

## **BOT 4404 Phycology – The Fascinating World of Seaweeds**

**Instructor:** Alain Duran, PhD

**Instruction mode: Hybrid – Hyflex (mode Q):** Mode Q is a highly flexible version of hybrid with a minimum 20% on-campus instructional requirement.

Office: BBC-AC1 381

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### **Course description**

This course is an introduction to the world of algae. It will cover algal systematics, biogeography, and taxonomy and address algal physiological and ecological aspects. And will discuss algal responses to human dimension issues such as global change, nutrient cycling, biogeochemical products, and toxicity, emphasizing marine algae.

### **Objectives**

- 1- To provide students with a basic knowledge of major algal groups' evolution, taxonomy, and biogeography. Students will achieve an understanding by critically reading scientific literature and analyzing particular cases.
- 2- To provide students with a good understanding of major algal groups' anatomical, morphological, and physiological features. Students will achieve it through active learning exercises and linking macroalgae structure and function aspects.
- 3- To prepare students to critically analyze the role of algae in ecological processes related to global change. Students will achieve this by understanding macroalgal responses to global change and investigating study cases.

### **Learning outcomes**

- 1- By studying evolutionary processes and taxonomic case analysis, students should understand the major processes that explain the presence-absence of species at the biogeographic level of the major algal groups.
- 2- By the end of the course, students should explain the interaction between the structure and function of algae and develop potential scenarios resulting from global change analyzing possible algal responses to different environmental drivers.
- 3- Students will describe and analyze the role of macroalgae in different ecosystems under a global change context.
- 4- Students will be able to integrate and have a global perspective of the ecological roles of macroalgae in different marine ecosystems.

**This course has mandatory laboratory sections designed to investigate further local macroalgal communities, emphasizing identification and ecological roles.**

### **TEXTBOOK:**

There is no mandatory textbook. However, most of the core information provided in the lecture comes from 1) Phycology (5<sup>th</sup> edition) by Robert Edward Lee and 2) Seaweed Ecology and Physiology (2<sup>nd</sup> edition) by Hurd et al. Both books are available for rent or purchase on Amazon. More specific information from scientific papers is provided on CANVAS.

## Grading system

### Online

- **Online weekly quizzes based on reading (20%)**

The quizzes encompass different questions (matching, multiple-choice, etc.) and will be based on the material (lecture and reading) covered during the week.

- **Online weekly discussion (20%)**

Every week there will be a Scientific Paper to read and discuss. The paper is directly related to the topic in question. The discussion's goal is to think critically about real examples of phycology. Students must actively participate in the debate (posting videos, written comments, etc.). Both frequency (at least two/week) and quality of posts will be taken into consideration for grading)

### In-person

- **Class participation - discussion (10%)**

Class attendance is mandatory. Students will be evaluated based on in-class activities, which will include, among others, discussions of scientific readings.

- **Research paper + poster presentation (30%)**

Each student pair (two students) will write a 5-page (1.5 space) research paper on an alga species or genus of their choice. Students should select their algal species (or genus) based on the alga's importance from a biological, ecological, economic, societal, or cultural perspective. For each paper, the student must introduce the basic biology, taxonomy, life history characteristics, anatomy, morphology, and ecology of their species (or genus). The paper should also discuss why this species is of particular importance. Articles should be in essay format, fully referenced, and with literature cited.

The poster presentation will be a **5-minute oral presentation** of your research paper. Your peers will complete anonymous evaluations of your poster/presentation and assess content, delivery effectiveness, visual aids, ability to answer questions, etc. These evaluations, in addition to my own, will comprise your grade.

### Final exam (20%)

The final exam encompasses over 30 questions of various formats (multiple-choice, matching, filling the blank, and short answer).

Alternative to final exam for students with 90% or more attendance. Rather than a final exam, this student could (totally optional) participate in Phycological Jeopardy.

### Grading:

A	B+	B	C+	C	D+	D	F
90-100	85-89	80-84	75-79	70-74	65-69	60-64	< 59

Grades are not negotiable. I do not curve grades. I do not allow students to complete extra credit assignments to bring up their final grades. You must attend lectures, participate in discussions, and study throughout the semester. **\*\* Important!** If you are struggling in the course, please come for help when there is still time to help you. Please take advantage of my office hours or make an appointment with me. Please do not wait until the end of the semester and ask me to change your grade; it is too late.

**Exam Make-up Policy:** Make-up exams are given only for emergency reasons or University-recognized religious holidays. You must contact me as soon as possible if you are aware of any potentially excusable missed exams **before** the exam time. **Make-up exams are all oral exams.** For this course, “emergency” is an unpreventable event that impedes attendance.

Emergencies are:

1. Medical emergency with Medical Doctor’s note/emergency room.
2. Automobile accident with police report (lack of ride is NOT an emergency case).
3. Death of immediate family members.

**Late Assignment Policy:** Late assignments (essays, homework, etc.) will be penalized by 10% for each day late.

**Instructors Communication:** All instructor communication and announcements will be made by email and through the blackboard section of the course website. Only students’ FIU email addresses will be used. If students do not use their FIU email account, use the easy-to-set-up automatic mail forwarding option to the email account you regularly use. **Students must maintain an active FIU email account and observe the “News” web page.** Emails returned due to “over quota” email accounts will not be re-sent. All student emails must contain “**Phycology**” in the subject line; student emails without a proper subject line and the student’s name will **not** be answered!

**Help with Writing:** If you need additional assistance with writing, don't hesitate to contact the Center for Excellence in Writing (305-348-6634).

**Academic Integrity:** **There is a zero-tolerance policy for cheating in this course!** Cheating during exams (e.g., looking at another's paper, possession of notes, talking) and on assignments is unacceptable. Plagiarism on written assignments (passing off another person's ideas as your own) will result in the same actions. It will result in an automatic zero on the assignment and be reported to University Officials. If you are unsure whether an action is plagiarism, please see the PLAGIARISM POLICY in the Student Handbook or ask me.

**Student Disability:** Any student who, because of a disability, may require special arrangements to meet course requirements should contact DRC (Disability Resource Center) within one week of the beginning of this course to make the necessary accommodations.

**Sexual harassment policy:** FIU is committed to eliminating sexual harassment. Following the FIU Faculty Senate guidelines, this syllabus includes a warning that any misconduct will be reported.

**Academic misconduct:** FIU is committed to not tolerating any academic misconduct by students. Under the FIU Faculty Senate guidelines, this syllabus warns that any academic misconduct, particularly cheating in exams, will be reported and penalized.

**PLEASE BE RESPECTFUL OF YOURSELF, YOUR PROFESSOR, AND YOUR PEERS**

**No cell phones or beepers, chatting, or surfing the internet are tolerated during class.**

**Schedule ALWAYS STAY INFORMED!**

<b>Phycology. Fall 2021 Schedule</b>				
<b>Date</b>	<b>Week</b>	<b>Topic</b>	<b>Online activity</b>	<b>In-person activity</b>
Aug 24	1	Introduction – Algal generalities		Lecture
Aug 31	2	Algal taxonomy, fossil record functional diversity	<ul style="list-style-type: none"><li>• Reading 1</li><li>• Quiz 1</li><li>• Discussion 1</li></ul>	Lecture + discussion 1
Sep 7	3	Microalgae I. Cyanobacteria	<ul style="list-style-type: none"><li>• Reading 2</li><li>• Quiz 2</li></ul>	Lecture + discussion 2

			<ul style="list-style-type: none"> <li>• Discussion 2</li> </ul>	
Sep 14	4	Microalgae II. Dinophyta (dinoflagellates) + Bacillariophyceae (diatoms)	<ul style="list-style-type: none"> <li>• Reading 3</li> <li>• Quiz 3</li> <li>• Discussion 3</li> </ul>	Lecture + discussion 3
Sep 21	5	Chlorophyta (green algae)	<ul style="list-style-type: none"> <li>• Reading 4</li> <li>• Quiz 4</li> <li>• Discussion 4</li> </ul>	Lecture + discussion 4
Sep 28	6	Rhodophyta (red algae)	<ul style="list-style-type: none"> <li>• Reading 5</li> <li>• Quiz 5</li> <li>• Discussion 5</li> </ul>	Lecture + discussion 5
Oct 5	7	Phaeophyceae (brown algae)	<ul style="list-style-type: none"> <li>• Reading 6</li> <li>• Quiz 6</li> <li>• Discussion 6</li> </ul>	Lecture + discussion 6
Oct 12	8	Biology of algae I (photosynthesis)	<ul style="list-style-type: none"> <li>• Reading 7</li> <li>• Quiz 7</li> <li>• Discussion 7</li> </ul>	Lecture + discussion 7
Oct 19	9	Biology of algae II (nutrients and other abiotic factors)	<ul style="list-style-type: none"> <li>• Reading 8</li> <li>• Quiz 8</li> <li>• Discussion 8</li> </ul>	Lecture + discussion 8
Oct 26	10	Ecology of macroalgae I. species interactions and ecosystems (kelp forests)	<ul style="list-style-type: none"> <li>• Reading 9</li> <li>• Quiz 9</li> <li>• Discussion 9</li> </ul>	Lecture + discussion 9
Nov 2	11	Ecology of macroalgae II. species interactions and ecosystems (coral reefs and seagrasses)	<ul style="list-style-type: none"> <li>• Reading 10</li> <li>• Quiz 10</li> <li>• Discussion 10</li> </ul>	Lecture + discussion 10
Nov 9	12	Ecology of macroalgae II Harmful algal blooms and Sargassum (Final project_1 <sup>st</sup> submission, Nov 12th)	<ul style="list-style-type: none"> <li>• Reading 11</li> <li>• Quiz 11</li> <li>• Discussion 11</li> </ul>	Lecture + discussion 11
Nov 16	13	Seaweed and humans <b>Invited speaker(s)</b>	<ul style="list-style-type: none"> <li>• Reading 12</li> <li>• Quiz 12</li> <li>• Discussion 12</li> </ul>	Lecture + discussion 12
Nov 23	<b>Thanksgiving break</b>			
Nov 30	<b>Final presentations</b>			
Dec 7	<b>Final exam</b>			