

# CHEMISTRY 212/213: INORGANIC CHEMISTRY I SPRING 2018 SYLLABUS

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*Web page:* This course is available on Moodle  
*Drop-in hrs:* Feel free to stop by any time. If I am not in my office, I could be in my lab (223 Hugel). I cannot promise you I will always have available time, but you can try.  
*Lectures:* M, W, F 8:00 - 8:50 a.m. Honest, not my choice  
*Lab (213):* T 8:00 - 10:50 a.m.  
*Text:* Inorganic Chemistry, 5<sup>th</sup> Ed.; by G.L. Miessler, P.J. Fischer and D.A. Tarr (Pearson, 2014)

*Objectives:* The purpose of this course is to introduce you to modern ideas concerning the structures of atoms and to describe models for bonding in compounds. The emphasis throughout the course will be on the way in which structures and observable properties of compounds are influenced by their electronic structures. While this course will deal primarily with inorganic compounds, the principles that are developed will apply directly to *organic* compounds as well. Consequently, *organic* compounds may be used as examples. However, no background for this course other than general chemistry is assumed or necessary.

Students enrolled in Chemistry 213 will take the laboratory component of the course. Enrollment in Chemistry 213 is only required for B.S. Chemistry majors. A different version of the syllabus is available for Chemistry 212 and 213.

*Expectations:* Read the material.  
Bring a scientific calculator to class.  
Work the homework sets.  
Actively participate in class, particularly homework sets.  
Show up to class. For the lecture portion of the course, there is no formal attendance policy. However, it is highly unlikely that any student will receive an above average grade without regular attendance in lecture.

*Outcomes:* In keeping with the chemistry department student learning goals, this course will 1) contribute to the student's general knowledge of chemistry with a particular emphasis on modern inorganic concepts and 2) enhance the student's ability to apply new knowledge to solve problems. Students enrolled in the laboratory will also have a hands-on experience in a chemical laboratory emphasizing proper technique in obtaining and recording data, proper use of instrumentation and the use of SciFinder Scholar to search the chemical literature.

*Grading:*

3 exams	18% each	(Feb 12, Mar 7, Apr 11)
Final exam	21%	To be determined
Lab/Project	20%	
Problem Sets	5%	

Grades will be assigned using the standard scale.

*Exams:* Three exams and a final will be given over the course of the semester. I tend to write slightly long exams and I do not like students to feel rushed while they are taking exams. I would rather see what you know as opposed to what you can write in 50 minutes. Therefore, exams will be given either at night or early in the morning on the days scheduled with a three hour time limit. Classes on those

days will be used for review if the exams are at night. If you are unavailable to take the exam in the evening (and you must tell me why AT LEAST ONE WEEK prior to the exam), you will either take it during class time or at a time we agree upon. Make-up exams will only be given for extreme cases requiring dean's excuses. The final will only be partially cumulative. My early estimate has it at 70% final few weeks of material, 30% cumulative.

*Homework:*

Problem sets will be assigned and graded during the course of the semester. There will be approximately two problem sets per test period. They will be due approximately one week after being assigned. We will discuss the problem sets in class. Students in **Chemistry 212** will be assigned to put a problem up on the board during these discussion periods. We will analyze the work presented on the board as well as entertain different ideas from the rest of the class. Students are strongly encouraged to put notes/corrections on their problem sets as we discuss them as long as a different color pen or pencil is used. You are encouraged to work together or talk about the problem sets with one another. However, simply copying another person's work will not be of any benefit to the student.

*Moodle:*

Moodle will be used extensively. Laboratory materials, student lecture guides and problem sets will be posted. In addition, grades will be posted. Previous exams can also be found, although the course may have undergone some revision and different material may be present. If you have any problems viewing this material, please inform the instructor.

*Cell phones:*

I expect you to come to class and be prepared to focus on the material being covered. Texting, checking various forms of social media, etc. will only serve to distract you during class. Students doing this during class may be asked to leave. If this is an ongoing problem, I will exercise my right to have a student withdraw from the class.

*Other:*

Maybe because I am old-fashioned or maybe because I was required to do so, you will become very familiar with the periodic table during this course. So familiar in fact, that you might even say you will have to memorize the atomic symbols and their location on the table excluding the d-block and f-block metals. It will be worth points on the first exam and a complete table will not be provided on any exams.

While nice and useful some of the time, graphing/programmable calculators will only be allowed for the exams under special circumstances. The memories must be erased by me before the exams. It will save me, and you, a lot of time and trouble if you just pick up a cheap scientific calculator. If you wish to use a graphing calculator, I will erase the memory before each exam. I will not spend time looking through the programs to make sure they are ok. I will erase everything. If you want to keep something, I suggest saving it to a computer or maybe another calculator.

*Intellectual  
Honesty:*

You will be held to the highest expectations of student conduct as outlined in the Lafayette College Student Handbook. If you violate these precepts, I will refer the matter to the Dean's office

# CHEMISTRY 212: INORGANIC CHEMISTRY I

## SPRING 2018 SYLLABUS SUPPLIMENT

Since you are not taking the lab, you will complete several projects that will count as 20% of your final grade, essentially replacing the lab. The grade will be broken down as follows: homework posting (8%), feedback submission (6%), element presentation (32%) and final project (54%).

You are required to post answers to the homework problems on the board the days that they are due. It is expected that you will come to class early to post these problems so we are ready to start class at 8 am promptly. Your grade for homework posting will be based solely on you posting the material, not on the correctness of the answers.

The element presentation will take place at mutually agreed upon times outside of class. Students (can be group of 2) will choose a group on Moodle. Students may highlight whatever they wish about their elements but must cover the following: allotropes, common valence, and common compounds (in particular halides and oxides). Students should feel free to be creative. The presentation should be 15-20 minutes in length followed by questions. The material presented will be testable on exams. Students will be graded on their presentation using the rubric shown below. You are expected to attend all element presentations.

	Beginning	Developing	Accomplished	Exemplary	Score
Technology use	Projector was turned on (1)	Some issues with slides (2)	Minimal issues with slides (3)	Everything worked well (4)	
Slide quality	Very wordy, errors (1)	Words/figures, errors (2)	Figures/words, few errors (3)	Mostly figures, no errors, (4)	
Slide appearance	Hard to read (1)	Difficult to read (2)	Relatively easy to read (3)	Easy to see everything (4)	
References	Few references only shown at end (1)	Many references only shown at end (2)	Few references at appropriate places (3)	Many references at appropriate places (4)	
Chemistry presented	Minimal, mostly fluff (4)	Some but not much (4)	A fair amount of info (6)	Great details (8)	
Chemistry correctness	Your gen chem professor would be disappointed (2)	Problems with the chemistry being presented (4)	A few minor mistakes in the chemistry (16)	Sound chemical principles and language used consistently (8)	
Timing	Way too long or short (1)	A bit too long or short(2)	Close to right time (3)	Great timing (4)	
Presentation style	Locked to the lectern, no eye contact (1)	Minimal movement, some eye contact (2)	Some engagement with the audience (3)	Actively engaged the audience (4)	
Note usage	Reading notes or slides (1)	Reliance on notes (2)	Some note usage (3)	No note usage (4)	
Presentation clarity	No logical flow (2)	Tough to follow (4)	Relatively easy to follow (6)	Logical order of presentation (8)	
Vocal clarity	Difficult to hear, ummms (1)	Tough to hear (2)	Relatively clear (3)	Crystal clear (4)	
Audience questions	Just from Dr. N (1)	Easy questions from class (2)	Good questions from class (3)	Tough questions from class (4)	
Answering questions	Had a difficult time answering questions (1)	Arrived at an answer with assistance (2)	Did a pretty good job with questions (3)	Answered questions very well (4)	

The final project will be a review of an inorganic topic you choose and will involve substantial research (**wikipedia does NOT count as a valid source**). The review should be approximately 10 pages long excluding pictures, charts, etc. and may be no more than 25 pages. You will present your topic as a 15-20 minute presentation to the class. This will be done outside the normally scheduled class time. We will work out times later in the semester. Your grade will be based on your paper (55.6%) and your presentation (44.4%). Due to this scheduling, I understand you will not be able to attend every presentation. If you miss more than 50% of the presentations (not including your own), your presentation grade will be dropped 10%. You should meet the following targets.

**Talk**

	<b>Beginning</b>	<b>Developing</b>	<b>Accomplished</b>	<b>Exemplary</b>	<b>Score</b>
Slide quality	Very wordy, hard to read, errors, few references at end (2)	Wordy, some figures, some errors, many references at end (4)	Few words, mostly figures, few errors, few references at right spot (6)	No errors, minimal words, good figures, many references at right spot (8)	
Chemistry	Your gen chem professor would be disappointed (2)	Significant problems with chemistry being presented (4)	A few minor mistakes in discussion of chemistry (6)	Sound chemical principles and language used consistently (8)	
Timing	Way too long or short (2)	A bit too long or short(4)	Close to right time (6)	Great timing (8)	
Presentation style/clarity	Locked to the lectern, using notes, no eye contact, hard to hear (4)	Stay in one spot, relies on notes, some eye contact, hard to follow (8)	Some engagement with the audience, relatively clear (12)	Actively engaged the audience, very clear and logical (16)	
Answering questions	Had a difficult time answering questions (2)	Arrived at an answer with assistance (4)	Did a pretty good job with questions (6)	Answered questions very well (8)	

**Paper**

	<b>Beginning</b>	<b>Developing</b>	<b>Accomplished</b>	<b>Exemplary</b>	<b>Score</b>
Topic	Minimal chemistry (1)	Little chemistry (2)	Significant chemistry (3)	In-depth chemistry (4)	
Writing	Choppy and overly repetitive, difficult to follow (3)	There is a rough outline to the paper but it does not flow well (6)	In general logically constructed but has a few rough spots (9)	Easy to read and good flow with a logical organization (12)	
Grammar and spelling	Do you know what spell check is (2)	Many typos or poor choices in wording (4)	Several typos or poor choices in wording (6)	Minimal typos (8)	
Background	Minimal explanation of important concepts (1)	Attempts to explain concepts (2)	Partial explanations of concepts (3)	Provides sufficient discussion of concepts (4)	
Analysis and review	Gets lost in mundane details that are not significant to the topic (2)	A mix of unnecessary details and concise analysis (4)	Generally concise but presents some unnecessary detail (6)	Provides details where needed, but is appropriately concise (8)	
Chemistry	Your gen chem professor would be disappointed (2)	Significant problems with the chemistry presented (4)	A few minor mistakes in the discussion of chemistry (6)	Sound chemical principles and language used throughout (8)	
Summary	Mentions the authors name and little more than the paper titles (1)	Either too little or too much detail but hits some main points (2)	Partially complete but misses a main point (3)	Thorough and concise highlighting the main points (4)	
Figures	Figures included at the end of the paper without citation, captions or call outs (2)	Figures included in the paper with minimal citations, captions or call outs (4)	Figures well-placed in the paper with many citations, captions or call outs (6)	Good choice, placement and calling out of figures, proper figure captions and citations as needed (8)	
References	Few references properly formatted (1)	Several references missing details (2)	A few references missing minor details (3)	Proper formatting of all references (4)	

As part of your grade, you will provide feedback on presentations given by other students in the class. For each presentation you attend, you will provide anonymous feedback on

the presentation on a 3" x 5" card provided by the instructor. On one side of the card you will indicate the name of the presenter(s) and comment on aspects of their presentation that you found to be good. On the second side of the card you should comment on any areas the presenter(s) could improve.

- Wed Feb 7: Provide the instructor with the title of your project and a list of several leading references.
- Fri March 30: Provide to the instructor a draft of your paper. The instructor will provide comments on style, content and depth of coverage. The draft will not count toward your grade, but not turning in a draft will result in a 10% reduction of your project grade.
- By Fri Apr 13: Provide a draft of your paper to a member of the class chosen by the instructor using a highly scientific process. This will serve as a peer review. Each student in Chem. 212 will review the paper of another student. You have 1 week to review and return the paper with comments. Failure to return the paper will result in a 5% deduction on the grade of your paper.
- By Fri May 4: Presentations and final version of the paper is due.