

Syllabus: Marine Biochemistry (SIO 181)

Instructors

Martin Tresguerres
Megan Barron

Email

mtresguerres@ucsd.edu (858-534-5895)
mebarron@ucsd.edu

TA

Lauren Linsmayer

llinsmay@ucsd.edu

Office hours:

By appointment

Time (Lectures):

Tuesday & Thursday 11.00 am- 12.20 pm

Location (Lectures):

Lecture Hall (Room 227), Eckart Building
Sumner Auditorium

Time (Seminars)

Monday 4.00-5.50 pm; Wed 5.00-5.50 pm

Location (Seminars)

Vaughn Hall 100

Final Exam:

TBD Final Exams: June 10-16

Required textbooks:

None, instructors will upload reference material (TED)

Course Goals:

To provide an introduction of biochemical and physiological adaptations in diverse marine organisms and how these adaptations are important in their natural environment and in relation to anthropogenic activities.

Learning Objectives:

By the conclusion of the course, the students should be familiarized with biochemical and physiological adaptations used by marine organisms. In particular, they should have learned principles on essential physiological processes such as:

- Metabolism (aerobic and anaerobic),
 - Acid/base regulation
 - Nitrogen metabolism
 - Osmoregulation (osmoconformers, osmoregulators)
 - Thermoregulation
 - Biochemistry and physiology of coral, *Osedax* worms, and hagfish
 - Mechanisms to achieve and maintain buoyancy
- The students should also become familiar with the most important biochemical and physiological adaptations that are characteristic of marine organisms, including general and species-specific mechanisms.

Course Website:

Course materials will be available through the course website

(<http://ted.ucsd.edu>). All students will need to be able to access this site. Be sure to check the course website frequently for announcements, updates and assignments.

Grading:

Grades will be based on a “Midterm Exam” on lectures 1-12 (40% of the final grade), a “Final Exam” focused on lectures 13-19 (40% of the final grade), and “Seminars” (20% of final grade).

Schedule

MT	Tue April 4	Intro
MT	Thu April 6	Aerobic and anaerobic metabolism
MT	Tue April 11	Oxygen transport and hypoxia adaptations
MT	Thu April 13	<i>Sodium/potassium ATPase and V-type proton ATPase</i>
MT	Tue April 18	Acid/Base regulation I
MT	Thu April 20	Acid/Base regulation II, ocean acidification
MT	Tue April 25	Nitrogen metabolism
MT	Thu April 27	Thermal Strategies in the marine environment
MT	Tue May 2	Osmoregulation I
MT	Thu May 4	Osmoregulation II
MB	Tue May 9	MIDTERM
MB	Thu May 11	<i>Coral I Anatomy, Morphology, Cytology, Symbiosis</i>
MB	Tue May 16	<i>Coral II Calcification, pH regulation, bleaching</i>
MB	Thu May 18	Pharmacognosy & biomimicry
MB	Tue May 23	<i>Bone-eating Osedax worm Acid secretion, symbiosis</i>
MB	Thu May 25	<i>Hagfish feeding strategies, slime production</i>
MB	Tue May 30	Buoyancy
MB	Thu June 6	Diving Physiology
MB	Tue June 8	Review Session
MB	TBD (June 10-16)	FINAL

Note: 80-minute lectures

Instruction begins Monday April 3, ends Friday June 9.