Required readings will be provided on line for each major topical area.

Ten short quizzes will be administered during the term. The quizzes will involve five multiple choice or true/false questions. Seven minutes will be allowed for each quiz. The quizzes will be based on lecture materials. Each quiz will count for up to 2 points. Two points will be awarded for exams with 0-1.5 wrong answers. One point will be awarded for exams with 2-2.5 wrong answers.

The course will also involve two special projects during the semester. For the first project students will be required to find a short video (i.e. < 4 minutes in '.flv' file format) or a still image (jpeg format) which illustrates a concept or principle covered during the course to that date. The student will be required to write and submit a paragraph (approximately half a page single spaced text) describing the video or image and its significance (titled with student name and assignment number, e.g. 'John Smith Special Project 1'). Image files should be imbedded in the pdf file. Video files can be submitted as separate flv files labeled with the students name and assignment number (e.g. 'John Smith Video Special Project 1'). The visual material with text will be posted on the e-Learning web site. All 6000 level students in the class will be asked to grade the presentations of a specified sub-set of other 6000 students in the class on a scale of 1-3 (1- below average, 2 - average, 3 - above average). During the grading students will be asked to enter a brief comment on the presentation (e.g. strong point and/or weak point). The average grades of the students will be averaged with the grade of the instructor for a final grade. Students will receive five points for submitting the project and two additional points per project based on the average peer/instructor grade of 2 or higher. Students will get 3 points per project for participating in grading of the projects.

The second special project will involve the development of a 20-25 minute voice over Power Point presentation on a special topic. The PowerPoint presentation should include a list of at least five references from the primary literature. A list of example special topics will be provided, but students are encouraged to select their own topic in communication with the

instructor. The presentations will be placed on line for viewing by all students in Week 15 of the course. All 6000 level students and the instructor will provide brief evaluations of the presentations by the end of Week 16 using the discussion section of the course web site.

Detailed instructions on how to submit projects and participate in grading will be provided on the e-Learning web site at the beginning of the semester.

Three exams will be administered online during the course. Each will be worth up to 20% of the grade. The exams will not be cumulative in terms of the material covered. Exam questions will emphasize lecture materials, but may also include general concepts presented in the required reading. The exams will be an hour and a half in length and will be available online Wednesday-Sunday of exam week. Exam questions may include multiple-choice and essay. The essay questions may incorporate concepts presented in the required reading material.

The grade point allocation is: A (93-100%), A- (90-92%), B+ (86-89%), B (82-85%), B- (78-81%), C+ (74-77%), C (67-73%), C- (63-66%), D+ (59-62%), D (55-58%), D- (51-54%), and E (<50%).

For information on current UF policies for assigning grade points, see <https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>.

Basis for grade:

Quizzes (10)	20%
Exam 1	20%
Exam 2	20%
Exam 3	20%
Special project 1	5%
Special Project 2	10%
Participation in project grading & discussion	5%

Course Outline

Week **Topical Areas, Tests and Assignments**

Week 1 Introduction & course description

Week 2 Origins of algae
Environmental changes and evolution of algae
Phylogeny of algae
Systematics basics

Reading assignments
Quiz 1

Week 3 Algae structure & function – by division

- Week 13 Examples of ecosystem types
- Reading assignments
 Quiz 9
- Week 14 Examples of ecosystem types - continued
- Quiz 10
- Week 15 Algal applications
- Second special project due by Wednesday**
- Week 16 Exam 3**
Peer Grades for Special Project 2 due

Online Course Evaluation Process: Student assessment of instruction is an important part of efforts to improve teaching and learning. At the end of the semester, students are expected to provide feedback on the quality of instruction in this course using a standard set of university and college criteria. These evaluations are conducted online at <https://evaluations.ufl.edu>. Evaluations are typically open for students to complete during the last two or three weeks of the semester; students will be notified of the specific times when they are open. Summary results of these assessments are available to students at <https://evaluations.ufl.edu/results>.

Academic Honesty: As a student at the University of Florida, you have committed yourself to uphold the Honor Code, which includes the following pledge: *“We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honesty and integrity.”* You are expected to exhibit behavior consistent with this commitment to the UF academic community, and on all work submitted for credit at the University of Florida, the following pledge is either required or implied: *"On my honor, I have neither given nor received unauthorized aid in doing this assignment."*

It is assumed that you will complete all work independently in each course unless the instructor provides explicit permission for you to collaborate on course tasks (e.g. assignments, papers, quizzes, exams). Furthermore, as part of your obligation to uphold the Honor Code, you should report any condition that facilitates academic misconduct to appropriate personnel. It is your individual responsibility to know and comply with all university policies and procedures regarding academic integrity and the Student Honor Code. Violations of the Honor Code at the University of Florida will not be tolerated. Violations will be reported to the Dean of Students Office for consideration of disciplinary action. For more information regarding the Student Honor Code, please see: <http://www.dso.ufl.edu/sccr/process/student-conduct-honor-code>.

Campus Helping Resources: Students experiencing crises or personal problems that interfere with their general well-being are encouraged to utilize the university’s counseling resources. The Counseling & Wellness Center provides confidential counseling services at no cost for currently

enrolled students. Resources are available on campus for students having personal problems or lacking clear career or academic goals, which interfere with their academic performance.

- *University Counseling & Wellness Center, 3190 Radio Road, 352-392-1575, www.counseling.ufl.edu/cwc/*
 - Counseling Services
 - Groups and Workshops
 - Outreach and Consultation
 - Self-Help Library
 - Wellness Coaching
- *Career Resource Center, First Floor JWRU, 392-1601, www.crc.ufl.edu/*

Services for Students with Disabilities: The Disability Resource Center coordinates the needed accommodations of students with disabilities. This includes registering disabilities, recommending academic accommodations within the classroom, accessing special adaptive computer equipment, providing interpretation services and mediating faculty-student disability related issues. Students requesting classroom accommodation must first register with the Dean of Students Office. The Dean of Students Office will provide documentation to the student who must then provide this documentation to the Instructor when requesting accommodation

0001 Reid Hall, 352-392-8565, www.dso.ufl.edu/drc/

Software Use: All faculty, staff and students of the university are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against university policies and rules, disciplinary action will be taken as appropriate.