



WELCOME TO ANS 198

PROFESSIONAL
DEVELOPMENT IN MARINE
SCIENCE

A sunset over the ocean with a white dashed border around the text.

NOTE TO PRIYA:

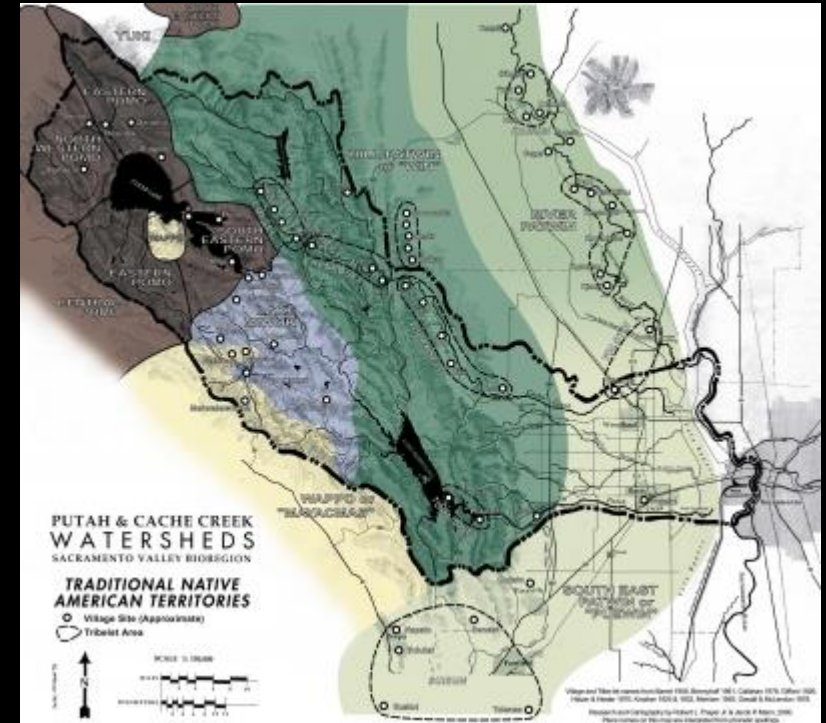
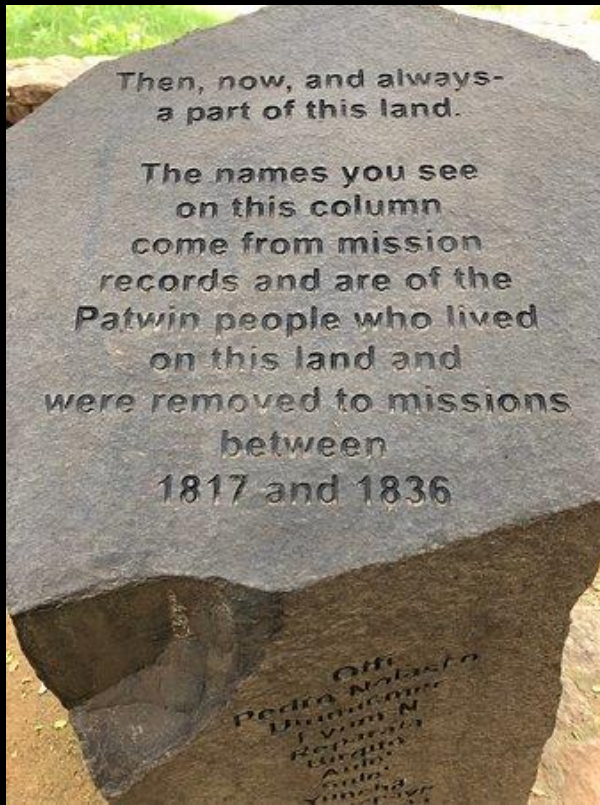
RECORD LECTURE &
TURN ON CLOSED
CAPTIONING



WELCOME TO ANS 198

**PROFESSIONAL
DEVELOPMENT IN MARINE
SCIENCE**

TERRITORIAL ACKNOWLEDGEMENT



This acknowledgement was made possible by [native-land.ca](https://www.native-land.ca) and [yochadehe.org](https://www.yochadehe.org).

BOOKMARK THE COURSE WEBSITE!



https://ucdcmsi.github.io/mcs-resources/Fall2020_ProfDev.html

WHAT IS THIS COURSE?



A professional development seminar for students interested in a career in the marine sciences.



WHAT IS THIS COURSE?

You will learn ...

how science works

skills that will make you a
successful student

how to find career
experiences that will prepare
you for life after undergrad



NUTS & BOLTS OF THIS COURSE



CRN: 21626

2 units

Graded P/NP



INSTRUCTOR OF RECORD

Anne Todgham

todgham@ucdavis.edu



INSTRUCTOR OF THIS COURSE



Priya Shukla

pshukla@ucdavis.edu



ABOUT PRIYA



Effects of an eelgrass bed (*Zostera marina*) on seawater pH and alkalinity

Priya Shukla
University of California, Davis
Bodega Marine Laboratory
BIS 124
27 July 2011



ABOUT PRIYA

Phycologia Volume 56 (6), 638–648

Published 1 August 2017

Elevated $p\text{CO}_2$ is less detrimental than increased temperature to early development of the giant kelp, *Macrocystis pyrifera* (Phaeophyceae, Laminariales)

PRIYA SHUKLA*† AND MATTHEW S. EDWARDS

Coastal and Marine Institute Laboratory, San Diego State University, 5500 Campanile Drive, San Diego, California 92182, USA



ABOUT PRIYA



UC DAVIS
BODEGA MARINE
LABORATORY



**Bodega Ocean Acidification
Research Technician**

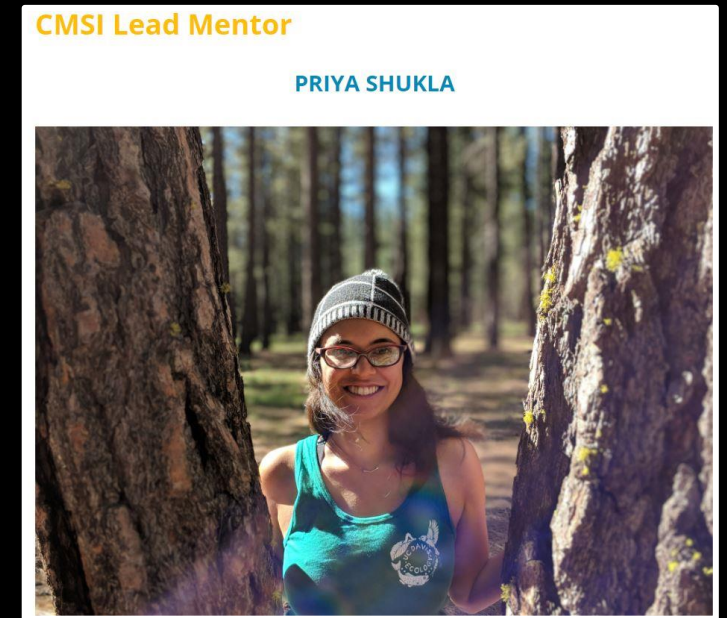
ABOUT PRIYA



PHD
STUDENT



WRITER



CMSI LEAD
MENTOR

ACTIVITY – ABOUT YOU!

From pre-class
survey

43% of you think
icebreakers are
“Painfully
Awkward”



AN OVERT COURSE GOAL



COMMUNITY BUILDING



ACTIVITY – ABOUT YOU!

In breakout sessions of 3 people each ...

One of
your first
ocean
memories



An ocean class /
lecture /
research
experience
you've had in
college

ACTIVITY – ABOUT YOU!

In breakout sessions of 3 people each ...

SHARE
SOMEONE
ELSE'S
OCEAN
MEMORY



SHARE SOMEONE
ELSE'S COLLEGE
OCEAN
EXPERIENCE



GRADING

Based on **class participation & short, weekly questionnaires.**

Graded P/NP

To receive a passing grade ...

**You must attend 7/10 classes.
All assignments must be turned in.**

GRADING

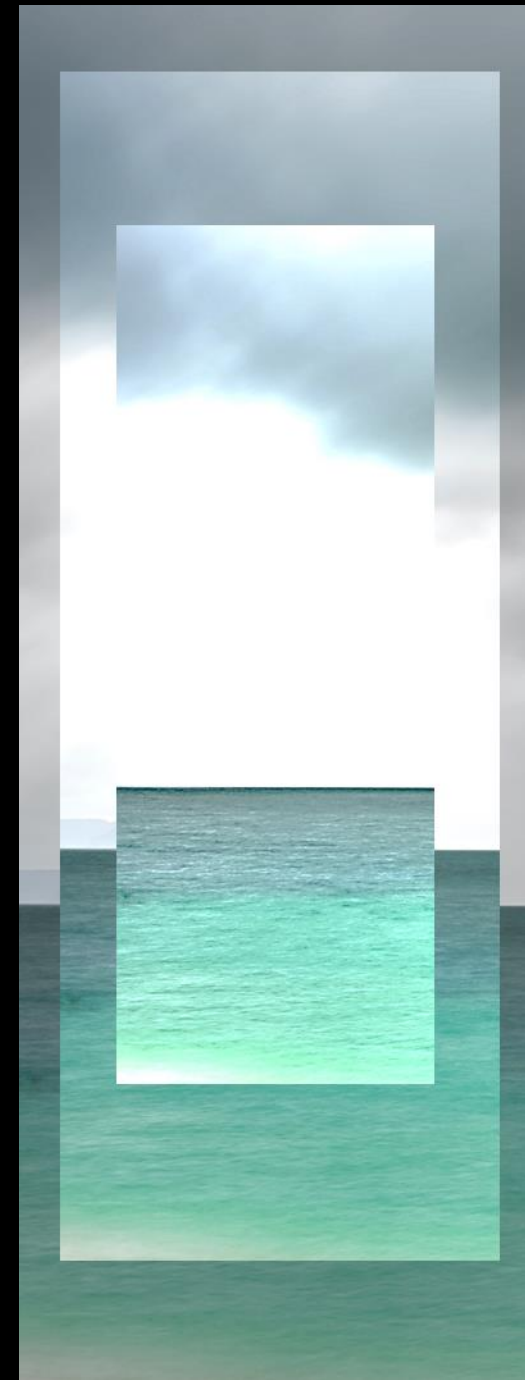


If you will not be able to attend 7/10 classes OR submit all assignments, please let me know so that we can discuss alternate arrangements

ASSIGNMENTS

due 12:00pm the day of class

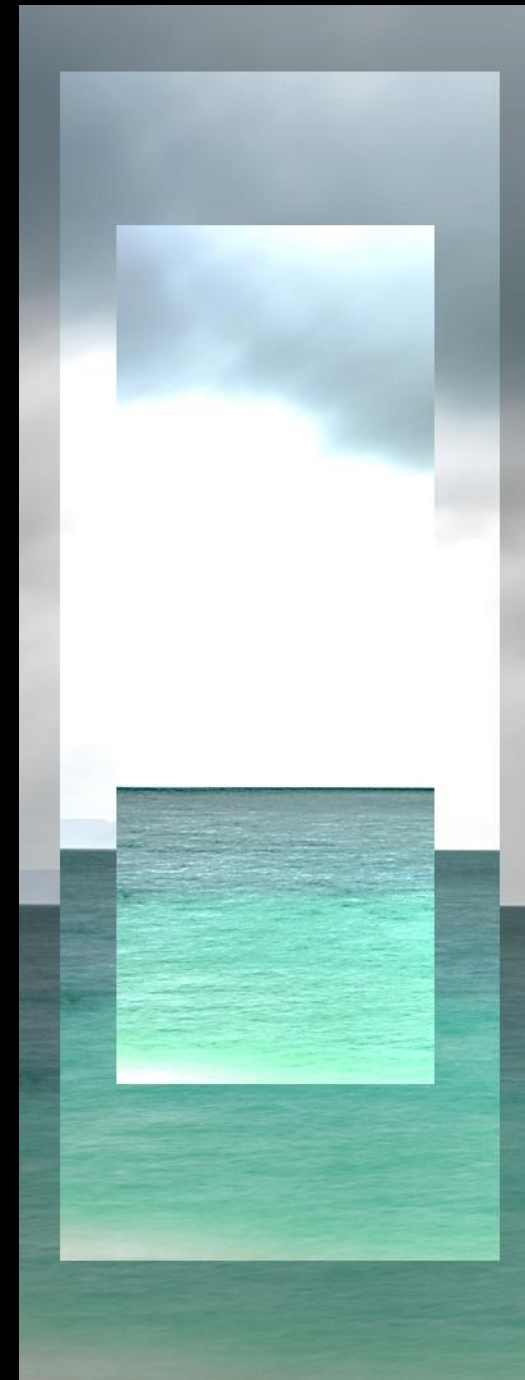
You will be expected to find resources yourselves & then share them with your peers during a subsequent meeting



ASSIGNMENTS

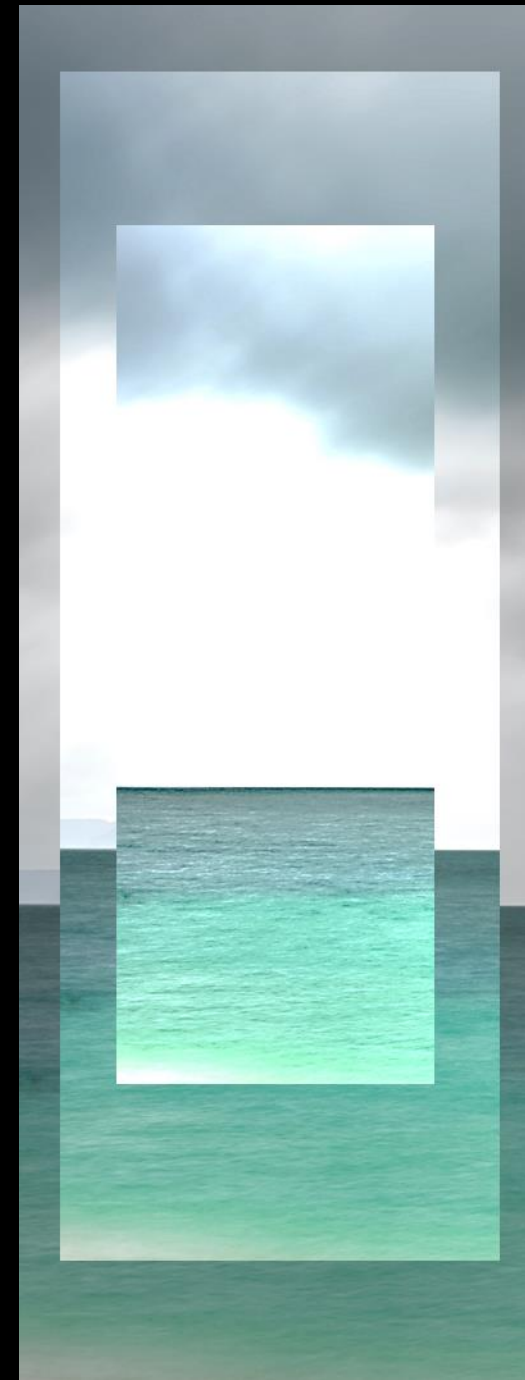
A key goal of this course is to share and collect resources

This can be a book, a peer-reviewed article, a blog post, an Instagram post, a Facebook Group, a Twitter thread, an infographic, advice a professor gave you, something you learned from a lunch with a seminar speaker, etc.).



ASSIGNMENTS

Ultimately, there is no single class you can take that will teach you everything you need to know, **so learning how to search for and share the information you need is a good skill to hone.**



ASSIGNMENTS

 **NOAA Education** ✓
@NOAAeducation

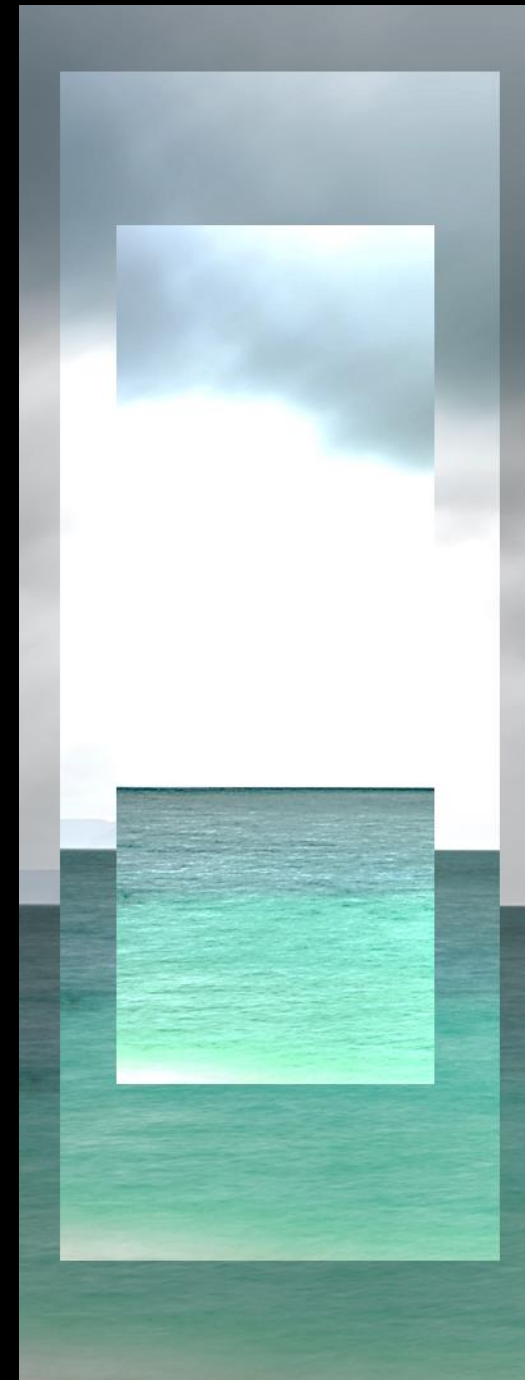
Are you an [#undergraduate](#) interested in a two year scholarship and paid summer [#internship](#) with NOAA? If so, the Hollings or EPP/MSI [#scholarship](#) may be for you! Applications are now open! [#NOAAScholars](#)

For more information and how to apply:



NOAA undergraduate scholarship applications are open — Apply today!
Are you interested in a scholarship and paid summer internship with NOAA?
Consider applying for the Hollings Undergraduate Scholarship or the Educationa...
noaa.gov

8:23 AM · Sep 1, 2020 · Twitter Web App



CODES OF CONDUCT



ACADEMIC

*Read the syllabus:
Don't plagiarize, don't cheat.*

CODES OF CONDUCT



WORKING TOGETHER

*Read the syllabus:
Lots of examples of acceptable &
unacceptable behavior.*

COURSE SCHEDULE

- 1 Introduction
- 2 Academic Science + Lab Culture
- 3 Writing in Science
- 4 Finding & Reading Scientific Papers
- 5 Applying to Jobs / Internships
- 6 Applying for Grants & Fellowships
- 7 Applying to Graduate School
- 8 Science Communication
- 9 Science Ethics & Advocacy
- 10 ***Wild Card: Class Choice!***



Diversity

Equity

Inclusion

Diversity

Used to describe policies / practices that attempt to include previously excluded groups

RESTORATIVE JUSTICE

RACISM

BIPOC

ABLEISM

EQUALITY

HETEROSEXISM

GENDER

OPPRESSION

RACE

DIVERSITY

EQUITY

BIAS

MICROAGGRESSION

SYSTEMIC

MARGINALIZATION

POWER

ETHNICITY

DISCRIMINATION

DECOLONIZE

HOMPHOBIA

SEXISM

PRIVILEGE

ALLY

JUSTICE

INTERSECTIONALITY

PREJUDICE

SEX

CULTURAL COMPETENCY

INCLUSION

Diversity

Used to describe policies / practices that attempt to include previously excluded groups

Equity

Equality = sameness

Fairness & Justice (considers a person/community's context)

Equality v. Equity

As Project: Human City points out - "equality seeks to make everyone equal, equity, on the other hand, seeks to address the underlying and systemic differences of opportunity and access to social resources."

Diversity

Used to describe policies / practices that attempt to include previously excluded groups

Equity

Equality = sameness

Fairness & Justice (considers a person/community's context)

Inclusion

Brings previously excluded groups into positions where they can make decisions and impact



JUSTICE

all people should have equal access to wealth, health, well-being, justice, privileges, and opportunity regardless of their legal, political, economic, or other circumstances

Justice

JEDI MIND TRICKS

Equity


Diversity

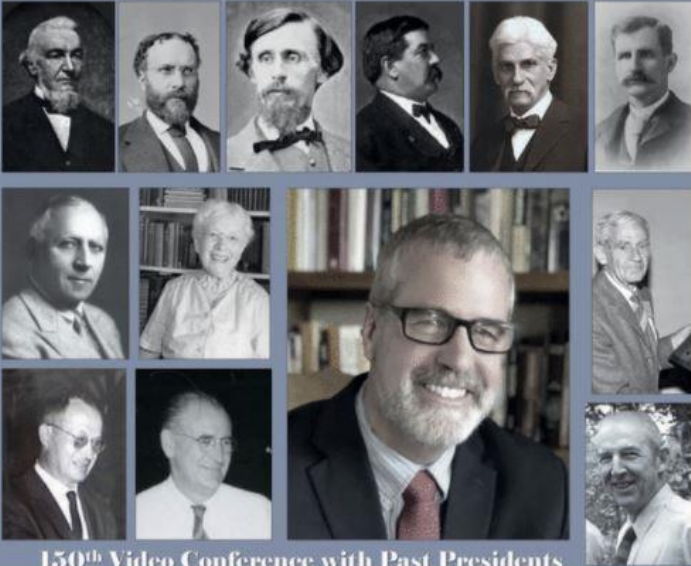
Inclusion



MARGINALIZED MARINE SCIENTISTS



 **FISHERIES**
August 2020



150th Video Conference with Past Presidents

MARGINALIZED MARINE SCIENTISTS



#BLACKINMARINESCIENCE

*Save the Week!!
November 29th - December 5th*



CODES OF CONDUCT



WORKING TOGETHER

*Let's Develop Our Own
Principles of Community!*

RULES OF ENGAGEMENT

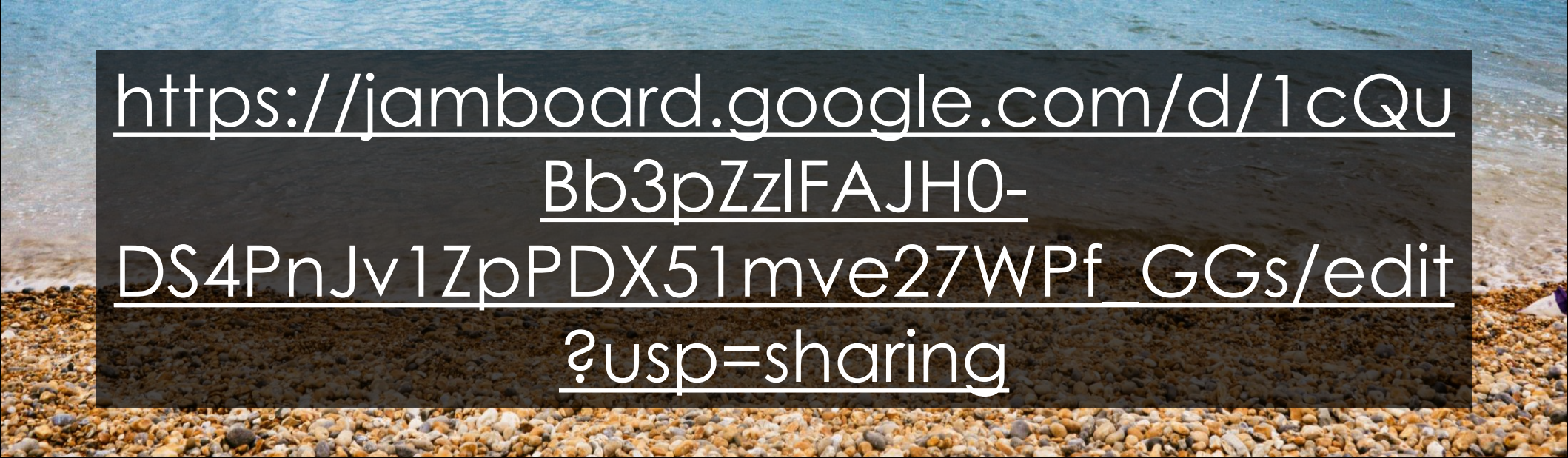


From pre-class
survey

43% of you have
used Google
Jamboard



TO GOOGLE JAMBOARD!



https://jamboard.google.com/d/1cQuBb3pZzIFAJH0-DS4PnJv1ZpPDX51mve27WPf_GGs/edit?usp=sharing

COURSE SCHEDULE

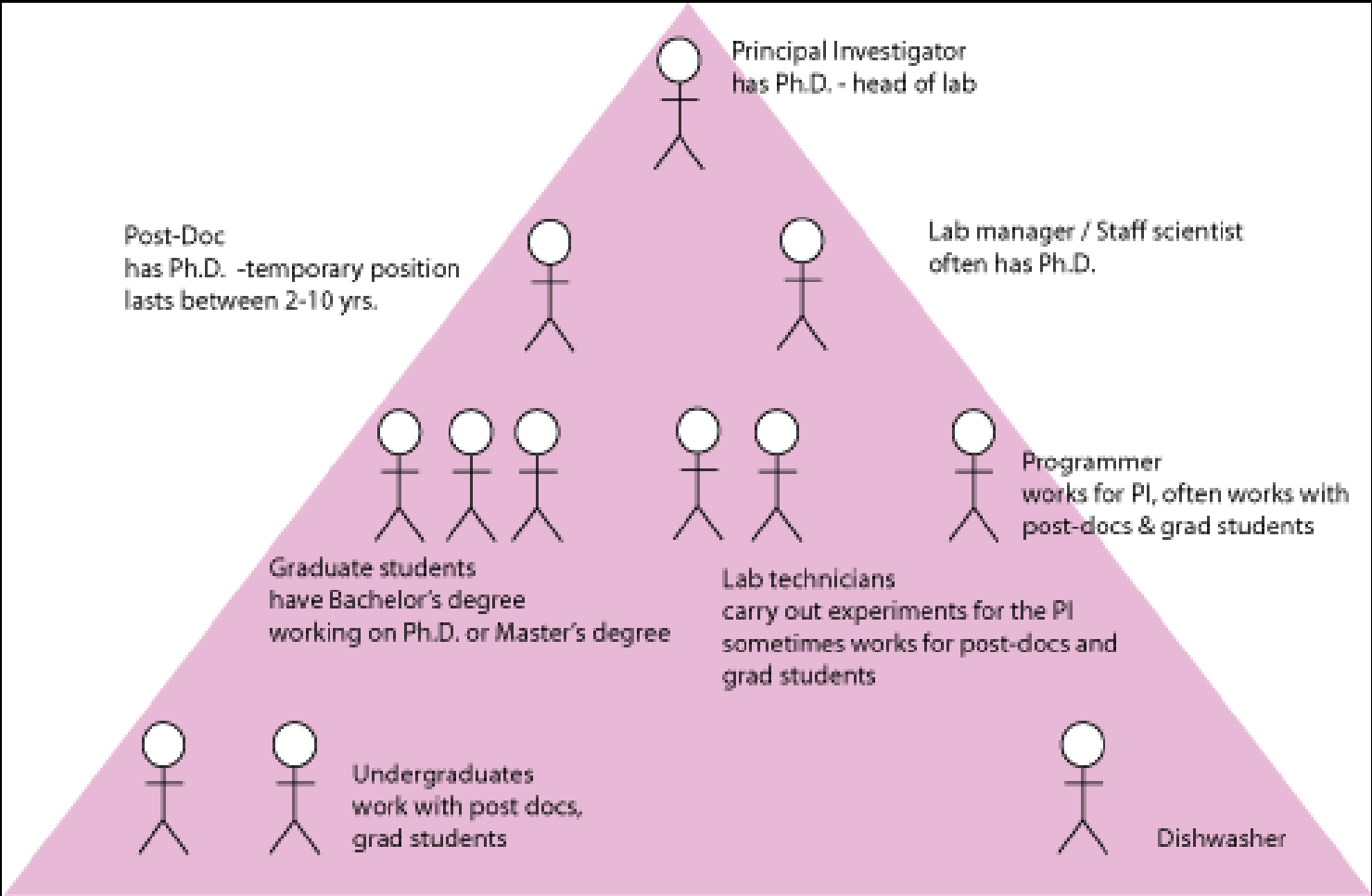
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- 9 Science Ethics & Advocacy
- 10 ***Wild Card: Class Choice!***



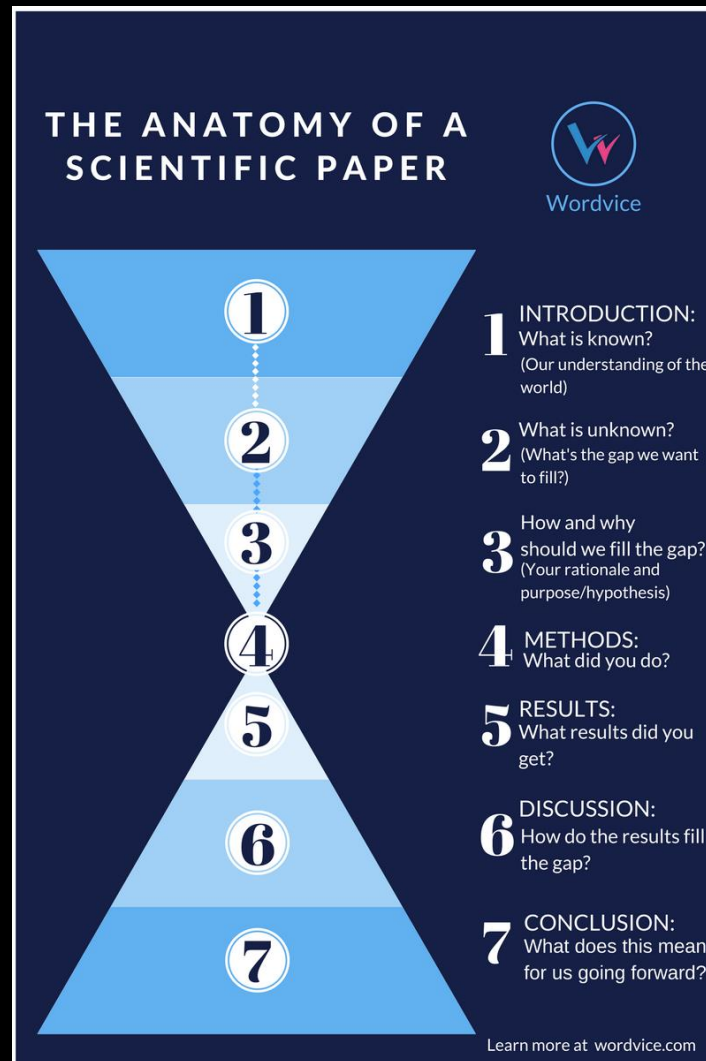
Academic Science



Lab Culture



Writing in Science



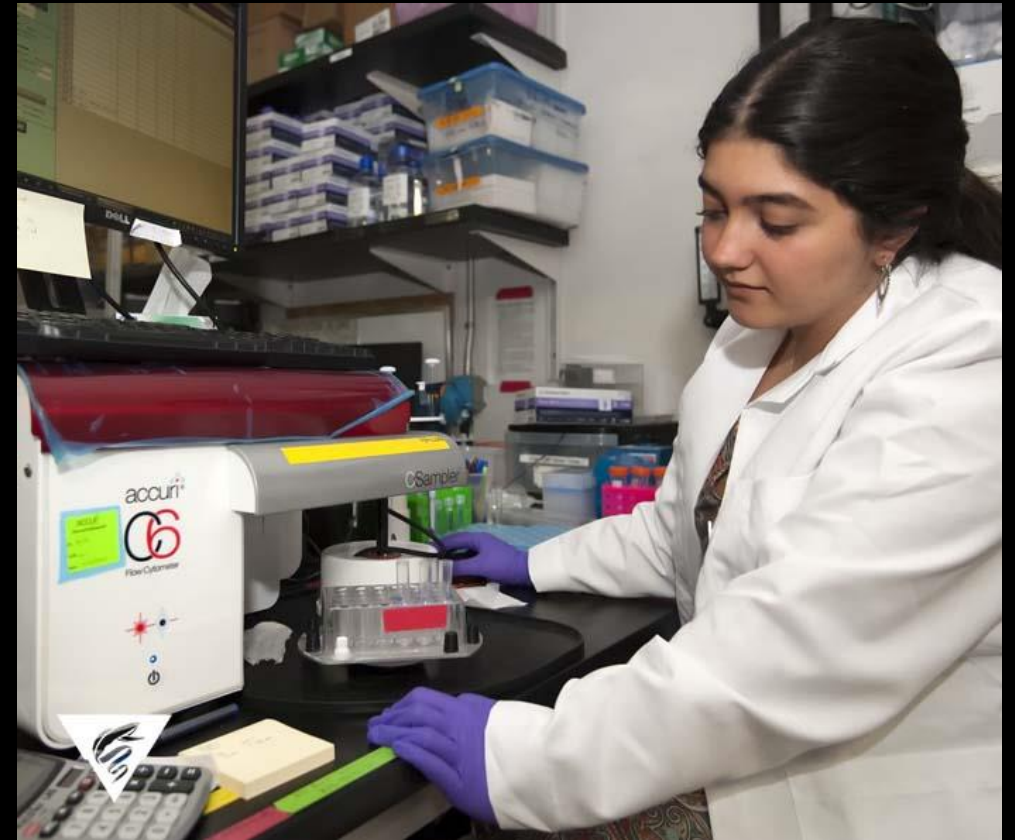
Finding & Reading Scientific Papers

SCIENCE ARTICLES: A GUIDE

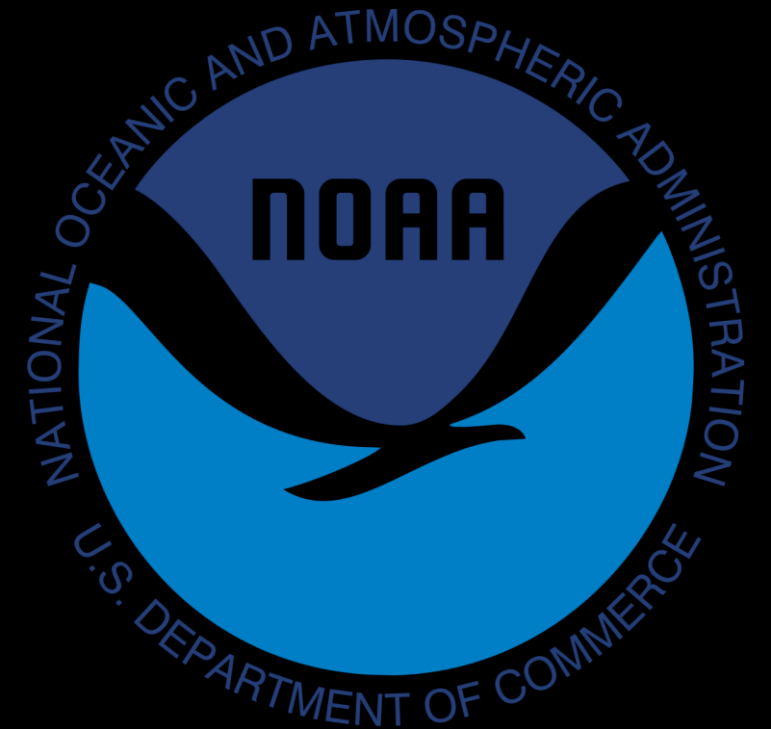
	AVERAGE SENTENCE IS EASY TO UNDERSTAND	AVERAGE SENTENCE IS HARD TO UNDERSTAND
SUBJECT MATTER IS COMPLEX	GREAT WRITING	TYPICAL WRITING
SUBJECT MATTER IS SIMPLE	HONEST WRITING	PROBABLY JUST BULLSHIT

smbc-comics.com

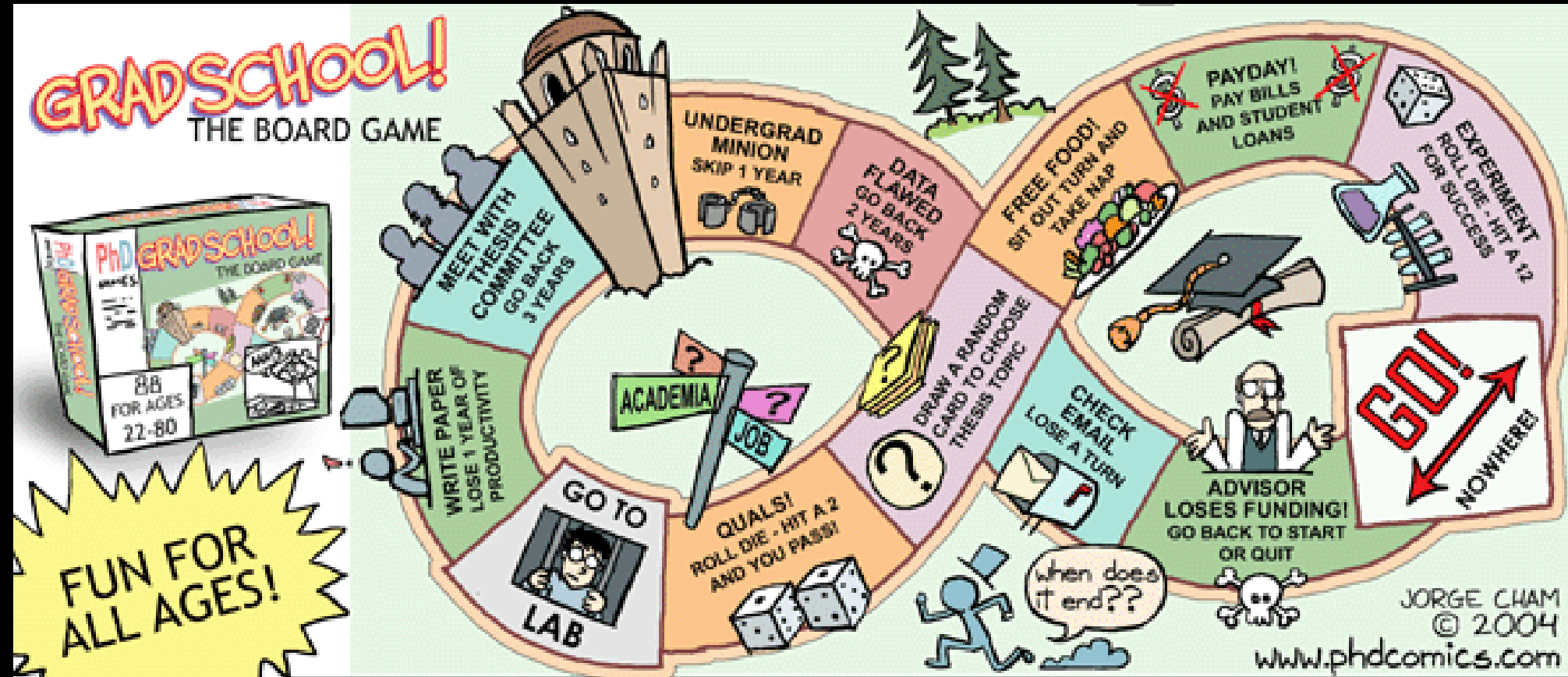
Applying to Jobs / Internships



Applying for Grants / Fellowships



Applying to Graduate School



Science Communication

WHAT IS OCEAN ACIDIFICATION?

The ocean absorbs lots of CO₂ from the atmosphere.

HOW DOES IT WORK?

The amount it absorbs is the same as every person on earth throwing a bowling ball of CO₂ into the ocean – every day.

As individuals, we can reduce our carbon footprint and buy products that support sustainable fisheries and aquaculture.

As societies, we can harness knowledge about marine biology through research – and focus on monitoring and forecasting changes.

Support initiatives and policies that reduce carbon emissions.

Protect vulnerable societies, such as island communities that depend on reefs for protection and seafood for protein.

WHAT CAN WE DO ABOUT IT?

We can't stop ocean acidification entirely, but we can do our best to mitigate the impacts and protect those affected.

Different things happen to CO₂ once it's in the ocean. Some of the CO₂ combines with water to form carbonic acid, which then breaks apart, releasing a hydrogen ion. Hydrogen ions make the ocean more acidic.

$CO_2 + H_2O = H_2CO_3$

$H_2CO_3 \rightarrow H^+ + HCO_3^-$

HISTORICALLY CO₂ addition and removal were in equilibrium.

BUT TODAY the rate of CO₂ addition is 100X FASTER. The ocean is already 34% MORE ACIDIC.

By 2100, the ocean will probably be 150% more acidic.

WHAT'S LIKELY TO HAPPEN?

Evidence about the effects of ocean acidification is building, but scientists are uncertain about the extent of the changes. Here are some likely scenarios:

It will be more difficult for many animals to build shells. One reason for this is less carbonate in the ocean water – a necessary building block in skeletons and shells. Animals like corals and mollusks are at risk.

The shells of very small algae could also be affected. As these form the base of the marine food web, their dwindling numbers might change ocean ecosystems completely.

Some organisms might benefit from ocean acidification, like certain sea grasses.

This will likely change entire food webs, and might lead to species going extinct.

In a worse-case scenario, ocean acidification and warming could mean our grandchildren know only dead reefs covered in algae and abounding with jellyfish... This is likely when ocean acidification is coupled with warming of the surface waters.

FOUND HERE:

- Cooley, S. et al. 2019. Frequently Asked Questions about Ocean Acidification. U.S. Ocean Carbon and Biogeochemistry Program and the UK Ocean Acidification Research Programme. Version 2.
- Laffoley, D. et al. and Baxter, J.M. (eds). 2016. Tackling Ocean Acidification – improving prospects by planning ahead. 16 pp.
- Doney, S.C. et al. 2009. Ocean Acidification: the Other CO₂ problem. Annual Review of Marine Science, Vol 1, 109-122.

Science Ethics, Advocacy & Activism



Wild Card Class – Your Choice!



Class Activity: Scavenger Hunt!





NEXT WEEK


ACADEMIC SCIENCE
+ LAB CULTURE

BEFORE CLASS NEXT WEEK

Complete pre-
class survey

Complete
Assignment 1



The background of the image is a sunset over the ocean. The sky is filled with vibrant orange and red clouds, transitioning to a darker blue at the top. The sun is low on the horizon, creating a bright glow. The water is dark with some ripples. The text "Marine Science Club" is centered in the image, enclosed in a white dashed rounded rectangle.

Marine Science Club

A sunset over the ocean with the word "QUESTIONS?" in a dashed white box. The sky is filled with vibrant orange and red clouds, and the sun is low on the horizon, casting a golden glow. The water is dark and reflects the colors of the sky. The text "QUESTIONS?" is written in a bold, white, sans-serif font and is enclosed within a white dashed border that has rounded corners.

QUESTIONS?