

CHEMISTRY 208 (Section 01) – SPRING 2019

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Phone: 1-2049 (which I rarely answer); **e-mail:** gwrice@wm.edu (which I regularly read)
Office hours: Mon: 10:30-12; Tues & Thurs: 10-11:30 am. (or by mutual agreement)
Note: Office hours will be expanded prior to exams.

Text: Chemistry, Atoms First, Rice University, Houston TX. <https://openstax.org/>.
Options for accessing the text and a student solutions guide for include:

- 1) Download a pdf copy or view an HTML copy (FREE) **Links provided on the**
- 2) Purchase a hard copy (a mere \$65 from Amazon) **208 Blackboard site**

We are rebelling against the high cost of traditional textbooks (\$250+) by using the Openstax option. Openstax may ask for donations to ensure that this option remains viable for years to come. Please contribute to bringing profiteering book publishers down to their knees.

Blackboard: **Gen Chem II (Section 01) – Intro Inorg Chem - Spring 2019.** Used extensively for this course.

Grading: The grading for this course will tentatively be as follows:

Problem Sets	5 x 20	= 100 points (10%)
Exams	3 x 180	= 540 points (54%)
Final Exam:		360 points (36%)
TOTAL:		1000 points

A floating curve will be used with the median grade as a guideline. The median grade for this course will be considered a very respectable B. I will let you know on a regular basis how the grade distribution looks as we proceed through the semester. The past history for my courses would imply that the grade “breakdowns” roughly follow the ranges below with some +/- grades on either end as well (***the overlap between the grades implies uncertainties in the year to year fluctuations of the DR R mind palace***):

A 87-100 B 76-89 C 64-78 D 50 – 67 F <50

Game Plan: The contents of this course are a continuation of topics covered in the first semester of general chemistry at William and Mary, thus there is an expectation that those concepts have been “mastered” to a certain degree. Some topics will be reviewed as a precursor to new discussions in similar areas. We will be moving at a fairly good pace on some rather difficult concepts. Some notes will be posted prior to lectures on Blackboard. Keeping up with the material, in particular the reading and practice problem assignments, will be critical to your success in this course.

I will use OneNote for all class lectures. Transcripts (pdfs) of all lectures will be provided on **Blackboard** in a timely manner after each live episode, but I assure you that class attendance can be a real plus for a successful outcome. You will most likely be harassed from time to time by emails with amended course information, corrections, weather, etc.

Practice problems: The problems recommended for each chapter represent a minimum effort for understanding the material and should be completed prior to attempting the graded problem sets and certainly the exams. I will try to provide some guidance at the end of lectures as to which assigned problems have been conceptually covered that day. Answers to the practice problems will be provided on **Blackboard** in a timely manner once the topic is completed.

Problem sets (6): These will be given after particular topics are discussed in lecture. You will typically have a week to complete the problem sets. You may use any resources available to you to solve the problems, including other life forms. Tentative due dates are provided in the course schedule on the back of this sheet. The lowest problem set score will be dropped from your overall grade. Help sessions will be scheduled prior to the due date for each problem set.




“Hour” Exams (3): The exams will typically be a mixture of multiple choice, short answer, and numerical problems. Practice exams will be provided within a week of the scheduled exam time on **Blackboard** for “timely” practice. Cover sheets containing pertinent equations for the test material and a periodic table will be provided for each exam and posted on **Blackboard** for your perusal (always liked that word). Help sessions and additional office hours will be scheduled prior to each hour exam.

Final Exam: The final will be comprehensive (and hopefully comprehensible) and cover all material (problems and descriptive) presented for the entire semester. A cover sheet with pertinent information/equations will be provided for the final exam as well.

Missed exams, etc. There are no options available, regardless of the circumstances, for turning in problem sets late since one problem set is dropped from your overall grade. Rescheduling of exams due to illness or college sanctioned activities must be approved by DR R prior to the start of any hour exam. If an hour exam is not completed within an approved timeline for an acceptable reason, then the weight associated with the final exam will be increased to reflect the missed assignment(s). For example, if you miss an Exam II, then the final exam will be weighted such that the total points on the final is based on $360+180 = 540$. Thus, if your grade on the final was $280/360$, that would be scaled up to be $389/540$. Honestly, it would probably be in your best interest not to miss anything if at all possible.

SIGNIFICANT DATES

NOTE: All HELP sessions begin at **5 p.m.**, locations to be. Final exam help session times and locations will be announced in late April.

Monday, January 28	HELP Session !	Place TBA	
Tuesday, January 29	PROB SET #1 DUE	(at class time)	
Wednesday, February 6	HELP Session !	Place TBA	
Thursday, February 7	PROB SET #2 DUE	(at class time)	
Tuesday, February 12	HELP Session !!	Place TBA	
Wednesday, February 13	HELP Session !!!	Place TBA	
Thursday, February 14 →	EXAM #1	(Chapters 14-15)	
Wednesday, February 27	HELP Session !	Place TBA	
Thursday, February 28	PROB SET #3 DUE	(at class time)	
Wednesday, March 13	HELP Session !	Place TBA	
Thursday, March 14	PROB SET #4 DUE	(at class time)	
Wednesday, March 20	HELP Session !!!	Place TBA	
Thursday, March 21 →	EXAM #2	(Chapters 16-17)	
Wednesday, March 27	HELP Session !	Place TBA	
Thursday, March 28	PROB SET #5 DUE	(at class time)	
Wednesday, April 10	HELP Session !	Place TBA	
Thursday, April 11	PROB SET #6 DUE	(at class time)	
Wednesday, April 17	HELP Session !!!	Place TBA	
Thursday, April 18 →	EXAM #3	(Chapters 5, 19, 20)	
Monday, April 29	HELP Session !!!	(TBA)	
Tuesday, April 30	HELP Session !#%&\$	(TBA)	

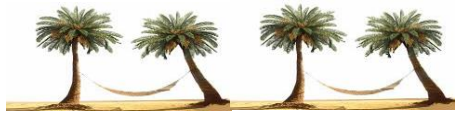




FINAL EXAM - WEDNESDAY, May 1 (2 p.m.)
(Comprehensive)



Proposed Schedule of Tentative Topics

(or where we should be when we get there)

DATE	TOPIC	READING	PRACTICE PROBLEMS
Jan 17	Course introductions Acid-base (A/B) FUNdamentals	7.2 (A/B only); 7.5 (titrations only)	7.22,82,88,90; 14.4a-c, 6a-c, 10a-c, 12a-c,16, 22, 24
Jan 22	Acid/base strengths, K_a and K_b (the FUN ends)	14.3	14.30, 32, 34, 36, 40a, 44, 52, 56ab, 58, 60ab, 72, 76
Jan 24	Polyprotics; acid/base properties of salts (the nasty stuff)	14.4–14.5	14.78, 80, 82
Jan 29	Common ion effect and buffers (not to be confused with buffets)	14.6	14.88, 90, 02, 94, 96, 100, 104
Jan 31	Titrations (the ultimate acid/base problems); indicators	14.7	14.114
Feb 5	Solubility equilibria (some things just don't dissolve well); complex ions (more baffling equilibria)	15.1–15.2	15.2, 4, 8a-c, 10ab, 12, 14ab, 16ab, 20, 22, 30ab, 32, 38, 42, 54, 62, 63, 76a-c, 99, 107, 111, 139
Feb 7	Thermochemistry (review; the heat is on)	Handout; 9.1-9.3	9.8, 10, 22, 30, 48, 54, 58, 62, 66, 84a
Feb 12	Thermodynamics (chaos can be a good thing)	12.1-12.4	12.12, 16, 17, 22, 28a-c, 34a-c, 36, 40ab, 44, 48
Feb 14 (Thur)	EXAM I (Chapters 14-15)		
Feb 19	Thermodynamics (so this is where equilibrium comes from)	Handout	TBA
Feb 21	Electrochemistry (to reduce or oxidize; that is the reaction)	Handout; 7.2 (redox only); 16.1-16.2	7.20, 38, 40 16.4, 6, 8ab, 14, 18ab
Feb 26	Electrochemistry (where would Google be without Nernst?)	16.3-16.4	16.24ab, 26, 28, 30, 31a-c
Feb 28	TBA	TBA	TBA
Mar 2-10	 SPRING BREAK 		

DATE	TOPIC	READING	PRACTICE PROBLEMS
Mar 12	Electrochemistry (hope you have a Faraday)	17.8-17.10; 17.12; 17.14	17.91a,b, 105, 115
Mar 14	Covalent bonding (let's meld Lewis and hybrid theory together)	4.6-4.9 (<i>review</i>)	4.51, 53, 57
Mar 19	Covalent bonding (the bizarre molecules)	5.1-5.4	5.29, 31, 33, 35, 47
Mar 21 (Thur)	EXAM II (Chapters 16-17)		
Mar 26	Molecular Orbital Theory (glad it isn't a law)	5.5-5.6	15.55, 57, 59
Mar 28	Nuclear Chemistry (it's sooo... elemental)	20.1, 22.3, 22.4	20. 33, 37, 45
April 2	Nuclear Chemistry (the good/bad side of energy)	20.2, 20.3, 20.5	20.19, 21, 23, 39, 43
April 4	Transition metal chemistry (not talking heavy metal here)	Handout; 19.1	19.6, 8a-c, 26a-d, 32
April 9	Transition metal chemistry (d orbitals sure are complex)	19.2-19.3	19.36, 38, 41a-c, 47, 48
April 11	Transition metal chemistry (the inorganic of bioinorganic)		
April 16	Descriptive Inorganic (why must you torture us so !!!)	18.1-18.5	18.10, 16, 18, 28a-d, 52, 60, 74
April 18 (Thur)	EXAM III (Chapters 5, 19, 20)		
April 23	Descriptive Inorganic (please have mercy !!!)	18.7-18.12	18.83, 86, 89, 92, 105a-c, 112a-c
April 25	Descriptive Inorganic (our affairs with air); Review (ask me anything); liquid nitrogen extravaganza!!!	Handout	
May 1 (WED)	 FINAL EXAM (2–5 p.m.) 