

# Environmental chemistry and sustainable management of coral reefs (field visit included) (OCEAN 7193)

## Information

**Time:** to be arranged (Fall Semester)

**Lecturer:** Huei-Ting (Tina) Lin

**Credits:** 3

## Description

This advanced course is designed to train graduate students and advanced undergraduate students to obtain knowledge about environmental chemistry, focusing on coral reef environmental chemistry. The students will become skillful to channel the most updated scientific research results with citizen scientists, e.g. residential volunteers. Through this course, we will search through the literature and to identify key parameters for coral reef environmental monitoring. Students will help to analyze samples collected by our collaborating citizen scientists, to interpret the data based on literature information, and to present the results to citizen scientists at the beach site at the end of the semester.

## Objectives

## Requirements

## References

## Designated Reading

## Schedule

Week	Topic
1	ICE-BREAKING: Students introduce themselves to the class. (1) Who are you? (2) What is the most unique thing about yourself? (3) What is the most interesting or embarrassing thing about yourself?  What do you know about University Social Responsibility (USR)? What are citizen scientists? Why is the coral reef ecosystem important? Why is the research on the environmental chemistry of the reef ecosystem important?

Week	Topic
2	<p>Student presentation: Relevance of coral reef environmental chemistry and sustainable management to your research or to your personal life.</p> <p>Video conference: meet citizen scientists to learn their needs</p> <p>Review of environmental chemistry: macro nutrients (silicate, phosphate, nitrate, ammonium, nitrite), trace elements, coral calcification rates, community production rate, community respiration rate, organic nutrients, and pollutants</p> <p>Review of key ecological players and their relevance to environmental chemistry: corals, symbionts, plankton assemblage, algae, bacteria, etc.</p>
3	Literature search: identify the four key papers to read throughout this semester. Guidelines for preparing a study sheet for guided reading.
4	Reading assignment 1
5	<p>Reading assignment 1 (continue)</p> <p>Go through the answers and in-depth discussion</p> <p>*****</p> <p>Take-home question: In our bottle experiment, how will the alkalinity of the 500mL seawater sample change after the ~180 mL headspace CO<sub>2</sub> is dissolved into the seawater and the seawater pH drops to make the methyl-red indicator turned red-orange?</p>
6	Reading assignment 2
7	<p>Reading assignment 2 (continue)</p> <p>Go through the answers and in-depth discussion</p>
8	<p>Reading assignment 3</p> <p>+volunteer lab work</p> <p>Sample analysis-major nutrients, alkalinity and dissolved inorganic carbon (DIC), Dissolved organic carbon and total nitrogen, particulate organic carbon and nitrogen, bacterial abundances (?), plankton assemblages (?)</p>
9	<p>Reading assignment 4</p> <p>+volunteer lab work</p> <p>Sample analysis-major nutrients, alkalinity and dissolved inorganic carbon (DIC), Dissolved organic carbon and total nitrogen, particulate organic carbon and nitrogen, bacterial abundances (?), plankton assemblages (?)</p>
10	Presentation dry run-1
11	Presentation dry run-2

Week	Topic
12	<p>5/20 (Wed) Get things ready. 4-6 pm. Presentation practices of the first two talks.</p> <p>5/21 (Thr) Morning: two presentations</p> <p>2:00–3:30pm: a review of today’s presentation and presentation practice for the 3rd talk</p> <p>3:30–6:00pm +Beach cleaning +Uplifted marine geological site study</p> <p>5/22 (Fri) Morning: one presentation</p> <p>11-12 pm: a review of today’s presentation</p> <p>12-6 pm: learn about the island in your own way “Be SAFE”</p> <p>6-8 pm: a review of today’s activities; show us the island from your point-of-view</p> <p>5/23 (Sat) “See” the tourists. Wanna arrange a survey</p>

## Evaluation

## Contact

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