## SIO139 W2024

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Office hours by arrangement (just send an E-mail to set it up).

Meeting: Wednesday 2pm. MCTF building room 210 (this is the new SIO building at the top of the hill)

**Course web site:** Canvas

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

Assignments are typically submitted online but are sometimes also brought to class.

## **Course overview**

The course will provide practice in scientific research and communication skills. This quarter we will use the work of Rachel Carson in some cases to illustrate some forms of science communication. The scientific topic of pollution remains highly relevant today. Some of our current papers and lectures will be on this topic.

## How will this class be organized?

This course is going to be a combination of in person lectures, online content, reading, and writing exercises.

P/NP grades only. Prerequisites: upper-division standing or consent of instructor.

Writing Center: The Teaching and Learning Commons provides writing support for students. Since this class includes frequent writing assignments consider getting their support for your work. <u>https://commons.ucsd.edu/academic-support/writing/for-undergraduates.html</u>

Cheating: The University imposes strict guidelines on academic integrity (https://senate.ucsd.edu/Operating-Procedures/Senate-Manual/Appendices/2) and these will be enforced. Anyone caught plagiarizing will receive a 0 for the assignment and will be reported to the Academic Integrity coordinator. Plagiarism includes using work for other courses and resubmitting some or all for this course. Technology and AI should be used in integrity with university policies. In this class only specific AI tools are allowed as discussed on Feb 7 for literature searching.

**Class Meetings** 

- 1. January 10. Science communication for different audiences
- 2. January 17. Rachel Carson/ Prof. Amro Hamdoun
- 3. January 24. Conference talks. Guest talks by SIO graduate students.
- 4. January 31 References and Reference Managers. UCSD Librarian Jenny Reiswig
- 5. February 7. AI and literature research
- 6. February 14. Analyzing data with R. Prof. Dovi Kacev
- 7. February 21. Recreational Fisheries. Prof. Brice Semmens
- 8. February 28. SIO Collections. Charlotte Seid, Ben Frable, Linsey Sala Curators

(Meet in Vaughn Hall, lower level)

- 9. March 6. Posters for communication
- 10. March 13. Look at posters. Wrap up discussion.

Finals March 16-23 NO FINAL

Assignments and Due Dates

1. Assigned Jan 10.

# A)Read Hamdounpaper1.

B)Read a second paper from longer reading list that is used for a future literature review below.

C)Write a one paragraph summary of each paper as discussed in class. See resources below. Show word count on each summary. Due Jan 17 ONLINE (5pts).

D)Watch a video about Rachel Carson:

https://www.pbs.org/wgbh/americanexperience/films/rachel-carson/

https://youtu.be/O-r\_p6vDYuE?si=TW81DxEQ9iEG3LZs

- 2. Assigned Jan 17. Peer review paragraph paper summaries for two of your classmates (assigned via Canvas). Note that you will have to read their paper/s to evaluate their summaries. Make corrections on your own paper based on comments. Add or subtract words so that your total is now your original word count plus/minus 50 words. Show original and final word count on each summary. Due Jan24 ONLINE (5pts). Read Rachel Carson reading 1.
- 3. Assigned Jan 24. Read Rachel Carson reading 2 (Silent Spring). Using a similar style explain for a general audience what is ocean acidification and why is it occurring. This is meant to be about 2 paragraphs. Due Jan 31. ONLINE (10pts)
- 4. Assigned Jan 31 Homework: Use 1 reference from the reading list, either the paper you chose to summarize or another paper. Find 9 more related references that cited them or each other and create a reference library in Endnote online. Keep the papers relatively similar in theme as you will write a literature summary. The literature summary could be about an aspect of the original paper. Submit a page with the references formatted as in Author-Date AND in Numbered styles. Due Feb 7. ONLINE (10pts).
- 5. TWO PARTS. Assigned Feb 7. 1)Use Connected papers and Litmaps to find 5 more papers related to the ones from Jan 31. Submit a Litmap as a pdf. ONLINE (5pts) 2) Download R and RStudio. R: https://www.r-project.org RStudio: https://www.rstudio.com View introduction to R online http://www.cyclismo.org/tutorial/R/index.html. (If you do not have a computer on which you can download R and RStudio, please let me know ASAP)
- 6. Assigned Feb 14

Using your 15 papers above, pick 10 to begin a literature summary with references. READ ALL 10 PAPERS. Create a list of all major methods used. Create a list of conclusions from each paper. Write a paragraph or two summarizing the 'state of the field,' in which you describe what is known about that particular field and what are the next steps that the field needs to address. For this assignment, you are assuming that the papers that you are reviewing is the extent of the literature in that field. Submit a) List of methods, b) List of conclusions, c) paragraph or two about the state of the field. Due Feb 21 ONLINE (10pts).

- 7. Assigned Feb 21. Create a graph using R. Write a figure legend for the graph. Step by step instructions are posted on Canvas Due Feb 28 ONLINE (10pts) Continue working on complete literature summary that is due....Mar 6. Prepare a paragraph summarizing each paper.
- 8. Assigned Feb 28. Complete the writing of a literature summary by combining your list of key questions, methods used, key conclusions and ideas for future work, all in your own words, into one literature review paper. Due March 6. ONLINE (30 pts)

- 9. Assigned March 6. Read Carson (3,4,5). Work individually or with a partner (optional) to prepare a poster from 1 of the three papers about Convoluta (Symbiosis papers). Pretend this paper is your own research. Further guidance provided in class. Due March 13. ONLINE (10pts) Submit as a pdf online. Bring copy to class Mar 13 as hard copy.
- 10. Assigned March 13. Which Rachel Carson reading did you find most interesting. Why? 1 paragraph. Due March 15. ONLINE (5pts).

All papers should demonstrate mastery of grammar, punctuation, spelling and syntax expected of college level students. If you need writing assistance, please seek help from Student Support Services and the Writing Center. All papers are to be word-processed, proofread, and solely the work of the author. Resources https://www.wikihow.com/Summarize-a-Journal-Article Scores for each assignment are listed.

## **Reading List Choices for Literature Review.**

Pick 1 for paragraph summary 2, Jan 10 assignment. Choose one in an area of marine biology you are interested in.

- Shinzato, C., E. Shoguchi, T. Kawashima, M. Hamada, K. Hisata, M. Tanaka, M. Fujie, M. Fujiwara, R. Koyanagi, T. Ikuta, A. Fujiyama, D.J. Miller, and N. Satoh, Using the Acropora digitifera genome to understand coral responses to environmental change. Nature, 2011. 476(7360): p. 320-U82.
- Block, B.A., H. Dewar, S.B. Blackwell, T.D. Williams, E.D. Prince, C.J. Farwell, A. Boustany, S.L.H. Teo, A. Seitz, A. Walli, and D. Fudge, Migratory movements, depth preferences, and thermal biology of Atlantic bluefin tuna. Science, 2001. 293(5533): p. 1310-1314.
- Davidson, E.H., J.P. Rast, P. Oliveri, A. Ransick, C. Calestani, C.H. Yuh, T. Minokawa, G. Amore, V. Hinman, C. Arenas-Mena, O. Otim, C.T. Brown, C.B. Livi, P.Y. Lee, R. Revilla, A.G. Rust, Z.J. Pan, M.J. Schilstra, P.J.C. Clarke, M.I. Arnone, L. Rowen, R.A. Cameron, D.R. McClay, L. Hood, and H. Bolouri, A genomic regulatory network for development. Science, 2002. 295(5560): p. 1669-1678.
- 4. Halpern, B.S., S. Walbridge, K.A. Selkoe, C.V. Kappel, F. Micheli, C. D'Agrosa, J.F. Bruno, K.S. Casey, C. Ebert, H.E. Fox, R. Fujita, D. Heinemann, H.S. Lenihan, E.M.P.

Madin, M.T. Perry, E.R. Selig, M. Spalding, R. Steneck, and R. Watson, A global map of human impact on marine ecosystems. Science, 2008. 319(5865): p. 948-952.

- 5. Martin, J.H. and S.E. Fitzwater, Iron-deficiency limits phytoplankton growth in the northeast pacific subarctic. Nature, 1988. 331(6154): p. 341-343.
- Myers, R.A., J.K. Baum, T.D. Shepherd, S.P. Powers, and C.H. Peterson, Cascading effects of the loss of apex predatory sharks from a coastal ocean. Science, 2007. 315(5820): p. 1846-1850. 7. Pandolfi, J.M., R.H. Bradbury, E. Sala, T.P. Hughes, K.A. Bjorndal, R.G. Cooke, D. McArdle, L. McClenachan, M.J.H. Newman, G. Paredes, R.R. Warner, and J.B.C. Jackson, Global trajectories of the long-term decline of coral reef ecosystems. Science, 2003. 301(5635): p. 955-958.
- 7. Proctor, L.M. and J.A. Fuhrman, Viral mortality of marine-bacteria and cyanobacteria. Nature, 1990. 343(6253): p. 60-62.

Papers for poster assignment:

These are under the Symbiosis module online.

Rachel Carson Readings:

These are under the readings module online.

- 1. Under the Sea Wind, Chapt. 3 Arctic Rendevous.
- 2. Silent Spring, Elixirs of Death pg 21-30.
- 3. The Sea Around Us, The Moving Tides pg 345.
- 4. Women's National Press Club Speech. Lost Woods. pg 201-210.
- 5. Letter to Dorothy pg 246-47.