

## **SIO126 Marine Microbiology**

**SIO126 is an introduction to the unicellular microbes that live in the oceans and how they interact with their physical and chemical environment and with each other.**

**Time and location:** MWF 9-9:50 Peterson 103

**Instructor:** Brian Palenik, 3110 Hubbs Hall, SIO  
Phone: 858-534-7505, email: [bpalenik@ucsd.edu](mailto:bpalenik@ucsd.edu)  
“Office” hours: By appointment

**IA:** Ivan Moreno. [imoreno@ucsd.edu](mailto:imoreno@ucsd.edu)

**Course web site:** Canvas

The lecture notes (pptx) will be available usually on the day of the lecture.

### **Sections:**

Mondays 10:00am-10:50 am WLH 2112

Wednesdays 3:00-3:50pm Center Hall 203

**Grading:** There will be three quizzes (20 pts each). Each quiz will have two parts, one a vocabulary/concept part (25%) and one part with short essays (75%). **The quizzes will be taken online but restricted to during class time.** We will take the two highest of your three quizzes for 60% of your grade (60 pts). There is an in-class final (20%) with location TBA. Three short assignments will count for 5% each (15 % total). These are typically short 1 page paper reviews of assigned papers. Class and Section attendance and participation will count for 5%.

Note: even if taken P/NP all quizzes and exams must be taken.

### **Academic Integrity**

Academic Integrity is expected of everyone at UC San Diego. This means that you must be honest, fair, responsible, respectful, and trustworthy in all of your actions. Lying, cheating or any other forms of dishonesty will not be tolerated because they undermine learning and the University’s ability to certify students’ knowledge and abilities. Thus, any attempt to get, or help another get, a grade by cheating, lying or dishonesty will be reported to the Academic Integrity Office and will result sanctions. Sanctions can include an F in this class and suspension or dismissal from the University. So, think carefully before you act by asking yourself: a) is what I’m about to do or submit for credit an honest, fair, respectful, responsible & trustworthy representation of my knowledge and abilities at this time and, b) would my instructor approve of my action? You are ultimately the only person responsible for your behavior. So, if you are unsure, don’t ask a friend—ask your instructor, instructional assistant, or the Academic Integrity Office.

You can learn more about academic integrity at [academicintegrity.ucsd.edu](http://academicintegrity.ucsd.edu) (Source: Academic Integrity Office, 2018)

We have several short writing assignments and plagiarism has been an occasional issue in this class. Plagiarism of a writing assignment will result in a 0 for that assignment and will be reported to the Academic Integrity office. Anyone caught cheating on a quiz or final exam will receive an F for the course and will be reported to the Academic Integrity coordinator. Plagiarism includes copying material from sources without citation. **Do not copy sentences or even partial sentences from the papers you are summarizing.** Putting text from papers in quotes as part of a citation is not appropriate in scientific writing. We will discuss strategies for writing paper summaries in section.

**Recommended Texts:** A few in- class readings will be assigned and may be referred to in the quizzes. Some of the reading will be used for summary writing prompts.

**Review Articles:** An entire issue of Nature Reviews Microbiology was been devoted to marine microbiology (5:2007) and is still relevant.

<https://www.nature.com/collections/cqptywsnrr>

**I believe that learning partly occurs through interactions during class time. It is a chance for me to understand what concepts I might need to explain better as well as a chance for you to synthesize material from this class and others by asking questions. I expect class and section participation.**

## **SCHEDULE**

M Jan 8 Introduction to the marine environment

W Jan 10 Physics of the marine environment

F Jan 12 Chemistry of the marine environment **Assignment 0 Due**

(Assignment 0: Ungraded but **required** will be an assignment to find a paper you find interesting in AEM or Environmental Microbiology. You will turn in the title and abstract of the paper online by the end of the first week.)

M Jan 15 Holiday MLK

W Jan 17 Methods in Marine Microbiology A (Field sampling etc)

F Jan 19 Methods in Marine Microbiology B (Molecular approaches)

M Jan 22 Methods in Marine Microbiology C (Genomics)

W Jan 24 The Prokaryotic Cell

F Jan 26 **Quiz 1 (Jan 8-Jan 22)**

M Jan 29 Phylogenetic Diversity of Marine Prokaryotes

W Jan 31 Metabolic Diversity A

F Feb 2 Metabolic Diversity B **Assignment 1 Due**

M Feb 5 Metabolic Diversity C  
W Feb 7 Eukaryotic Diversity (Phototrophs)  
F Feb 9 Eukaryotic Diversity (Heterotrophs/Mixotrophs)

M Feb 12 Marine Viruses  
W Feb 14 The Microbial Loop  
F Feb 16 **Quiz 2 (material from Jan 24-Feb 12)**

M Feb 19 Holiday  
W Feb 21 Phytoplankton blooms Professor Peter Franks  
F Feb 23 I Cold Deep Sea and Hydrothermal Vents **Assignment 2 Due**

M Feb 26 Sea Ice/Changing Oceans  
W Feb 28 Marine Microbes and Disease I  
F Mar 1 Marine Microbes and Disease II

M Mar 4 **Quiz 3 (material from Feb 14- Mar 1)**  
W Mar 6 Marine Natural Products Prof. April Lukowski  
F Mar 8 Symbiotic Associations A **Assignment 3 Due**

M Mar 11 Symbiotic Associations B  
W Mar 13 Symbiotic Associations C  
F Mar 15 Current directions and developments in marine microbiology

**FINAL. It is scheduled for 03/20/2024 W 8:00a-10:59am Location TBA**  
It will cover Symbiosis and any other topics from the class.

### **Writing assignments.**

Writing assignments are summaries of provided papers (these are different from occasional class readings) There will be three.

Summaries address three main questions:

- 1) What research questions/hypotheses was the paper trying to address and why?
  - 2) What methods did it use?
  - 3) What were its conclusions? How this contribute to our understanding of the field?
- Papers are meant to be about 1 page of about three paragraphs. DO NOT USE LISTS.

**Please turn it in Online.**

The following may help you write a summary for this assignment.

<https://www.wikihow.com/Summarize-a-Journal-Article>