

 <p data-bbox="430 331 954 420">NOVA SOUTHEASTERN UNIVERSITY</p> <p data-bbox="219 415 527 449">Oceanographic Center</p>	<p data-bbox="1101 195 1328 262">Course Syllabus (2016)</p>
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Last Date Revised: 03/03/16

I. COURSE NUMBER AND TITLE: Marine Chemistry

Course/section Number(s): **OCOR – 5605- OD1**

Days: **Monday 6:30-9:30 PM**
 Building & Room: **Forman 100**

II. INSTRUCTOR:

Abigail Renegar, Ph.D.
 Phone: 954-262-3644 Email: drenegar@nova.edu
 Office: CoE #404
 Office Hours: By appointment.

III. COURSE DESCRIPTION:

This course is an introduction to marine chemistry. It describes the properties, composition, and origin of seawater; the importance, distribution, relationships, and biogeochemical cycling of the major inorganic nutrients, dissolved gases, trace metals, and organic compounds. Salinity, temperature and density distributions will be explained. Carbonate parameters (pH, Alkalinity, TCO₂ and pCO₂) and how these are influenced by uptake of anthropogenic carbon dioxide by the ocean will be a key topic. Material is presented through lectures and three laboratory sessions which cover the principles and application of selected analytical techniques.

IV. COURSE LEARNING OUTCOMES*:

At the conclusion of this course the student will be:

- Demonstrate an understanding of the physical, chemical and biological processes affecting the distribution of chemical parameters in the oceans.
- Explain the concepts of salinity and composition of the major seawater ions. Describe the distribution of salinity, temperature and density in the oceans
- Explain the carbonate system, distribution of carbonate parameters in the oceans and the concept of ocean acidification and climate change.

- Describe the distribution of dissolved oxygen in the oceans, seasonal variations, physical and biological processes affecting oxygen concentrations and its importance for marine life.
- Demonstrate an understanding of the importance, major forms, distribution, measurement and cycling of inorganic nutrients (phosphate, nitrate, nitrite and silicate), dissolved organic matter and trace elements in the oceans.
- Determine the salinity of seawater by various physical and chemical methods.
- Determine the concentration of inorganic phosphate in seawater by standard analytical methods.
- Determine the concentrations and fluctuations of the major components of the CO₂ system from pH/alkalinity data, and interpret the results in biological or ecological terms.

*These are directly related to the Program Learning Outcomes for Marine Biology, Coastal Zone Management and Marine Environmental Science.

V. REQUIRED TEXTS AND MATERIALS:

Required Text: An Introduction to the Chemistry of the Sea, 2nd ed., Michael EQ Pilson, Cambridge University Press, 2013. ISBN: 978-0521757775

Recommended Texts: Chemical Oceanography, 4th Ed., Frank J. Millero, Taylor & Francis Group, 2013. ISBN: 9781466512498

VI. COURSE SCHEDULE AND TOPIC OUTLINE:

Date	Topic(s)	Assignment(s)	Comments
08/24/16	Introduction, constituents of seawater	Chapter 1, 2, 4 and 13	
08/31/16	The concept of salinity	Chapter 3	
09/07/16	Laboratory 1: Salinity	Salinity Lab	
09/14/16	Carbon dioxide and the carbonate system	Chapter 7	Salinity Lab due
09/21/16	Laboratory 2: CO ₂ System Lab		
09/28/16	Midterm Exam		
10/05/16	Dissolved oxygen, other gases in the sea	Chapter 5 and 12	CO ₂ Lab due
10/12/16	Phosphorus, nitrogen, and silicon in the sea	Chapter 8	
10/19/16	Laboratory 3: Phosphate Lab		
10/26/16	Trace elements and radiotracers	Chapter 9 and 10	Phosphate Lab due
11/02/16	Organic matter	Chapter 11	
11/09/16	Final Exam		

Note: This is a tentative schedule that may be changed. Students will be provided a minimum one week advance notice of any change when possible.

VII. GRADING CRITERIA (e.g.)

- Midterm exam (25%). Multiple choice, short answer and essay.
- Final exam (25%). Multiple choice, short answer and essay.
- Three laboratory reports (30% total, 10% each).
- Eight quizzes, (20% total, 2.5% each). Multiple choice and short answer.

VII. COURSE REQUIREMENTS AND POLICIES:

ATTENDANCE

FYI: Section 3.8.4 from the Oceanographic Center Catalog:

As a requirement for accreditation, regular attendance is necessary. Each professor has the responsibility to enforce class attendance. To fulfill this requirement, students must have logged in, accessed, and/or interacted with the majority of online course requirements (e.g. assignment submissions, asynchronous discussion) by the first week of the session or they may be withdrawn from the course by the instructor through the Program Office. For this reason, if students anticipate or encounter any reason why they may be unable to engage with their online coursework for an extended period during a term, they must communicate this to their instructor and the Program Office as soon as possible. Students do have the option of requesting an Incomplete; if this is granted by their instructor, they then have 3-months from the end of the term date to submit the required course work as decided with the instructor. An incomplete grade agreement form must be completed and filed with the distance education office. An instructor reserves the right to request original written documentation to substantiate any such absences. A falsified excuse is cause for disciplinary action. An Incomplete course graded I must be completed in one semester or the grade is changed to F. All students are referred to the section

3.5.2. of the Oceanographic Center catalog (<http://nova.edu/ocean/forms/nsuoc-2014-2015-catalog.pdf>) for details on course withdrawals and refunds.

ACADEMIC HONESTY

In order to ensure the highest standards of academic honesty and ethical behavior, the NSU policies on cheating and plagiarism will be strictly enforced. See the NSU Student Handbook for more information at <http://www.nova.edu/cwis/studentaffairs/forms/ustudenthandbook.pdf>. I am empowered by the policy to penalize a student suspected of academic dishonesty, plagiarism, or otherwise misrepresenting work and I will do so and report that student to the Dean of the OC. Nova Southeastern University has contracted with **turnitin.com** to provide plagiarism detection services, and I will submit any suspicious documents to this service.

The use of cell phones, or any other electronic devices not specifically allowed by me, during an exam is not permitted. The use of such devices for any reason will be assumed to be for the purposes of cheating and will result in your dismissal from class and administrative action up to permanent expulsion from all NSUOC programs. If you need the phone for emergency notifications, or the like, leave the phone with me or the proctor at the start of class. You will be immediately notified if there is an incoming call.

EXPECTATIONS

You can expect that I will arrive on time for lectures and be well prepared. You can expect that I will be clear about my expectations and the criteria I use in assigning grades and that I will be fair and equitable. I will treat everyone in the class with consideration and respect.

I expect you to come to class, arrive on time, and be prepared for lecture and lab. I expect you to turn off your cell phones, pagers, and hand-held electronic devices as a gesture of reciprocal respect. If you bring a computer to class, I expect you to use it to take notes and record classroom information. I expect you to stay awake, take notes, participate in discussions and ask questions. I expect you to turn in your assignments on time and in good condition.

X: UNIVERSITY-WIDE POLICY STATEMENTS

A. Academic Misconduct: Academic misconduct appears in a variety of forms (including plagiarism). It is a violation of NSU academic policy and may be punished in a variety of ways, from failing the assignment and/or the entire course to academic probation, suspension or expulsion. If you have questions about what constitutes academic misconduct before handing in an assignment, see your instructor or the NSU Student Handbook at <http://www.nova.edu/cwis/studentaffairs/forms/ustudenthandbook.pdf>.

B. ADA Policy: Nova Southeastern University provides accommodations for students with documented disabilities. If you have a disability for which you believe you require accommodation, please contact Academic Services (<http://www.nova.edu/disabilityservices/>, 954-262-7189).

C. Last Day to Withdraw: Due to the compressed nature of this course you will be able to obtain a full refund of your tuition up to **Date Changes per TERM**. There will be no refund after that

date. None of the lab fee is refundable; however you will own the airline ticket that was purchased for you. It is your responsibility to formally withdraw by completing the appropriate forms to obtain a refund (<http://www.nova.edu/ocean/coursepolicy.html>). A request for tuition refund must be made in writing at the time of withdrawal. Refunds will be made solely at the option of the university and will be based on the legitimacy of the reason for withdrawal. Should you fail to appropriately withdraw from this course, and then earn a grade below your expectations, I will do what I can to see that the grade is reported on your transcript. I will **NOT** backdate paperwork so that you can avoid earning a grade lower than you like.

D. Email Policy: All email communications between students and faculty must be conducted via NSU email accounts (<http://www.nova.edu/common-lib/policies/emailcomm.policy.html>). This requirement will assist NSU in communicating more effectively and protecting your privacy. Emails sent to faculty from non-NSU accounts will be returned to the sender with instructions to resend the communication from your NSU account. To set up an NSU email account or to get help with an existing account, go to https://www.nova.edu/sbin/account_request. Also, the computer help desk is available to assist you with questions regarding your NSU email account. It can be reached at 954-262-HELP (4357).

E. Student Course Evaluations: Student comment and feedback evaluating each college class is an important tool to evaluate program effectiveness. Participation in this process is a responsibility of each student.

F. Grading System

From the Oceanographic Center Catalog Section 3.9.1

The following system is used to grade academic performance:

GRADE	DESCRIPTION
A	Excellent
B	Satisfactory
C	Marginal Pass
D	Poor
F	Failure
W	Withdrawal: Given after the third class week or termination by the instructor for non-completion of the course by the student.
I	Incomplete: Given when most (80 percent), but not all, work has been completed.
Au	Audit
P	Pass

Professors may use + or – in grading. **However, the grading scale ranges from A to D-, no A+ or F+ are awarded.** A grade of incomplete (I) must be requested from the instructor, have the Associate Dean’s approval, and be accompanied by a **completed contract specifying outstanding course requirements and completion dates.** Completion of the course graded incomplete must occur within one semester (or 3 months) of the end of the course and the incomplete be changed to a different grade. If the course is not completed in 3 months, or the student has not withdrawn and received a W, the incomplete will automatically be converted to a grade of F. Under unusual circumstances students may request a time-extension to complete the course. Such requests must be submitted to, and approved by, the Associate Dean of Academic Programs prior to the end of the 3-month time limit. **There are**

no exceptions to this rule. Securing the completed and signed incomplete contract forms is the responsibility of the student.