

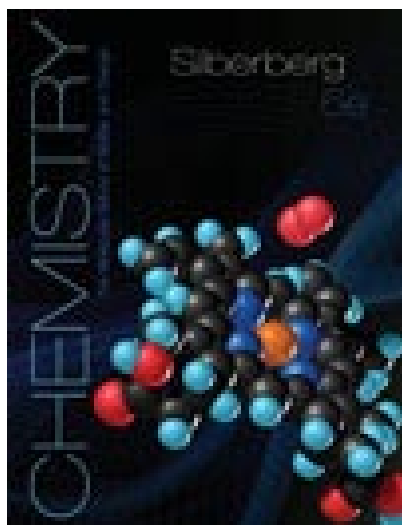
Syllabus

CHM 2045

General Chemistry

Spring 2013

| Sections | Class Period | Instructor | Office | Office Hours |
|------------------------------|----------------------------------|------------|----------|----------------------------------|
| 1880, 1984, 2096, 2150, 2182 | 4 th (10:40-11:30 am) | Polfer | CLB 311C | Check announcements in lectures. |



TEXTBOOK: *Molecular Nature of Matter and Change*, by Silberberg

- **Publisher:** McGraw-Hill, **6th Ed**

REQUIREMENTS:

- CHM 2045 and CHM 2045L constitute the first semester of the **two term sequence of General Chemistry, CHM 2045-2045L-2046-2046L**. This sequence is suitable for all science and engineering majors.
- **To continue** into CHM 2046, you must earn a **grade of C or higher** in CHM 2045 and have **MAC 1140, or MAC 1147 or calculus I** or the equivalent of these or higher **completed**. (Statistics does not count.) **If you drop your math class** and do not have MAC 1147 or the equivalent or higher you **will not be able to go on to CHM 2046** even if you pass CHM 2045!

CHM 2045 General Chemistry

Section number:_____ Discussion time/location:_____

(Tentative) Class Schedule (Spring 2013)

CLB 130 Class times: M, W, F 4th period (10:40-11:30 am)

COURSE SCHEDULE (lecture schedule is tentative)

| Dates | Topics (# of lectures) | Chapters |
|---|---|------------------------|
| Jan. 7–9 | Introduction and Review: Atoms, Molecules, and Ions (2) | Chap. 1–2 |
| Wednesday, Jan 16 | Online Assessment Quiz #1 | Chaps. 1–2 |
| Jan. 11–18 | Mass Relations and Stoichiometry (3-4) | Chap. 3 |
| Wednesday, Jan 23 | Online Assessment Quiz #2 | Chap. 3 |
| Jan. 23–28 | Aqueous Reactions (3-4) | Chap. 4 |
| Wednesday, Jan. 30 (8:20-10:20 pm) | Progress Exam 1 | Chaps. 1–4 |
| Feb. 1–4 | Enthalpy & Calorimetry (2) | Chap. 6 |
| Feb. 6–8 | Atomic Structure (2) | Chap. 7 |
| Wednesday, Feb. 13 | Online Assessment Quiz #3 | Chap. 6–7 |
| Feb. 11–18 | Electron Configuration and Periodic Trends (4) | Chap. 8 |
| Feb. 20–25 | Chemical Bonding Models (3) | Chap. 9 |
| Wednesday, Feb. 27 (8:20-10:20 pm) | Progress Exam 2 | Chaps. 6–9 |
| Mar. 1 and 11 | Molecular Geometry (2) | Chap. 10 |
| Mar. 13–18 | Covalent Bonding Theories (3) | Chap. 11 |
| Wednesday, Mar. 20 | Online Assessment Quiz #4 | Chaps. 10–11 |
| Mar. 20–25 | Gases (3) | Chap. 5 |
| Mar. 27 – Apr. 1 | Intermolecular Forces and Liquids and Solids (3) | Chap. 12 |
| Wednesday, Apr. 3 (8:20-10:20 pm) | Progress Exam 3 | Chaps. 5, 10-12 |
| Apr. 5–12 | Solutions (4) | Chap. 13 |
| Wednesday, Apr. 17 | Online Assessment Quiz #5 | Chap. 13 |
| Apr. 15–22 | Chemical Kinetics (4) | Chap. 16 |
| Apr. 24 | Cumulative Review (1) | Cumulative |
| Monday, Apr. 29 (3:00–5:00pm) | Final Exam | Cumulative |

Holidays: (no classes): Jan. 21 MLKJr. Day; Mar 4–8 Spring Break

Course Objectives: CHM 2045 (General Chemistry I)

- To build a **basic foundation** of the science of chemistry (which is crucial to an understanding in many other disciplines: medicine, molecular biology, genetics, pharmacology, ecology, atmospheric science, engineering, material science, environmental science, etc.)
- Learn about chemistry in your daily life
- To **analyze scientific concepts** and **think critically** (identify whether a problem is scientific or pseudo-scientific)
- To learn **problem-solving** via the *scientific method* (practice your **logical thinking** skills)

Course material (in order covered in class/*Topical Questions*):

| | |
|------------|---|
| Chapter 1 | Keys to the Study of Chemistry <i>How and what do we measure?</i> <i>What is the scientific approach?</i> |
| Chapter 2 | The Components of Matter <i>What is matter made up of?</i> <i>What are isotopes?</i> |
| Chapter 3 | Stoichiometry of Formulas and Equations <i>What is a mole?</i> <i>How do we derive a chemical formula from mass analysis?</i> |
| Chapter 4 | Three Major Classes of Chemical Reactions <i>What happens to ionic compounds when they are dissolved in water?</i> <i>What are redox reactions?</i> |
| Chapter 6 | Thermochemistry: Energy Flow and Chemical Change <i>How is the difference between heat and work?</i> <i>What is the enthalpy of a reaction?</i> |
| Chapter 7 | Quantum Theory and Atomic Structure <i>Is light a particle or a wave?</i> <i>What are quantized energy levels?</i> |
| Chapter 8 | Electron Configuration and Chemical Periodicity <i>What is the electron configuration of an atom?</i> <i>What chemical reactivity does one predict from atomic properties?</i> |
| Chapter 9 | Models of Chemical Bonding <i>How are atoms bound together in molecules?</i> <i>What is the difference between a covalent and an ionic bond?</i> |
| Chapter 10 | The Shapes of Molecules <i>What is the octet rule?</i> <i>How does one predict the shape of a molecule?</i> |
| Chapter 11 | Theories of Covalent Bonding <i>What is valence bond theory?</i> <i>What is the difference between sigma and pi bonds?</i> |
| Chapter 5 | Gases and the Kinetic-Molecular Theory <i>How does an ideal gas behave?</i> <i>What is the partial pressure of a gas?</i> |
| Chapter 12 | Intermolecular Forces: Liquid, Solids, and Phase Changes <i>What is a phase transition?</i> <i>What forces hold solids or liquids together?</i> |
| Chapter 13 | The Properties of Mixtures: Solutions and Colloids <i>What is a colloid?</i> <i>How does temperature affect solubility?</i> |
| Chapter 16 | Kinetics: Rates and Mechanisms of Chemical Reactions <i>What is the reaction order?</i> <i>What is the rate-determining step of a reaction?</i> |

TIPS: Chemistry is very much a "learn by understanding" subject. Because of this you must work in this course to do well. That means you must read the textbook, work the sample problems as you go, and do the electronic homework until you understand! Then you should work extra problems (from the book, slides and old exam problems) to test your understanding.

QUIZZES: The Quizzes will be taken on **Sakai**. Five (5) Discussion Quizzes will be given (see dates above in green). **No make-up quizzes will be given for any reason.** As with the progress exams, to accommodate unavoidable conflicts, we offer a dropped-quiz policy (the best 4 of 5 quizzes counting toward your grade – see under “GRADES” below). The lowest grade will be dropped, for a maximum total of 120 course points.

DISCUSSION: **First discussion will be Tuesday January 8. Discussion sessions are by section number, so make sure that you know your section number.**

| Section | Time | Venue |
|---------|------------------------------------|----------|
| 0465 | T 7 th (1:55-2:45 pm) | MAT 0016 |
| 1880 | T 8 th (3:00-3:50 pm) | FLG 265 |
| 1984 | T 3 rd (9:35-10:25 am) | FAC 120 |
| 2096 | T 5 th (11:45-12:35 pm) | CSE E221 |
| 2150 | T 6 th (12:50-1:40 pm) | LEI 207 |
| 2182 | T 7 th (1:55-2:45 pm) | LEI 207 |

EXAMS:

- **Three** progress exams and a **cumulative** final exam will be given in the course.
- All progress exams will be **given in the evenings (8:20 pm start time)** and rooms will be assigned either by section number or alphabetically, so **know your section number!**
- Be on time and **ONLY** bring calculators (non-graphing), pencils and erasers to the exam room. **NO NOTES OR INFORMATION SHEETS, NO COMPUTERS, CELL PHONES** or any information storage device electronic or paper may be used during the exam.

COURSE POLICIES

- Read your syllabus carefully, it is a **grading contract**
- You are required to attend all classes and discussions
- You must check on Sakai on a weekly basis that all **grading information** is **correct**. Should you not see your grade or notice a mistake, it is **YOUR responsibility** to inform me. If you wait until the last few days of the semester to point out an incorrect grade, you may lose your points!
- If you have a **personal problem** that prevents you from meeting course requirements, you must go and see the **Dean of Students**.
- If you need help with Chemistry questions, go to the Chemistry Learning Center (in Flint 257-278), where graduate students can assist you. A schedule with TA names and their times in the CLC will be posted.
- **Learn how to fill out a scantron.** These errors are inexcusable. They include form code errors, registry errors, and even errors in the name and UFID. You **WILL BE** penalized for scantron errors that require extra work to get your grade into the e-learning grade book: First offense 9 points, second offense 18 points, third offense 24 points, and fourth offense 36 points.
- Students may **NOT** use graphing calculators in exams. You must use a **scientific calculator** with exponents and log and ln functions. Bring a second calculator, just in case your first calculator gives up. No other device may be used as a calculator i.e. cell phone, iPods etc. **No cell phones** are allowed in the exam rooms.
- Only email me in emergency situations. There are too many of you to do this on a 1-on-1 basis. If you have questions, come and see me right before or after class, or during office hours.

SCORING: Your grade for the term will be determined as follows:

| | |
|--|----------|
| Progress Exams (best 2 of 3@ 250 pts each) | 500 |
| WebAssign homework (94 pts available) | 80 |
| Quizzes (best 4 of 5 @ 30 points each) | 120 |
| Final Exam | 300 |
| TOTAL | 1000 pts |

GRADES will not be curved. The following grade cut-offs will be used: This is fixed and not negotiable. We are now using minus grades so your grade will be based on the scale below.

| | | |
|---------------|---------------|---------------|
| A = 900-1000 | B - = 760-799 | D + = 630-659 |
| A - = 860-899 | C + = 730-759 | D = 600-629 |
| B+ = 830-859 | C = 700-729 | E < 600 |
| B = 800-829 | C - = 660-699 | Failing grade |

WEBASSIGN (ONLINE) HOMEWORK: WebAssign assignments for each textbook chapter will be due on the dates listed in WebAssign – due times for each due date are just before midnight - it is up to students to be aware of WebAssign **due dates**. Do NOT wait until the last minute to attempt to complete WebAssign assignments, because computer issues can arise at any time, and you don't want to be left at the last minute not being able to complete your assignments on time due to some technical error.

To access WebAssign (NEW INSTRUCTIONS),

1. go to <https://www.webassign.net/ufl/login.html> (you should be de-directed to your gatorlink login)
2. login using your gatorlink (you should be re-directed to WebAssign)
3. check if you see the CHM 2045 class in WebAssign. If not, logout, then login again. On consecutive logins you should see the class.
4. check assignments and due dates

You'll have to buy the access **from the website** (around \$25.95 for the semester). You'll have 14 days of free trial access to WebAssign once you register on the site using the class-provided login information, after which you'll have to have a purchased access. **Do not allow your previous WebAssign account to expire during the semester or you will lose all of your work!**

Note: Correct answers to WebAssign assignments require very precise **attention to significant-figure** rules – if you do not **fully** understand the usage of significant figures, you should read pages 25-29 in your Silberberg textbook (or another source for detailed significant-figure instruction). Also, the correct answers to WebAssign assignments have very narrow acceptance windows – you must be very careful in the numbers you use for calculations and how you carry them through the problem-solving procedure. You'll have **three (3) attempts** for each problem question. Finally, you'll notice that many of the WebAssign problems have information next to the problem number (some of which refers to Silberberg Follow-Up or End-Of-Chapter Problem such-and-such, so that you can consult the Silberberg textbook problem and/or the posted online solutions to find out how the problem is solved if you have any difficulties). The WebAssign User Guide is at

http://www.webassign.net/manual/WebAssign_Student_Guide.pdf and the WebAssign Student Technical Support is at http://www.webassign.net/user_support/student/

Do not email instructors about WebAssign problems - if you need help, come to office hours or the CLC for help - be sure to have the problem printed out in full and show what work you've done. Again, pay extra careful attention to significant figure rules because WebAssign is not tolerant of incorrect sig figs.

Sakai: To access Sakai you should go to the website: <http://iss.at.ufl.edu> . Choose “Sakai”, then “University of Florida”. To log in, you must use your GatorLink username and password. If you do not yet have one, you must obtain one. If you have any problems with your GatorLink name or password you should contact the Help Desk at 392-HELP, or go to 520 CSE. They will only help you with GatorLink issues.

HONOR SYSTEM: All exams are given under the Honor System. Any student caught cheating will receive the maximum punishment I can bring to bear. Cheating of any kind will result in an “E” grade. Check the website for the UF policy on honesty and cheating: http://www.dso.ufl.edu/stg/Code_of_Conduct.html

CHEMISTRY LEARNING CENTER (CLC): There is free help to be had from graduate student teaching assistants in the CLC Monday through Friday in Flint Hall 257 and 258. Your discussion TA will have office hours in the CLC, but you may go there anytime and see any TA to get help on questions pertaining to chemistry. A schedule of the TA schedules will be posted in the corridor outside the CLC and on e-Learning. The CLC ends their office hours the last day of class and I end my office hours then as well.

Other Information:

Honor Code: <http://www.chem.ufl.edu/~itl/honor.html>

Disabilities: <http://www.chem.ufl.edu/~itl/disabilities.html>

Counseling: <http://www.chem.ufl.edu/~itl/counseling.html>

ABSENCES: The General Chemistry program at UF administers all conflicts with scheduled assessments and examinations in accord with University policy. As such, *certain* unavoidable *absences* by students from examinations *are allowed*, **if properly documented and disclosed to the instructor** in charge **one week BEFORE the anticipated conflict**. Such allowed absences include, but are not limited to:

- religious observances,
- sanctioned sporting events,
- other UF exams **if the other course has a higher course number** than the General Chemistry course.

In all such cases, students will be given the opportunity to take a **conflict exam**, which takes place shortly **before the scheduled assessment** for the class.

No exams will be administered to absent or otherwise compromised students for a grade **AFTER** the established and scheduled assessment time. Exams given to excused students after the rest of the class is given their exam are herein defined as *makeup exams*; **no makeup exams are given in General Chemistry at UF**. If you have any questions about requesting a conflict exam, please contact your instructor or the Director of General Chemistry «genchem@chem.ufl.edu».

Unpredicted **absences due to medical illness** are **not covered under the above conflict exam policy**. If the time and severity of the illness is severe enough to make continuation in scholastic activity impossible for the rest of the term, a medical withdrawal is strongly advised. Note that the availability of an incomplete grade is severely restricted by UF policy, and students seeking such a remedy should read that policy carefully before requesting and incomplete in a General Chemistry course. If the medical condition warranting the absence at a scheduled exam is unexpected, relatively minor, and can be recovered from in short order, we request that the student, as soon as he/she is healthy (our first concern) provide verifiable documentation of the medical condition to the course instructor within a timely fashion of the scheduled assessment date. Furthermore the student is expected to makeup all work associated with the examination. This typically means completing the exam honestly under the instructions given with the exam without unauthorized assistance, and then self assessing the performance using the published exam solution. If proper medical documentation and the worked and self-graded exam are presented and prove acceptable to the instructor at the time the student is ready to restart their academic pursuits, the instructor and student together decide on one of the following options:

- 1) The exam score is omitted from the student's course grade computation by renormalizing the remaining assessment scores using a formula agreed to by the student and instructor, or
- 2) begin the process for the request of a medical withdrawal from the course by the student.

No makeup exams (as defined above) are ever given.

Dropped exam policies exist in most, but not all, courses in the General Chemistry program for the convenience and benefit of the student. When this policy is in effect, one or more of a given assessment type within a course is automatically omitted without any documentation or justification needed by the student. These policies are usually referred to as a “best 2 out of 3 exams are counted” or equivalent, and are in effect in all CHM2045 classes, and many others. Such a policy allows a student to be absent for one scheduled assessment *without* having to provide the detailed documentation or prior notification required for the excused

absences detailed above. The dropped exam policy is not meant to replace UF exam absence policy for conflicts with sanctioned events, merely extend these for the benefit of the student.

STUDENT ATHLETES and SCHOOL EVENTS: You must see me in person each and every time about taking a graded event outside posted times. Make sure that you do this at least 1 week before the event/deadline (see **conflict exam** above).

DISABILITY RESOURCES: Students requesting classroom and exam accommodations must first register with the Dean of Students Office. The Dean of Students Office will provide documentation to the student who must then provide this documentation to the Instructor when requesting accommodation. Students will then go to the disability resource center. If you are applying for disability resource status, **come see me the first week of class.**

The Dean of Students Office provides individualized assistance for students with documented disabilities. Services are based upon student need and impact of their specific disability. There is no requirement for any student to self-identify as having a disability. However, students requesting classroom accommodations must register with the Dean of Students Office and provide the appropriate documentation verifying their disability. The Dean of Students Office determines what is and is not appropriate documentation. Examples of accommodations that are available to students include, but are not limited to, registration assistance, approval of reduced course load, course substitutions, classroom and examination accommodations, auxiliary learning aids, additional course drops when disability related, and assistance in other university activities. The designated coordinator for compliance with Section 504 of the Rehabilitation Act of 1973, as amended, and the Americans with Disabilities Act (ADA) is the Assistant Dean of Students responsible for Students with Disabilities Programs, P202 Peabody Hall, 392-1261 (Voice), or 392-3008 (TDD).

The Disability Resource Center strives to provide quality services to students with physical, learning, sensory or psychological disabilities, to educate them about their legal rights and responsibilities so that they can make informed decisions, and to foster a sense of empowerment so that they can engage in critical thinking and self-determination.