

BIO SCI E120 – MARINE BIOLOGY – SPRING 2019

Time: Tuesday & Thursday, 11:00-12:20 pm

Room: SSPA 1100

Instructors & Office Hours:

Dr. Cascade Sorte, csorte@uci.edu, Steinhaus 359, Thursday 12:30-1:30 pm & by appointment

Dr. Matthew Bracken, m.bracken@uci.edu, Steinhaus 457, Thursday 9:30-10:30 am & by appointment

TA: Lauren Pandori, lmcquinn@uci.edu, Steinhaus 327, Tuesday 4:00-5:00 pm & by appointment

Course Description: This course is an introduction to biological processes in ocean ecosystems. We will examine the environmental and biological factors influencing the physiology, distributions, abundances, interactions, and evolution of marine organisms. We will also evaluate human impacts on marine ecosystems.

Goals

1. Develop an understanding of the processes underlying patterns observed in marine systems
2. Be able to interpret and evaluate the results and presentation of scientific research
3. Clearly communicate scientific information

Class Participation: It's very important – to your individual and our group success – that everyone

- (1) Attends and focuses in class (see policy below),
- (2) Does the assigned reading,
- (3) Contributes questions and ideas during group discussions, and
- (4) Encourages and considers everyone else's questions and ideas.

Readings

Required research paper and case study PDF's (listed below) will be posted on the course website.

Optional textbooks: "Marine Biology: A Very Short Introduction" by Philip V. Mladenov
"Marine Biology" by Jeffrey S. Levinton (*both on reserve in library*)

Grading:

80%	Exams (40% each of the top 2 exam grades; April 18, May 14, June 6)
10%	Field Trip (by May 28)
5%	Discoveries in Marine Biology Exercise (April 4)
5%	Synthesis Exercise (June 4)

Grading: A+ > 97, A = 93-96, A- = 90-92, B+ = 87-89, B = 83-86, B- = 80-82, C+ = 77-79, C = 73-76, C- = 70-72, D+ = 67-69, D = 63-66, D- = 60-62, F < 60. *Grades round up, so 92.5 = A.* Grading is straight scale, not curved.

Exams: There will be 3 exams, each including a mix of multiple choice (scantron) and short essay questions. Practice for the exams will be provided as "pre-lecture quizzes", questions on projected Powerpoint slides at the beginning of each class period. Exams will focus on recent topics but are also cumulative in the sense that the course topics are designed to build on each other. The lowest exam grade will be dropped.

Field Trip: Your class fee covers entry to the Aquarium of the Pacific in Long Beach, and we have allotted one lecture period for this field trip (although you can go anytime you like by May 28). TA Pandori will provide details on how to get your Aquarium pass and will post a worksheet on the course website that you should print and bring with you when you go. You will receive credit for this exercise based on (1) your grade on the worksheet, and (2) taking a selfie in front of your favorite exhibit and turning it in via the website by May 28 at 11:59 pm PST.

Discoveries in Marine Biology and Synthesis Exercises: Details will be provided during class and on the website.

Class Attendance Policy: Attendance is not required or monitored; rather, each student is responsible for their participation in the course. There is a documented, significant relationship between attendance and performance: students that attend class get better grades. Because of this, and because the instructors can only help students learn to the degree that they are *present* and *engaged*, we encourage you to prioritize *attendance* and *focus*.

All exams and exercises must be completed at the designated time. Be sure to arrive on time for exams: no new exams will be distributed after the first student leaves the exam. Make-up exams or exercises may be given at the instructors' discretion *only* if students (1) email instructors at least 1 week ahead (for planned absences, e.g., due to religious observance) or before class starts (11:00 am PST) on exam/exercise days for unexpected absences

(due to emergencies or sickness requiring a medical visit) and (2) provide appropriate, official documentation as requested. Make-up exams or exercises will be primarily essay based.

Students are responsible for adhering to UCI policies on class attendance (beyond policies listed above), requesting disability services, and academic honesty. All cases of suspected academic misconduct will be reported to the Office of Academic Integrity per policies described at <https://aisc.uci.edu/students/academic-integrity/index.php>.

Case Studies

1. Bracken, M. E. S., B. A. Menge, M. M. Foley, C. J. B. Sorte, J. Lubchenco, and D. R. Schiel. 2012. Mussel selectivity for high-quality food drives carbon inputs into open-coast intertidal ecosystems. *Marine Ecology Progress Series* 459: 53-62.
2. Karl, D. M., C. O. Wirsen, and H. W. Jannasch. 1980. Deep-sea primary production at the Galápagos hydrothermal vents. *Science* 207:1345-1347.
3. Pechenik, J. A. 1999. On the advantages and disadvantages of larval stages in benthic marine invertebrate life cycles. *Marine Ecology Progress Series* 177: 269-297.
4. Sandin, S. A., J. E. Smith, E. E. DeMartini, E. A. Dinsdale, S. D. Donner, A. M. Friedlander, T. Konotchick, M. Malay, J. E. Maragos, D. Obura, O. Pantos, G. Paulay, M. Richie, F. Rohwer, R. E. Schroeder, S. Walsh, J. B. C. Jackson, N. Knowlton, and E. Sala. 2008. Baselines and degradation of coral reefs in the Northern Line Islands. *PLoS ONE* 3:e1548.
5. Smith, J. R., P. Fong, and R. F. Ambrose. 2006. Long-term change in mussel (*Mytilus californianus* Conrad) populations along the wave-exposed coast of southern California. *Marine Biology* 149: 537-545.
6. Sorte, C. J. B., and G. E. Hofmann. 2005. Thermotolerance and heat-shock protein expression in Northeastern Pacific *Nucella* species with different biogeographical ranges. *Marine Biology* 146: 985-993.

Schedule (topics – but not dates of exams or assignments – are subject to change)

Week	Day	Date	Topic	Speaker	Required Readings	Mladenov	Levinton
1	Tues	2-Apr	1. Introduction (via www from the field)	Sorte			Ch. 1
	Thurs	4-Apr	2. Discoveries in marine biology	Pandori	Smith et al. 2006		
2	Tues	9-Apr	3. Marine environment & ecophysiology	Sorte	Sorte & Hofmann 2005		Ch. 4
	Thurs	11-Apr	4. Oceanography	Sorte		Ch. 1	Ch. 2
3	Tues	16-Apr	5. Life in a fluid: plankton vs. nekton	Bracken		Ch. 2	Ch. 5,7,8
	Thurs	18-Apr	Exam 1				
4	Tues	23-Apr	6. Ecological and evolutionary processes	Bracken			Ch. 3
	Thurs	25-Apr	7. Drivers of plankton abundance	Sorte		Ch. 2	Ch. 9
5	Tues	30-Apr	8. Productivity & food webs	Bracken		Ch. 2	Ch. 10
	Thurs	2-May	9. Benthic habitats & species	Bracken	Bracken et al. 2012		Ch. 11-13
6	Tues	7-May	10. Reproduction, dispersal & migration	Sorte	Pechenik 1999		Ch. 6
	Thurs	9-May	11. Intertidal habitats	Sorte		Ch. 7	Ch. 14
7	Tues	14-May	Exam 2				
	Thurs	16-May	12. Coastal subtidal habitats	Bracken		Ch. 3,5	Ch. 15
8	Tues	21-May	13. Deep sea habitats	Bracken	Karl et al. 1980	Ch. 6	Ch. 16
	Thurs	23-May	14. Biodiversity & human impacts	Bracken	Sandin et al. 2008	Ch. 8	Ch. 17-19
9	Tues	28-May	Field trip (Aquarium visit) on own				
	Thurs	30-May	15. Marine conservation	Bracken			Ch. 17-19
10	Tues	4-Jun	16. Review & Synthesis	Sorte			
	Thurs	6-Jun	Exam 3				
Finals			No meeting during final exam period				