

Syllabus, BISC 583, Fall 2016

Evolution & Adaptation of Marine Organisms

Course overview

BISC 583 is a 4-unit course covering fundamentals of evolutionary patterns and processes in the marine environment, with emphasis on rates of adaptation to a changing ocean. It is primarily intended for first-year students in the Marine Biology and Biological Oceanography (MBBO) Graduate Program. Prerequisites are admission to the MBBO program or permission from the instructors.

Course objectives

This is the second core course in the MBBO program and serves as preparation for a portion of the First Year Screening Exam. Students will gain background in the essentials of evolution and adaptation in marine microbes and metazoans. They will also gain experience in critiquing the current literature through both oral and written presentations.

Faculty

Eric Webb, eawebb@usc.edu, 213-740-7594

Andrew Gracey, gracey@usc.edu, 213-740-2288

John Heidelberg, jheidelb@usc.edu, 310-510-4040

Format

The course will meet in AHF 205 from 2:00-3:30 pm on Wednesday and 12:00-1:30 pm on Thursdays, with Wednesday's largely devoted to faculty lectures and Thursdays largely devoted to student-led discussions of primary literature. Course content will be posted on Blackboard (<https://blackboard.usc.edu/>).

Grading

Letter grades will be based on student-led discussions (10%), three writing assignments (15% each), a final examination (40%) and overall participation (5%).

Student-led discussions: Students will alternate leading discussions of journal papers throughout the semester. All students should come to class prepared to lead a 'chalk talk' style discussion, and the leader will be chosen in class. For each article students should be prepared to (1) state the central question or hypothesis of the article, (2) explain the main conclusion(s), (3) review key evidence supporting the conclusion(s), and (4) provide specific questions for general group discussion.

Writing assignments: Each student will write three reviews of journal articles presented in class, as if the articles were manuscripts being submitted for publication. Reviews should be brief (~3 pages) and should follow guidelines discussed in class. The three papers are due on Feb 16, Mar 29, and May 4, respectively; no late papers will be accepted.

Final examination: The final exam will be comprehensive and will include a combination of short answer questions, calculations and essay questions. The format is intended to be a preview of the kinds of questions that will be asked in the Screening Exam.

Overall participation: Participation scores are determined by the frequency of contributions to class discussions.

Statement for Students with Disabilities

Any student requesting academic accommodations based on a disability is required to register with Disability Services and Programs (DSP) each semester. A letter of verification for approved accommodations can be obtained from DSP. Please be sure the letter is delivered to me (or to

TA) as early in the semester as possible. DSP is located in STU 301 and is open 8:30 a.m.–5:00 p.m., Monday through Friday. The phone number for DSP is (213) 740-0776.

Statement on Academic Integrity

USC seeks to maintain an optimal learning environment. General principles of academic honesty include the concept of respect for the intellectual property of others, the expectation that individual work will be submitted unless otherwise allowed by an instructor, and the obligations both to protect one's own academic work from misuse by others as well as to avoid using another's work as one's own. All students are expected to understand and abide by these principles. Scampus, the Student Guidebook, contains the Student Conduct Code in Section 11.00, while the recommended sanctions are located in Appendix A:

<http://www.usc.edu/dept/publications/SCAMPUS/gov/>. Students will be referred to the Office of Student Judicial Affairs and Community Standards for further review, should there be any suspicion of academic dishonesty. The Review process can be found at: <http://www.usc.edu/student-affairs/SJACS/>.

Schedule:

Meetings	Subject	Instructor(s)
	<u><i>Evolutionary Processes</i></u>	
Wed 8/24 Th 8/25	Intro to the course	Gracey
Wed 8/31 Th 9/1	Eukaryotes/Multicellularity	Gracey
Wed 9/7 Th 9/8	Lateral Gene Transfer; What it is and how it might happen	Heidelberg
Wed 9/14 Th 9/15	Lateral Gene Transfer; What it means...	Heidelberg
Wed 9/21 Th 9/22	Gene families, duplications and deletions; paralogs and orthologs	Heidelberg
	<u><i>Evolutionary Patterns</i></u>	
Wed 9/28 Th 9/29	Origin of Life Journal readings TBA	Webb
Wed 10/5 Th 10/6	Tree of Life Journal readings TBA	Webb
Wed 10/12 Th 10/13	Bacteria/Archaea Journal readings TBA	Webb
Wed 10/19 Th 10/20	Evo/Devo Journal readings TBA	Gracey

Wed 10/26 Th 10/27	Temperature & Pressure Journal readings TBA	Gracey/Webb
	<u>Selective Agents</u>	
Wed 11/2 Th 11/3	Temperature & Pressure Journal readings TBA	Gracey/Webb
Wed 11/9 Th 11/10	Atmospheric gases Journal Readings TBA	Gracey/Webb
Wed 11/16 Th 11/17	Homeostasis Journal readings TBA	Gracey/Webb
Wed 11/23 Th 11/24	Thanksgiving	
Wed 11/30 Th 12/1	Water & Nutrients Journal readings TBA	Gracey/Webb
	Final Exam: Wednesday December 7th 2016, XX-XXam	