

**Chemistry 1046  
Course Outline  
Spring 2011**

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Section 01	MWF 9:00 - 9:50	
Exams Tuesdays	8:00 – 10:00 PM	Tuesday, 2/08, 3/15, & 4/12
<b>Office: CP 302</b>	Office hours	MW 10:00-11:30 T by appointment

Prerequisites: CHM 1045 and College Algebra

Corequisite: CHM 1046L laboratory

Text: Tro, Chemistry: A Molecular Approach, 1ed

I-Clicker Personal Response Transmitter required - purchase at the bookstore

Mastering General Chemistry – If you don't already have license (good for 1 year), purchase online or at bookstore

Bring a simple scientific calculator with a logarithm key to each class session and exam. **Graphing calculators will not be allowed for exams.**

Chapters 12 to 18 will be covered in this course. Sections of the text added or omitted will be announced in class. The topics listed below are intended to be a general focus of each chapter. More detailed information will be given in lecture and on my web site.

**Unit 1 - Intermolecular Attractions and Kinetics**

Chapter 12: Solutions

Solution formation, heats of solutions, factors affecting solubility, concentration units, & colligative properties

Chapter 13: Chemical Kinetics

Reaction rates, rate law, reaction order, determining the rate law, integrated rate law, half life, mechanisms, the Arrhenius equation, and catalysis.

Chapter 14: Chemical Equilibrium

The equilibrium state,  $K_c$ ,  $K_p$ , using the equilibrium constant, factors affecting equilibrium, catalysis, Le Chatelier's Principle, and equilibria calculations.

**EXAM 1 – Tuesday February 8, 8:00 PM**

**Unit 2 - Aqueous Equilibria and its Applications: Acids and Bases**

Chapter 15: Acids and Bases

Acid-base theory, weak acids and bases, Lewis Acids, pH scale, solutions of strong acids and bases. percent dissociation,  $K_a$  and  $K_b$ , calculating equilibrium concentrations, and the acid-base properties of salts.

Chapter 16: Aqueous Ionic Equilibrium

Common ion effect, buffer solutions, & titration, solubility equilibria,  $K_{sp}$ , selective precipitation, and qualitative analysis.

**EXAM 2 – Tuesday March 9, 8:00 PM**

**Unit 3 - Thermodynamics, & Electrochemistry**

## Chapters 17: Free Energy and Thermodynamics

Enthalpy, entropy, spontaneous processes, free energy, free energy changes for reactions, and free energy as related to chemical equilibrium.

## Chapter 18: Electrochemistry

Balancing redox equations, electrolysis, galvanic cells, cell potential and Free-Energy changes, reduction potentials, the Nernst Equation and concentration cells.

**EXAM 3 – Tuesday April 12, 8:00 PM****Unit 4 – Nuclear Chemistry & Coordination Chemistry (if time permits)**

## Chapter 19: Radioactivity and Nuclear Chemistry

Nuclear reactions, radioactivity, decay rates, fission, and fusion.

## Chapter 20: Organic Chemistry

Nomenclature, isomers, geometry, functional groups, and simple reactions of organic molecules.

OR

## Chapter 20: Transition Metals and Coordination Compounds

Properties of transition metals, coordination compounds, structural isomerism, and bonding in coordination compounds.

**Final Exam (Dates and time will be announced)**

\_\_Final exam will be announced

***How can you do well in this course?***

I want all of you to succeed in this course. However, this is going to take a lot of hard work. Plan on studying 2-3 hours for every hour of lecture. ***This is not a “listen and learn” type of course. Most of the learning will happen later, while reviewing notes, your textbook and, most importantly while solving problems.*** In this course you will find yourself frequently calling upon mathematical skills that you thought you had left behind for good a long time ago. If you feel the need, please go back and review your math skills.

Your textbook is a very important tool. Stay ahead of the material (in the worst case, stay on top of it) and lectures will make more sense to you this way. Learning chemistry is a collaborative effort – so interact with your instructor, TA, and classmates as often as possible. During a lecture, if you have a question please bring it up (there are no dumb questions, I guarantee there will be several other people with the same question, who are too afraid to ask). However, please be respectful and raise your hand, rather than blurting out the question.

**Other resources**

- Work together in small groups outside of class or at least, find a classmate to study with. This will help you tremendously.
- Take advantage of the weekly CHEMPAL sessions that will be available soon.
- During my office hours I am willing to work with you one-on-one, so please feel free to come with any questions you have. It will be more beneficial to you if are prepared and come with questions rather than expect me to explain everything to you. If my office hours do not work for you e-mail me for an appointment. If you have done all the problems at the end of the chapter in your book and feel the need for more practice, come see me and I will be glad to provide you with extra worksheets.
- The chemistry help desk in CP-378 is staffed with TAs who will be able to help answer you questions.

***CHEMPAL*** – CHEMPAL is Chemistry Peer Assisted Learning. This is free tutoring available to everyone. There will be several sessions a week tentatively beginning Tuesday, January 18<sup>th</sup>. The location and timing of these sessions will be available on Blackboard. If you attend 5 or more sessions during the semester, you will be awarded an extra 5 points. You are welcome to go to as many sessions as you want – in fact you can attend multiple sessions during the same week. **However, please note that if you attend more than 1 session during the same week, only one session can count towards this credit.** If you attend less than 5 sessions, you will be awarded 1 point for every

session you attended, however please remember only one session per week counts towards the credit. **You must arrive on time, stay for at least 45 minutes and actively engage with the material to receive credit. If you are disruptive, the preceptor will excuse you and you will not receive credit for that session.** Take advantage of this free tutoring service.

**Attendance and decorum:** Attending lecture is essential to help you understand the vast amounts of material we will cover over the course of the semester. Do not expect to consistently miss class and still do well. **Please be informed that if you choose to be absent from class, it will be your responsibility to keep up with the quizzes, MGC assignments and any other announcements. Any in-class quizzes given on the day of your absence cannot be made up.**

Please remember to turn off your cell phone or pager before coming to class. Please behave courteously in class. Talking on the cell phone during class, talking incessantly during class and any other kind of disruptive behavior will not be tolerated. **I WILL NOT HESITATE TO EXCUSE DISRUPTIVE STUDENTS FROM LECTURES.** If necessary, grading penalties will be assessed.

**Exams:** The expected date for each exam is given on the attached calendar, but these dates may vary. The date will be confirmed at least one week prior to the day of the exam. **All semester exams will be conducted on the designated date and time.** The three semester exams will be worth 100 points each. The final exam will be comprehensive and will be worth 200 points. It will be a resurrection final. **This means that provided you have taken ALL THREE semester exams, your lowest exam grade can be replaced by a percentage of your final.** The Final exam will be held during the week of April 25-30. The actual date and time will be announced later in the semester.

During exams you are only allowed to keep pencils, erasers, and a scientific non-graphing calculator with you. You have to leave all other material in the front of the class. If you need scratch paper it will be provided. **Graphing calculators will be confiscated.** Exam scores will be posted on blackboard. **If your exam score is not posted,** please come to see me with a valid photo ID.

**YOU WILL BE REQUIRED TO PROVIDE A PHOTO ID AT EACH EXAM.**

**You cannot keep your cell phones or any other electronic devices with you during the exam. If you are found with one it is grounds for academic misconduct.**

**THERE WILL BE NO MAKE-UP EXAMS GIVEN FOR ANY REASON.**

**Academic misconduct:** *Florida International University is a community dedicated to generating and imparting knowledge through excellent teaching and research, the rigorous and respectful exchange of ideas, and community service. All students should respect the right of others to have an equitable opportunity to learn and honestly demonstrate the quality of their learning. Therefore, all students are expected to adhere to a standard of academic conduct, which demonstrates respect for themselves, their fellow students, and the educational mission of the University. All students are deemed by the University to understand that if they are found responsible for academic misconduct, they will be subject to the Academic Misconduct procedures and sanctions, as outlined in the Student Handbook. Cheating is unfair to your honest classmates and absolutely will not be tolerated.* The first such infraction will be dealt with to the fullest extent permissible by the university. Cheating includes (but is not limited to) any form of inter-student collaboration on exams or quizzes, use of prohibited materials or devices during exams (*viz. a graphing calculator, CELL PHONE*), copying or distribution of quiz or exam answers prior to the test, and plagiarism.

[http://online.fiu.edu/exams\\_academic\\_misconduct.html](http://online.fiu.edu/exams_academic_misconduct.html)

**In-Class participation:** Class participation will be evaluated using the “Clicker”, which will be used in most class periods. As long as you use the clicker with you 80% of the time during a class period and 80% of the time during the semester, you will receive the full 10 points.

- Please remember to bring your clicker to class everyday.
- Please register your clicker at iclicker.com. Please ensure that your Panther ID is entered correctly.

**Please note that voting with a clicker of a person who is not present in the class at that time of the clicker quiz can be grounds for academic misconduct. Grading penalties will be assessed.**

**Mastering General Chemistry (MGC):** MGC sections will be assigned as the semester progresses. Please register for MGC at their website and ensure the following

- You have selected the correct instructor for the course.
- You have to make sure you are signed up for credit.
- You have entered your correct panther ID and full name.
- **MAKE SURE YOU REGISTER FOR THE CORRECT CLASS NUMBER, PUT IN YOUR PANTHER ID AND YOUR CORRECT NAME.** Failure to do this correctly may affect your grade.
- **Your course ID is MCGRAVES19255**

Please ensure that you are signed up correctly as this would ensure that you get a grade for your work at the end of the semester. You will receive 30 points if you have an average of 80% or higher on each of the individual units assigned. You can complete these units as many as six times to better your grade. It keeps your highest grade. After the deadline, **MGC may be used for practice until the end of the semester.** Until spring break you can turn in assignments late – a 1% penalty will be assessed for each hour the assignment is turned in late.

**Homework and quizzes:** During the semester, homework quizzes will be given on the **Blackboard** site. *If this class does not show up on your blackboard, please call UTS at 305-348-2284. I cannot add you to the class only UTS can.* You will submit these on the web site for a grade. All these assignments together will be worth 30 points. Selected questions from the homework could be used as exam questions. Within the specified time, you can work on these quizzes as many times as you want to improve your grade. I will keep your highest grade from all the attempts. **It is important that once you open a quiz, you must submit it before the time limit expires. START YOUR QUIZZES EARLY.** If you lock yourself out, **it is your responsibility to contact me to get your quizzes unlocked.** If you choose to do the quiz last minute and get locked out, I may not get your email in time to unlock the quiz.

**ALL BLACKBOARD QUIZZES WILL BE REOPENED DURING THE LAST WEEK OF THE SEMESTER.**

At least four unannounced in-class homework quizzes, worth 5 points each, will be given during the semester. The four highest in-class quiz scores will be used to calculate your grade.

Your quiz score will be included in the homework points. Your homework score can be calculated by the formula: Course Grade is computed as follows:

Graded Item	Points	Your Total Points	Grade
Exams	300	≥ 522 points	A
Homework	40	≥ 464 points	B
MGC	30	≥ 377 points	C
Class Particip.	10	≥ 290 points	D
Final Exam	200	< 290 points	F
Total Points	580		

**There is no extra credit being offered in this class outside that mentioned in this syllabus.**

$$\text{Homework score} = \left[ \frac{\text{your Blackboard total}}{\text{blackboard total}} * 30 \right] + (q1 + q2 + q3 + q4)$$

## CHM 1046

Mon.	Tues.	Wed.	Thurs.	Fri.	Sat.	Sun.
<b>Jan. 10</b> Ch. 12	11	12	13	14	15	16
17 Add Ends <b>MLKing Day</b>	18 Last day to add	19 Ch. 13	20	21	22	23
24	25	26	27	28	29	30
31 Ch. 14	<b>Feb. 1</b>	2	3	4	5	6
7	8 <b>Exam 1</b>	9 Ch. 15	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28 Ch. 16	<b>Mar. 1</b>	2	3	4 <b>Last drop day</b>	5	6
7	8 <b>Exam 2</b>	9	10	11	12	13
14 Spring Break	<b>Spring Break</b>	16 Spring Break	17 Spring Break	18 Spring Break	19 Spring Break	20 Spring Break
21 Ch. 17	22	23	24	25	26	27
28	29	30	31	<b>April 1</b>	2	<b>3</b>
4 Ch. 18	5	6	7	8	9	10
11	12 <b>Exam 3</b>	13	14	15	16	17
18	19	20	21	22 Class Ends	23	24
25	26 Final	27 Exam	28 Week	29	30	May 1