

FLORIDA ATLANTIC UNIVERSITY™

Graduate Programs—NEW COURSE PROPOSAL¹

UGPC APPROVAL _____
 UFS APPROVAL _____
 SCNS SUBMITTAL _____
 CONFIRMED _____
 BANNER POSTED _____
 CATALOG _____

DEPARTMENT: BIOLOGICAL SCIENCES

COLLEGE: COLLEGE OF SCIENCE

RECOMMENDED COURSE IDENTIFICATION:

PREFIX OCB COURSE NUMBER 6050 LAB CODE (L or C) _____

(TO OBTAIN A COURSE NUMBER, CONTACT MJENNING@FAU.EDU)

COMPLETE COURSE TITLE: Biological and Chemical Oceanography

EFFECTIVE DATE

(first term course will be offered)

SPRING 2015

CREDITS²: 3

TEXTBOOK INFORMATION: Miller, C.B. and P.A. Wheeler. 2012. Biological Oceanography, 2nd edition, Wiley-Blackwell, New York (ISBNs: 9781444333015, 9781444333022, 9781118223185).

GRADING (SELECT ONLY ONE GRADING OPTION): REGULAR X SATISFACTORY/UNSATISFACTORY _____

COURSE DESCRIPTION, NO MORE THAN THREE LINES: OCB 6050 explores major biological and chemical processes within the world's ocean, including estuaries, continental margins, and the open ocean.

PREREQUISITES *: Graduate standing, Introductory Chemistry (equal to CHM 2045) and Introductory Biology (equal to BSC 1010 and BSC 1011)

COREQUISITES*:

REGISTRATION CONTROLS (MAJOR, COLLEGE, LEVEL)*:

* PREREQUISITES, COREQUISITES AND REGISTRATION CONTROLS WILL BE ENFORCED FOR ALL COURSE SECTIONS.

MINIMUM QUALIFICATIONS NEEDED TO TEACH THIS COURSE: PH.D. IN THE RELEVANT FIELD

Faculty contact, email and complete phone number:
 M. Dennis Hanisak & J. William Louda
ghanisak@hboi.fau.edu & blouda@fau.edu
 (772) 242-2306 & (561) 297-3309

Please consult and list departments that might be affected by the new course and attach comments.³

Approved by:

Department Chair: [Signature]

College Curriculum Chair: [Signature]

College Dean: [Signature]

UGPC Chair: [Signature]

Graduate College Dean: [Signature]

UFS President: _____

Provost: _____

Date:

02.25.14

3.14.14

3/14/14

3/4/14

3/24/14

1. Syllabus must be attached; see guidelines for requirements: www.fau.edu/provost/files/course_syllabus.2011.pdf

2. Review Provost Memorandum: Definition of a Credit Hour www.fau.edu/provost/files/Definition_Credit_Hour_Memo_2012.pdf

3. Consent from affected departments (attach if necessary)

Email this form and syllabus to UGPC@fau.edu one week before the University Graduate Programs Committee meeting so that materials may be viewed on the UGPC website prior to the meeting.

8. Course Evaluation Methods

Final grades will be determined by averaging together grades for four activities:

Mid-Term Exam	25%
Final Exam	25%
Student Presentations	25%
Class Participation	25%

9. Course Grading Scale

Percentage Score:	Grade:	Percentage Score:	Grade:
92% - 100%	A	72% - 77%	C
90% - 91%	A-	70% - 71%	C-
88% - 89%	B+	68% - 69%	D+
82% - 87%	B	62% - 67%	D
80% - 81%	B-	60% - 61%	D-
78% - 79%	C+	0% - 59%	F

10. Policy on Make-up Tests, Late Work and Incompletes

If a student cannot attend an exam or hand in a homework project on time due to circumstances beyond their control, then the instructor may assign appropriate make-up work. Students will not be penalized for absences due to participation in University-approved activities, including athletic or scholastics teams, musical and theatrical performances, and debate activities. These students will be allowed to make up missed work without any reduction in the student's final course grade. Reasonable accommodation will also be made for students participating in a religious observance. Also, note that grades of Incomplete ("I") are reserved for students who are passing a course but have not completed all the required work because of exceptional circumstances. A grade of "I" will only be given under certain conditions and in accordance with the academic policies and regulations put forward in FAU's University Catalog. The student must show exceptional circumstances why requirements cannot be met. A request for an incomplete grade has to be made in writing with supporting documentation, where appropriate.

11. Special Course Requirements: None.

12. Classroom Etiquette Policy

Per the University's policy on the use of electronic devices: "In order to enhance and maintain a productive atmosphere for education, personal communication devices, such as cellular telephones and pagers, are to be disabled in class sessions."

13. Disability Policy Statement

In compliance with the Americans with Disabilities Act, students who require reasonable accommodations due to a disability to properly execute coursework must register with the Office for Students with Disabilities (OSD)—in Boca Raton, SU 133 (561-297-3880); in Davie, LA 240 (954-236-1222); in Jupiter, SR 110 (561-799-8010) or at the Treasure Coast Campus, CO 117 (772-873-3441)—and follow all OSD procedures.

14. Honor Code Policy Statement

Students at Florida Atlantic University are expected to maintain the highest ethical standards. Academic dishonesty, including cheating and plagiarism, is considered a serious breach of these ethical standards, because it interferes with the University mission to provide a high quality education in which no student enjoys an

unfair advantage over any other. Academic dishonesty is also destructive of the University community, which is grounded in a system of mutual trust and places high value on personal integrity and individual responsibility. Harsh penalties are associated with academic dishonesty. For more information, see University Regulation 4.001 at: http://www.fau.edu/regulations/chapter4/Reg_4.001_5-26-10_FINAL.pdf

15. Recommended Text/Readings

Textbooks:

Miller, C.B. and P.A. Wheeler. 2012. *Biological Oceanography*, 2nd edition, Wiley-Blackwell, New York (ISBNs: 9781444333015, 9781444333022, 9781118223185).

Readings:

Kump, L.R., T.J. Bralower, and A. Ridgwell. 2009. Ocean acidification in deep time. *Oceanography* 22: 94-107.

Nicholls J.C. and M. Trimmer. 2009. Widespread occurrence of the anammox reaction in estuarine sediments. *Aquatic Microbial Ecology* 55:105-113.

Voss M., H.W. Bange, J.W. Dippner, J.J. Middelburg, J.P. Montoya, and B. Ward. 2013. The marine nitrogen cycle: recent discoveries, uncertainties and the potential relevance of climate change. *Philosophical Transactions of the Royal Society B-Biological Sciences*. 368: DOI 10.1098/rstb.2013.0121.

16. Supplementary/recommended Readings

Bianchi, T.S. 2007. *Biogeochemistry of Estuaries*, Oxford University Press, New York. 706 pp.

Garrels, R.M. and C.M. Crist. 1965. *Solutions, Minerals, and Equilibria*. Harpers' Geoscience Series. Harper and Row, New York. 450 pp.

Hansell, D.A. and C.A. Carlson (Editors). 2002. *Biogeochemistry of Marine Dissolved Organic Matter*. Academic Press, Amsterdam. 774 pp.

Millero, F.J. 2013. *Chemical Oceanography*, 4th Edition. CRC Press, Boca Raton, FL.

Mobley, C.D. 1994. *Light and Water: Radiative Transfer in Natural Waters*. Academic Press, San Diego. 592 pp.

Schlesinger, W.H. 1997. *Biogeochemistry: An Analysis of Global Change*. Academic Press, San Diego. 588 pp.

Schulz, H.D. and M. Zabel (Editors). 2006. *Marine Geochemistry*. Springer-Verlag, Berlin. 574 pp.

Thomson, C.W. 1877. *The Voyage of the Challenger The Atlantic. A Preliminary Account of the Results of the Exploring Voyage of the H.M.S. Challenger during the Year 1873 and the Early Part of 1876*. Volumes 1 and 2. McMillian and Company, London. (PDF will be provided.)

vanLoon, G.W. and S.J. Duffy. 2011. *Environmental Chemistry: A Global Perspective*. 3rd Edition. Oxford University Press, New York. 545 pp.

17. Course Topical Outline

1. Introduction: Chemical and biological oceanographic beginnings
2. Seawater, major and minor components
3. Oxidation-reduction reactions and speciation
4. Dissolved gases other than carbon dioxide and gas laws

5. Carbon dioxide, carbonic acid equilibrium, carbonate sediments, and influence of the oceanic conveyor belt
6. Sources/sinks and residence times
7. Redfield concept, nitrogen cycle, and anammox
8. Phosphorus, silica, and iron cycles
9. Carbon and sulfur cycles and their linkages
10. Isotope geochemistry (C, N, H, S, U)
11. Organic biogeochemistry
12. Marine pollution, oil spills and ecotoxicants
13. Marine ecology: fundamental aspects
14. Plankton: primary producers & processes
15. Plankton: microbial loop
16. Plankton: secondary producers/consumers
17. Plankton: trophic dynamics
18. Fish & fisheries: higher trophic levels
19. Coastal oceanography: estuaries/reefs/mangroves
20. Coastal oceanography: coral reefs
21. Benthic processes: Coastal
22. Benthic processes: Deep-sea
23. Challenges in biological & chemical oceanography
24. Global climate change
25. Student presentations

Note: For each lecture, students will be assigned readings from the texts and peer-reviewed publications.