Syllabus: **SIO 181: Marine Biochemistry** **Spring 2022**

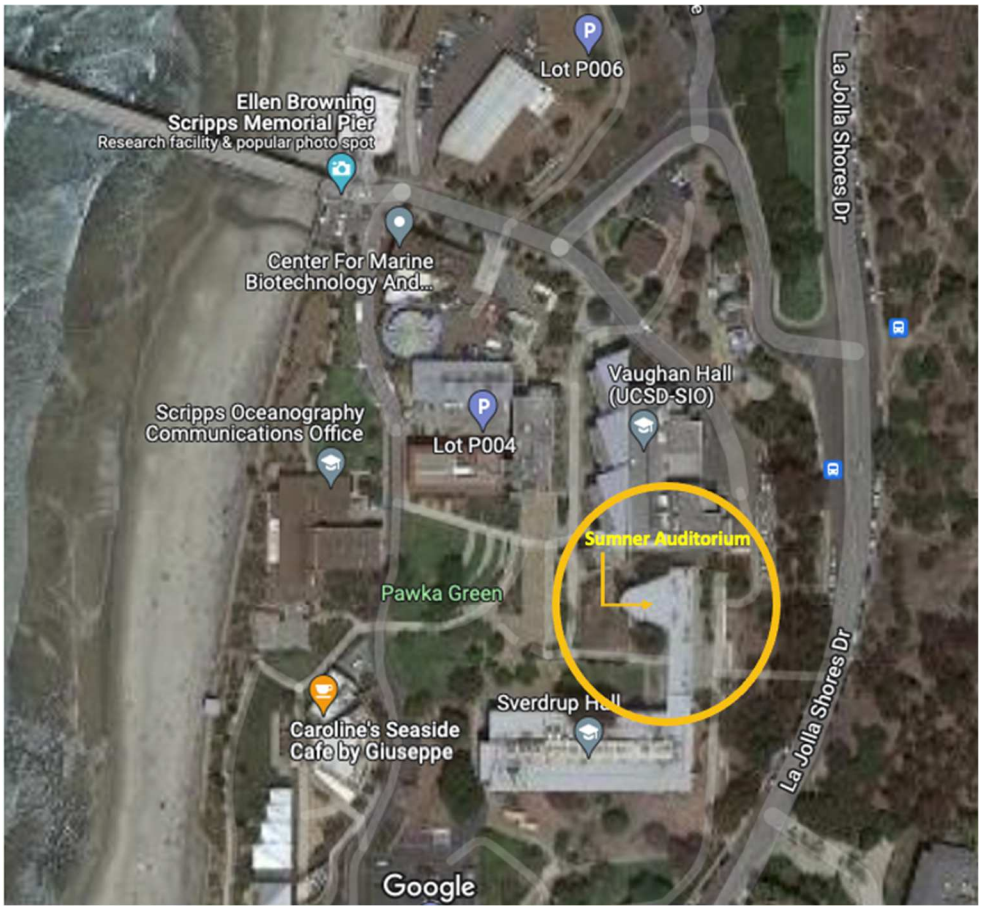
INSTRUCTORS	**E-mail**
Prof. Martin Tresguerres (he/him)	mtresguerres@ucsd.edu
Dr. Till Harter (he/him)	tharter@ucsd.edu

TAs

Ryan Myers (he/him)	r3myers@ucsd.edu
Taylor Hernandez (she/her)	tmhernan@ucsd.edu
Mackenzie Woods (she/her)	mfwoods@ucsd.edu

LECTURE HOURS Tuesday & Thursday 11.00 am- 12.20 pm

Sumner Auditorium - Podcast available



OFFICE HOURS

- **Martin's and Tills' Office Hours**

Tuesday & Thursday 12.30-1.30 pm (Sumner auditorium)

- **TA's Office Hours: they will announce it during the Discussion sections.**

DISCUSSION SECTIONS (Start on Week 2)

TA: Ryan - **Room**: Nieremberg 101 - (starts April 4)

A01 - Monday 1.00-1.50 pm

A02 - Monday 2.00-5.50 pm

TA: Taylor - **Room**: Eckart 236 - (starts April 4)

A03 - Tuesday 1.00-1.50 pm

A04 - Tuesday 3.30-4.20 pm

TA: McKenzie - **Room**: Vaughn 100 - (starts April 1)

A05 - Friday 11.00-11.50 am

A06 - Friday 12.00-12.50 pm

REQUIRED TEXTBOOKS:

Instructors will upload reference material to Canvas.

COURSE GOALS

To provide an introduction of biochemical and physiological adaptations in diverse marine organisms and how those 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:

-Aerobic and Anaerobic Metabolism

-Adaptations to hypoxia

-Acid-Base regulation

-Osmoregulation

-Mechanisms to achieve and maintain buoyancy

-Biochemistry and physiology of *Osedax* worms, hagfish, polar fishes

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 Canvas. Please check the course website frequently for announcements, updates and assignments.

GRADING:

Quizzes and Assignments…….....**40 %**

Midterm Exam *(Week 6)*.....**30%**

Final Exam *(Week 11)*.....**30 %**

TOTAL.....**100 %**

Pass/No Pass: ≥ 50% (Must get ≥ 50% in the quizzes and ≥ 50% in the Exams)

Schedule

Week #	Date	Topic
1	Tue March 29	1. Introduction
	Thu March 31	2. Enzymes, RedOx reactions -General energy metabolism
2	Tue April 5	3. Oxygen Transport
	Thu April 7	4. Na^+/K^+-ATPase, Carbonic anhydrase, V-type H^+-ATPase
3	Tue April 12	5. Hypoxia Adaptations (I)
	Thu April 14	6. Hypoxia Adaptations (II)
4	Tue April 19	7. Acid-Base Regulation (I)

	Thu April 21	8. Acid-Base Regulation (II)
5	Tue April 26	9. Thermoregulation
	Thu April 28	10. Biochemistry and Physiology of Hagfish
6	Tue May 3	11. Biochemistry and Physiology of Osedax
	Thu May 5	12. **MIDTERM**
7	Tue May 10	13. Nitrogen metabolism
	Thu May 12	14. Buoyancy (I)
8	Tue May 17	15. Buoyancy (II)
	Thu May 19	16. Osmoregulation (I)
9	Tue May 24	17. Osmoregulation (II)
	Thu May 26	18. Osmoregulation (III)
10	Tue May 31	19. Diving physiology
	Thu June 2	20. Polar Fishes
11	Tue June 7	Final exam - TBA - 11.30 am - 2.29 pm