

**BISC 582, Fall 2017**  
**Advanced Biological Oceanography**

Tuesdays-Thursdays, 2-330, ZHS 163

Sergio Sanudo-Wilhelmy ([sanudo@usc.edu](mailto:sanudo@usc.edu), phone 213-821-1302, office in AHF 206)

Dale Kiefer ([kiefer@usc.edu](mailto:kiefer@usc.edu), phone 213-740-5814, office in AHF 342).

Douglas Capone ([capone@usc.edu](mailto:capone@usc.edu), phone 213-740-2772, AHF 108))

**Suggested Resources/ Textbook:**

David W. Townsend, Oceanography and Marine Biology, 2012, Sinauer Assoc.

A. Longhurst, Ecological Geography of the Sea, 2<sup>nd</sup> Ed., 2007, Acad. Press., San Diego

J. Sarmiento & N. Gruber, Ocean Biogeochemical Dynamics, 2006, Princeton Univ. Press.

D. Kirchman (Ed), Microbial Ecology of the Oceans, 2<sup>nd</sup> ed. 2008, Wiley, NY.

W. Schlesinger & E. Bernhardt, Biogeochemistry: An Analysis of Global Change, 3rd Edition (2013), Academic Press, San Diego.

Andrew Bakun. Patterns in the Ocean, Ocean Processes and Marine Population Dynamics. California Sea Grant College System, NOAA.

K.H. Mann & J.R.N. Lazier. Dynamics of Marine Ecosystems, Biological–Physical Interactions in the Oceans. 3rd Edition, Blackwell Publishing.

**Classical Papers Web-sites**

<http://www.soest.hawaii.edu/oceanography/zij/education/ocn750-hp/>

Additional outside reading assignments will be provided for many of the lectures. All PowerPoint lectures will be posted on Blackboard.

Grading will be based on a mid-term exam and the final (35% each). The final will emphasize the second half of the course. 15% of the grade will derive from problem assignments from lectures and class participation. A research paper (~10 pages) on a topic of current interest in biological oceanography will be due on the last day of class and grading (15%) will be based on the written paper and a short (15-20 min) presentation during the last class period. Paper topics should be approved by one of the instructors by the end of September. Further instructions on the format of the paper and the discussion sessions will be provided after the start of the class.

Date	Topic	Lecturer	Reading
Aug 22	Introduction and chemical oceanography	Sanudo	Chap 4 Townsend
Aug 24	Chemical Oceanography-part 2	Sanudo	
Aug 29	Physical Oceanography	Kiefer	Chap. 5,6
Aug 31	Physical Oceanography_part 2	Kiefer	Mann & Lazier: 2.1-2.2.9,3.1- 3.2.3, 5.1-5.2.4,

			8.1-8.2.5
Sep 5	History of Oceanography	Capone	Chap. 1 Townsend
Sep 7	Marine Ecosystems, Ocean Food Webs and Distributions of Marine Organisms	Capone	Chap. 7, p. 246- 254; Chap. 12
Sep 12	Phytoplankton & Primary Production	Kiefer	Townsend Ch 7 p.227-231,Ch. 8;
Sep 14	Phytoplankton & Primary Production part 2 (optics)	Kiefer	Kiefer & Mitchell, 1983
Sep 19	Zooplankton & Secondary Production	Hutchins	Townsend Chap. 9
Sep 21	Fisheries and Aquaculture	Kiefer	Townsend Chap. 14
Sep 26	Nutrient Biogeochem- General Concepts	Capone	Moore et al. 2014
Sep 28	Nutrient Biogeochem- C cycle	Capone	TBA
Oct 3	(con't)-C cycle part 2	Capone	
Oct 5	Nutrient Biogeochem- N-cycle	Capone	Capone 2008
Oct 10	N Cycle-part 2	Capone	
Oct 12	Nutrient Biogeochemistry-P, S cycles	Capone	Karl 2014
Oct 17	Nutrient Biogeochemistry (trace metals, vitamins)	Sanudo	TBA
Oct 19	Trace metals and vitamins_part 2	Sanudo	TBA
Oct 24	Benthic biogeochemistry	Ziebis	Townsend, Chap. 3, p. 98. Chap. 10, Benthos.
Oct 26	Optical Oceanography and Remote Sensing	Kiefer	Kiefer et al. 1979; Wilson Kiefer 1979
Oct 31	<b>Mid-term</b>		Kirk Chap. 1
Nov 2	Microbial loop and viruses	Gomez-Consarnau	TBA
Nov 7	Modeling Plankton Dynamics	Kiefer	
Nov 9	Stella Project	Kiefer	
Nov 14	Climate Change, Ocean Acidification and Other Human Impacts	Sanudo	TBA
Nov 16	Climate Change, Ocean Acidification and Other Human Impacts-part 2	Sanudo	TBA
Nov 21	Climate Change, Ocean Acidification and Other Human Impacts-part 2	Sanudo	TBA
Nov 23	Thanksgiving		
Nov 28	Student Presentations	Sanudo	
Nov 30	Student Presentations		
<b>8 Dec</b>	<b>Final 2, 2-400 pm</b>		