

CH 404/404H/604: Bioinorganic Chemistry

Spring 2008

Instructor:	Professor Julia Brumaghim
Time/Location:	11:00 am – 12:15 pm Tuesday/Thursday, 202 Freeman Hall; please wait at least fifteen minutes if I am not present at 11:00 am
Required text:	<u>Principles of Bioinorganic Chemistry</u> by Stephen J. Lippard and Jeremy M. Berg, University Science Books, 1994.
Office hours:	In 481 Hunter Mondays 3 – 5 pm, immediately after class, or by appointment in 481 Hunter
Contact information:	Office: 481 Hunter (phone 656-0481); labs: 401, 344 Hunter email: brumagh@clemson.edu

COURSE SPECIFICS

Reading

Appropriate reading from the text is given in the course outline (p. 2); *it is highly recommended that the reading be completed prior to the lecture for which it is assigned.*

Problem sets

Problem sets are due *at the beginning of class* on the indicated days (p. 2), since answer keys will be handed out during the same lecture. Late homework will be not be accepted.

Exams

The midterm and final exam dates are listed on p. 2. The final exam will focus *primarily* on material from the second half of the course. Make-up exams are given by appointment for excused absences only. It is a university policy to provide, on a flexible and individualized basis, reasonable accommodations to students who have disabilities. Students are encouraged to contact Student Disability services to discuss their individual needs for accommodation.

Review papers (404H and 604 students only)

A review paper in the format of an *Angewandte Chemie* research highlight is required. A recent paper from the inorganic chemistry literature should be selected as the focus of your paper and the topic must be approved by 13 March. Further details will be given as the course progresses.

Attendance and Grading

Because of the fast-paced nature of this course, attendance at every class is highly recommended. Grades will be based upon the midterm and final exams as well as the problem sets and the review paper. Final grades will be calculated using the percentages listed below and exams will be graded on a curve so that A: 100-90%, B: 89-80%, C: 79-70%, D: 69-60%, F: <60 %.

	CH 404	CH 404H/604
Problem sets (8)	40 %	40 %
Midterm exam	30 %	20 %
Review papers	N/A	20 %
Final exam	30 %	20 %

COURSE OBJECTIVES

This course is intended to provide sufficient background knowledge of the topics and techniques used in bioinorganic chemistry so that students should be able to (1) understand the important aspects of metals in biological systems including the inorganic and biochemical relevance of the topics listed on p. 2, (2) understand and critically evaluate the current literature in this field.

COURSE OUTLINE

<u>Date (day)</u>	<u>Topic</u>	<u>Reading</u>	<u>Assignments due</u>
10 Jan. (Th)	Introduction	Chapter 1	
15 Jan. (T)	Inorganic chemistry review	Chapter 2	
17 Jan. (Th)	Inorganic chemistry review		
22 Jan. (T)	Biochemistry review	Chapter 3	Problem set 1
24 Jan. (Th)	Biochemistry review		
29 Jan. (T)	Physical methods, timescales	Chapter 4	Problem set 2
31 Jan. (Th)	Physical methods		
5 Feb. (T)	Metal uptake / transport / storage	Chapter 5	Problem set 3
7 Feb. (Th)	Metal uptake / transport / storage		
12 Feb. (T)	Metal uptake / transport / storage	Chapter 6	Problem set 4
14 Feb. (Th)	Metal uptake / transport / storage		
19 Feb. (T)	Metal uptake / transport / storage	Chapter 7.1, 8.1,	Problem set 5
21 Feb. (Th)	Review	8.2	
26 Feb. (T)	MIDTERM EXAM		
28 Feb. (Th)	Metals in proteins	Chapter 9	
4 Mar. (T)	Metals in proteins		
6 Mar. (Th)	Metals in proteins	Chapter 10	Problem set 5
11 Mar. (T)	Metals in proteins		
13 Mar. (Th)	Metals in proteins	Chapter 11	Problem set 6; Paper topic approved
18 Mar. (T)	Spring Break		
20 Mar. (Th)	Spring Break		
25 Mar. (T)	Metals in proteins		
27 Mar. (Th)	Metals in proteins	Chapter 12	Problem set 7
1 Apr. (T)	Metals in proteins		
3 Apr. (Th)	Metals and nucleic acids	Chapter 7.2-7.4	Paper due for review
8 Apr. (T)	Metals and nucleic acids		
10 Apr. (Th)	Metals and nucleic acids	Chapter 8.3-8.4	
15 Apr. (T)	Metals and nucleic acids		Peer review due
17 Apr. (Th)	Metals in medicine	Chapter 13	
22 Apr. (T)	Metals in medicine		Problem set 8
24 Apr. (Th)	Review		Final paper due
29 Apr. (T)	FINAL EXAM (8:00 – 11:00 am) in 202 Freeman		