Chemistry 103 Inorganic Chemistry in Living Systems Fall 2017

This course will present the basic principles of metal ions and coordination chemistry and apply these fundamentals toward the study of biological systems.

Instructor:	Professor Chris Chang (chrischang@berkeley.edu) Office Hours: Fri 2:30-4 pm, 532 Latimer Hall
GSIs:	Jeff Derrick (jderrick@berkeley.edu) Office Hours: Mon 12:00-1:00 pm, Wed 12:00-1:00 pm, 1 Lewis Peter Smith (ptsmith@berkeley.edu) Office Hours: Tues 3-4 pm, Thurs 3-4 pm, 1 Lewis
Lecture:	Tues and Thurs, 9:40-11 am, 120 Latimer Hall
No Textbook:	There is no required textbook for this course. Course material will consist of lecture notes as well as handouts and supporting material posted on the course website.
Additional Resources:	Miessler and Tarr, Inorganic Chemistry (any edition) Bertini/Gray/Stiefel/Valentine, Biological Inorganic Chemistry Lippard and Berg, Principles of Bioinorganic Chemistry

Course Website: Go to https://bcourses.berkeley.edu/ and find the "CHEM 103 F2017" page under "Sites". Handouts, lecture notes, problem sets, practice exams, and other supporting materials will be posted here.

Grading:

Problem Sets	*throughout semester, due before class*	10%
Exam 1	*in class, Thurs Oct 5, 9:40-11 am*	25%
Exam 2	*in class, Thurs Nov 2, 9:40-11 am*	25%
Final Exam	*TBA, Wed Dec 13, 11:30 am-2:30 pm*	40%

Examinations: Exams will cover material emphasized in the lectures, supplemental reading, and the problem sets. No makeup exams will be given. If you have a legitimate reason (with documentation) to miss an exam, you may be excused from the exam and in this case your final grade will be based on your *prorated* scores from the rest of the course. This situation does not apply to the final exam, which is required in all cases to complete the course. Please mark exam dates on your calendar immediately. If you know in advance of any reason that may cause you to miss any exam, please contact Prof. Chang immediately. The GSIs will hand back exams after lecture periods and also in their office hours. Requests for exam regrades will only be considered if they are in the form of a written statement on a sheet of paper attached to the original, unaltered exam. No requests will be considered more than one week after the exam. **Note:** Dishonesty and cheating will not be tolerated. Evidence of cheating on an exam will result in a grade of zero for that exam and further disciplinary action by the University.

Problem Sets: You are strongly encouraged to work through the problem sets, as this work will test your understanding of the course material. Exam questions may be similar to the material covered in the problem sets. Problem sets will be assigned during lecture and posted on the course webpage, and the GSIs will collect your answers at the

beginning of the lecture one week later. 10% of your final grade will be based on turning in completed homework assignments. If you are on a border between two grades, regularly completed problem sets will be taken into account in determining whether or not your grade should be higher. Answers will be available on the course webpage. We will also be posting additional optional problems as well as practice exams, many of them which will be exams from previous years, to help you prepare for exams.

Review Sessions: Reviews before Exams 1 and 2 will be held the lecture before the exam. A separate review session before the final will be at the regular class time Thurs Dec 7 during RRR week (9:40-11 am). Extended office hours the weeks before the midterm exams and final exam will also be added.

Chemistry 103 Lecture Schedule

Week	Topic
1,2	Intro to Metals in Biology, Inorganic Chemistry Basics (Electronic Configuration, Nomenclature, Lewis Structures, VSEPR, etc) - *Problem Set 1 Aug 31 due Sept 7*
3	Bonding and Molecular Orbital Theory for Small Molecules
4	Coordination Chemistry Fundamentals (Ligands, Geometries, Hard-Soft Concept, Chelate and Macrocyclic Effects, Electron Counting, etc) - *Problem Set 2 Sept 14 due Sept 21*
5	Crystal Field Theory and Applications of Crystal Field Theory (Magnetism, Absorption Spectroscopy, Reactivity) *Problem Set 3 Sept 21 due Sept 28*
6	Aqueous Coordination Chemistry: Principles and Applications to Biological Systems
7	**In-Class Midterm Exam 1, Thurs Oct 5, 9:40-11 am, 120 Latimer**
8	Structural Roles for Metals in Biology (Gene Expression, Signaling)
9	Metallohydrolases - *Problem Set 4 Oct 19 due Oct 26*
10	Oxygen Binding and Transport
11	**In-Class Midterm Exam 2, Thurs Nov 2, 9:40-11 am, 120 Latimer**
12-13	Electron Transfer, Water and Oxygen Catalysis in Photosynthesis and Respiration - *Problem Set 5 Nov 9 due Nov 16*
14	Oxygen Catalysis, Metals in Medicine
	Final Exam, Wed Dec 13, 11:30 am-2:30 pm, Location TBA