

**NATURAL SCIENCES DEPARTMENT  
HOSTOS COMMUNITY COLLEGE  
of THE CITY UNIVERSITY OF NEW YORK  
Spring 2010**

**CHE 210      SEC xxxWI      GENERAL CHEMISTRY I      CODE: XXXX**  
*4 credits, 3-hr lecture/1-hr recitation workshop/3-hr lab*

**Professors Nelson Nunez-Rodriguez, Ph.D. Yoel Rodríguez, Ph.D.**

Meets:	Lecture:      A-437 Tuesdays and Thursdays 9:30pm-10:45am Recitation    A-437 Thursdays 11:00-11:50am Laboratory:  A-513 Tuesdays 2:00pm-4:30pm
Email:	<a href="mailto:nnrodriguez@hostos.cuny.edu">nnrodriguez@hostos.cuny.edu</a>
Office hours:	Room A507H   Mondays 12:30-2:00pm, Wednesdays 3:30-5:00pm, or by appointment
Phone:	718-518-4137.
Contact Policy:	<ul style="list-style-type: none"><li>○ When sending an e-mail, be sure to put key information in the Subject area. Make sure to include your full name and class section in the text. I will answer your message in less than 48 hours.</li><li>○ When requesting an appointment outside my office hours, speak to me before you come. Notify me immediately if you need to cancel or change an appointment.</li><li>○ If you need to reach me urgently, contact the Department's secretary at (718) -518-4128. Leave a brief message and your contact information.</li></ul>

**COURSE DESCRIPTION:**

The student will analyze data and solve problems related to the principles of modern atomic theory, stoichiometry, oxidation-reduction reactions, gas laws, thermochemistry, electromagnetic radiation and quantum theory, chemical bonding and molecular structure, and properties of solutions. This course is intended for students preparing for careers in sciences and engineering.

**Writing Intensive Component**

This course has been designated "Writing Intensive (WI)" by Hostos Community College. The requirements include both formal (graded) and informal (non-graded) writing assignments. Both kinds of writing assignments must be done in order to satisfactorily complete the course. Students will engage in informal writing on a weekly basis. The informal writing will be developed through blackboard discussion forums. The formal writing component will be devised through revised lab reports. These assignments are intended to aid the students' thinking and understanding of the course material. Integrating writing into the course will increase and enrich the students' learning experience while also helping to improve their thinking and writing skills.

## **COURSE LEARNING OUTCOMES:**

**By the end of the course, students will:**

- Know the basic principles and topics of Chemistry and their application to real world problems.
- Solve problems ranging from simple to complex chemistry calculations based on the materials covered.
- Use chemical terminology to explain aspects ranging from engineering problems to every day life situation.
- Demonstrate to think critically about a chemistry problem, devise a strategy for solving it, and assess whether the results make sense.
- Relate chemistry to all areas of science.
- Connect diverse topics of chemistry.
- Manipulate basic laboratory equipment
- Apply proper chemistry procedures related to separation techniques, stoichiometry, chromatography, calorimetry, gravimetry, etc.

**COREQUISITE:** MAT 160

## **TEXTBOOK:**

Chemistry, 10th Ed., Raymond Chang, McGraw Hill, Inc., New York, ISBN: 0-07-298060-8

LAB MANUAL: Chemistry, The Central Science, 10<sup>th</sup> Ed., J.Nelson&K.Kemp, 2006

RECOMMENDED: Student Study Guide by Sharon Neal/[www.mhhe.com/physsci/chemistry/chang](http://www.mhhe.com/physsci/chemistry/chang)

**The Final grade will be determined by the grades on lecture and lab combined as follows:**

## **GRADE DISTRIBUTION**

<b>Lecture</b>	<b>70%</b>
- 4 Partial <i>face-to face</i> Exams (lowest will be dropped)	30%
- 3 to 5 Take home Exams +	5%
- Online Assignments +	15%
- 3 to 5 Online Exams	
- Online Quizzes	
- Online Forums (Informal Writing)	
- Final Cumulative Exam	15%
- Participation/Homework*	5%
<b>Laboratory</b>	<b>30%</b>
Lab Reports (Major Writing Assignments)	25%
Lab Quizzes	5%

+ Take home Exam and Online Assignments policies will be provided separately

*\*The Participation/Assignments grade will be based on the student's attendance, class participation and **completion of homework and online assignments. Homework assignments will be randomly checked before the exam date.***

### **1. Informal Writing:**

Most of the informal writing will happen in the lecture component of this course through the Blackboard Discussion Board. A smaller part of the informal writing will be done in the laboratory.

#### a) Informal writing in lecture:

Each week students will have the opportunity to choose from three prompt options posted by faculty on the Discussion Board. Two of these prompts remain the same throughout the semester with only the necessary thematic adjustments.

Students are expected to respond to at least 12 Discussion Board exercises throughout the semester (blackboard tallies student participation.)

Blackboard Prompts:

- *Based on what you learn in Chapter "Atoms, Molecules, and Ions" (please note that the title will change weekly), craft your own exam question. You must justify why you consider this question should appear in the exam. For this, I suggest that you explain what skills are tested in the question you are crafting. For example: Is your question asking fellow students to remember valuable information? Is it asking to analyze information, or maybe apply knowledge, etc. Any kind of question is accepted (multiple choice, true or false, short filling, short essay, etc.) In addition to crafting your own question you can also engage in dialogue with other students based on what they submit. You can give your opinion to support a previous posted question and/or you can add a comment to somebody else's opinion showing your support, agreement or disagreement with another student's comment regarding a question or the tested skill.*
- *Connect the content of Chapter "Chemical formulas, Reactions, Equations, Stoichiometry" (please note that the title will change weekly) to your daily life. Have in mind that I am not asking for your opinion; I want you to think of an example of how the material we covered about "Chemical formulas, Reactions, Equations, Stoichiometry" relates to you daily life.*
- *Watch the You tube clip below (please note that clips will change depending on the week's theme) and respond to the corresponding questions:*

1) Comparing the four halogens

<http://www.youtube.com/watch?v=u2ogMUDBaf4&feature=related>

After watching the clip above, please respond to the following question:

How are the periodic table elements arranged?  
Include the main periodic table groups and list some of their main properties.

2) Formation of sodium chloride

<http://www.youtube.com/watch?v=Ftw7a5ccubs&feature=related>

After watching the clip above, please explain the difference between ionic and covalent bonds. Give an example different to what you just watched.

3) Gases Properties--Gas, volume and pressure

<http://www.youtube.com/watch?v=t-lz414g-ro&feature=related>

After watching the clip above, please answer the following question: How could you explain this experiment? And explain the Kinetic Molecular Theory.

- *Summary of articles*

An online scientific article for the lay public will be chosen (for example, from the science section of The New York Times or other scientific online publications) and posted on Blackboard for students to read. Summarize the three main points of the article adding a personal comment on the article, for instance, whether you find the article informative, if it is clear, if you agree with the argument presented, etc.

- *Peer-reviewing a lab report*

Each student will have the opportunity to review in written form the draft of the formal laboratory report of another student. This will be done in class. (More about this activity in the 'formal writing' section of this syllabus.)

The professor will give feedback on the Discussion Board postings in class and, whenever possible, the professor will start the class by talking briefly about students' input on Blackboard.

#### b) Informal writing in the laboratory:

In order to prepare for a laboratory session, students will be asked to read the "Procedure" section and "translate" the essential information into a flowchart. Aside from preparing the student for the experiment to come, this assignment will train the student in how to synthesize information.

The flowcharts should be presented at the beginning of each lab session and this counts as participation but will not be graded.

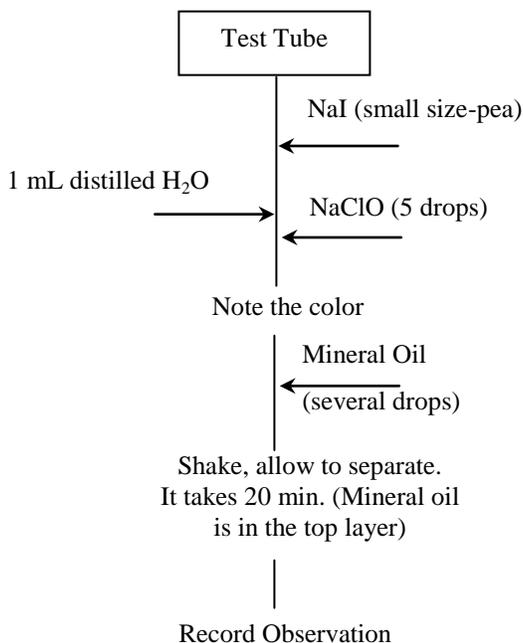
Sample of the assignment:

- *Read the "Procedure" section of your Lab manual. When you finish reading make a flowchart that synthesizes the information offered in the narrative. Keep in mind that your flowchart should function as a "recipe" for the experiment you are about to do. The instructor will discuss the flowchart mechanics and will model one on the board for the first two labs to help you produce your own one for the following labs. Example:*

*Experiment: Use of aqueous (aq) chlorine ( $\text{Cl}_2(\text{aq})$ ) to identify iodide salts.*

*Directions: In a small test tube, dissolve a small amount (about the size of a pea) of sodium iodide, NaI, in 1 mL of distilled water; add 5 drops of bleach. Note the color, then add several drops of mineral oil, shake, and allow to separate, which takes about 20 sec. Note that the mineral oil is the top layer. Record your observations on the report sheet.*

*Flowchart:*



## 2. Formal writing:

There will be nine lab reports in this course. Six of these reports will be reviewed and commented on by the professor in order to reinforce students' familiarity with the lab report format. Students are not required to submit a revised/rewritten version. Three lab reports will require revision and one of them will serve as the basis for an essay.

- *Revised Lab Report*  
"Separation of the Components of a Mixture"  
In week 3 of the semester  
Students write a first draft of the lab report, submit it for feedback, and then rewrite the lab report based on the professor's comments and submit the revised version (2 to 4 pages).
- *Consumer Information Pamphlet*  
"Chemicals in Everyday Life"

This assignment starts in week 7 of the semester and continues until the end of the semester (it's a scaffolded writing assignment.) You will use your lab on "Chemicals on Everyday Life" as the basis for a larger writing project: a "Consumer Information Pamphlet" about one chemical component frequently used in daily products. Write with a hypothetical audience in mind. Your written product should resemble a Consumer Information Pamphlet very much like those brochures that accompany most medications.

The goal of this assignment is that students become familiar with most common chemicals, their properties and relations with other chemicals.

Expansion of lab report:

1. Students write the lab report-receive professor's feedback.
2. Research on the field: Students will be asked to take a look at the products in their kitchen and bathrooms cabinets, cosmetics drawer, etc., and take notes on the chemical content of the products.
3. Informal writing reflecting exercise: The previous observation assignment will serve as the basis for an in-class informal writing exercise in which students respond to prepared questions. Students should bring their notes from the "field research." Based on their notes, students will respond to the following questions: How many chemical products there are in your home that you were not aware of? How many of these products are "natural" and how many are "processed" products? How many make contact with your skin? How many of these products you eat or drink or take as medication? Is there a chemical component that appears in more than 4 products? If so, what is it, and what do you think its use may be?
4. Research: Students will be asked to conduct research about one of the chemicals found in their cleaning/kitchen/cosmetic products. Students will start their search using Wikipedia to get general information about the chemical they are researching. In addition, the professor will make a scientific peer-reviewed publication database available in the library. The research should be geared towards obtaining the following information: Chemical formula of the component students chose, the history of the component (who discovered it, when was it discovered, whether it has been approved by the FDA and when it was approved), most common uses of the chemical and the contraindicated uses of the chemical component.
5. Students will incorporate the information they gathered from observation and research to their lab report and submit a first draft of their Consumer Information Pamphlet. The content and style of the Consumer Information Pamphlet should be oriented towards a lay audience. (The professor will provide an example of this type of writing.) In their pamphlet students will also include a personal assessment regarding the advantages and the possible hazards of using/consuming products that include the chemical they have studied. Students will be asked to end their pamphlet with a statement about whether or

not they would recommend the use/consumption of products that include the chemical component they studied.

6. Faculty provides feedback on students' first drafts.
  7. Students rewrite their Consumer Information Pamphlet based on the professor's comments. The revised version due the last day of class. (4 to 6 pages)
- *Peer-reviewed Lab Report*  
"Gravimetric Analysis of a Chloride Salt"  
In week 11 of the semester  
Students write a lab report that is peer-evaluated and revised. (2 to 4 pages)

For the peer reviews, you will submit a copy of your report without your name. In class, I will distribute these anonymous reports among the group. I will also provide students with reviewing guidelines (in writing). Each student will then read and, based on the guidelines, make written comments in the assigned lab report and then share her/his comments with the entire class. The professor will make notes of the student's reviewing comments in order to make general suggestions that all students can use when they rewrite their report. Commented/annotated reports will be returned to the students. Students are expected to revise their lab reports based on the written comments of his/her peer as well as on the professor's general comments. The revised version of the lab report is due a week later.