

Oceanography 421: Chemical Oceanography **Spring 2001**

Professor: Jim Murray

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Office Hours: On demand
(best to arrange a time first)

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Office Hours: Tuesday 12:30 - 1:30

Lectures: MTWThF 9:30 - 10:20 OTB205

Optional Review/Problem/Discussion Session:

To be arranged

Course Description

Required Text:

An Introduction to Marine Biogeochemistry

by Susan M. Libes, John Wiley and Sons, 1992

This book is OK. It is satisfactory in some areas but not very thorough in others. Overall it is probably the best book available.

The main reading will be the material I cover in class which is included in a set of detailed notes that are on the OCN421 web site.

The sections in Libes that cover (or supplement) the material covered in class is indicated in the syllabus.

Other reading:

Certain lectures may draw from external readings (e.g. journal articles and chapters from other books) and these will be distributed before class when required.

Lecture notes will available on the Ocn421 Web Site. This site can be reached through the ocean.washington.edu home page. These can be read or downloaded or printed as you prefer. They are stored in Adobe .pdf format so you will need the Adobe Acrobat Reader on your computer. This can be downloaded for free from the Adobe web site.

Course Philosophy:

We will emphasize **HOW** rather than **WHAT**. Our feeling is that the most important thing you should get from this class are tools you can apply to problems. You can always learn the facts about a specific problem. The tools we will emphasize are 1) chemical equilibrium calculations, 2) simple mass balance box models 3) the group approach to problem solving and 4) writing short and concise analyses of study questions.

We realize than many students have not had chemistry for some time so we will try our best to bridge that gap. Make sure you ask with questions if you hear unfamiliar terms or you are lost. Come see Thor Arnarson or Jim Murray frequently

The syllabus is organized into three broad areas of major focus

I. The Chemistry of Seawater and Chemical Equilibrium

II. Influence of Biology on Marine Chemistry

III. Applications of Chemical Tracers

Problem Sets:	There will be four problem sets. These are to be turned into the TA before 0930 on Wednesday of the week after they are assigned (see schedule). Late submissions will not be scored unless cleared with the TA. This class has a strong quantitative orientation and doing well on the problem sets will be necessary for doing well on the exams. Grading will emphasize your understanding of the method as well as the numerical result. The problem sets will count 50% (12.5% each) of the final grade. Students are encouraged to work together on problem sets.
Group Study:	There will be three, 2 - day, group study learning exercises (see class schedule). These will be used to focus discussion on some of the major areas of excitement in the field of chemical oceanography. These are "What controls the composition of seawater?", "Iron Geochemistry and Limitation of Plankton Growth", "What Controls Atmospheric CO ₂ and What do we Predict to be the Fate of Fossil Fuel CO ₂ ?". Each Group Study will have required reading that will be passed out several days in advance. Students will break into groups to discuss specific aspects of the papers. Written analysis will include discussion of specific questions and perhaps some required calculations. These papers and participation in the study groups will count 30% (10% each) of the grade.
Exam:	The final exam will be 2-hours on May 18 and will count 20% of the grade. The Exam will be closed-book, however you may bring one page (double-sided) of notes/equations.
Office hrs & e-mail	Come see us in the Ocean Science Building anytime you have questions or problems. You will find that both of us will accommodate requests for meetings during non-office hours if necessary. If that is not convenient send questions by e-mail to either of us.