Chemistry 100 Chemistry in Society

3 Credits
MW 10:00 – 11:15
Imiloa 111
CRN 60131

INSTRUCTOR: Bernie Reeves.
OFFICE: Imiloa 130
E-MAIL: br2@hawaii.edu
OFFICE HOURS: M 1-2 pm
TELEPHONE: 236-9116
EFFECTIVE DATE: Fall 2013

WINDWARD COMMUNITY COLLEGE MISSION STATEMENT

Windward Community College offers innovative programs in the arts and sciences and opportunities to gain knowledge and understanding of Hawai‘i and its unique heritage. With a special commitment to support the access and educational needs of Native Hawaiians, we provide O‘ahu’s Ko‘olau region and beyond with liberal arts, career and lifelong learning in a supportive and challenging environment — inspiring students to excellence.

CATALOG DESCRIPTION
Chemistry 100 provides a survey of basic concepts and applications of chemistry in the real world. This course is suitable for students who had little or no background in chemistry and serves to fulfill a general education physical science core course for the non-science major or as a preparatory course for Chem 151.

STUDENT LEARNING OUTCOMES
1. Describe the relationship between properties and structure of matter.
2. Name chemicals, balance chemical and nuclear equations.
4. Identify the types of chemical reactions (i.e. acid-base, redox, nuclear) and their applications to everyday lives.
5. Explain the chemistry of household chemicals, and the composition of air and water.

The first 5 outcomes will be tested on the quizzes and exams.
6. Relate a specific chemical concept to a current environmental, health, industrial, or technological issue by writing a short research paper.

COURSE TASKS
- Daily quizzes and weekly on line quizzes
- Assignments
- Attendance at 10 SI sessions before tests and exam
- Research Paper or Service Learning or PowerPoint Project
- 4 Midterm Exams
- Final Exam
GRADING

Grades will be based on daily and chapter quizzes, 11 online assignments and other assignments, 4 midterm exams, 1 research paper, and a final exam.

- On-Line Assignments --------------- 5%
- Homework Worksheets --------------- 5%
- Class Participation/Attendance ------------------ 5%
- Quizzes ----------------------------------- 20%
- Tests (4) ---------------------------------- 25%
- Exam -------------------------------------- 25%
- Research Paper (PowerPoint or Service Learning) ---- 15%
- Total -------------------------------------- 100%

1. Course grades will be assigned as follows:
   - A 100-90%
   - B 89-80%
   - C 79-70%
   - D 69-60%
   - F below 60%

**N Grade:** The 'N' grade indicates that the student has worked conscientiously, attended regularly, finished all work, fulfilled course responsibilities, and has made measurable progress but has not achieved the minimal student learning objectives and is not yet prepared to succeed at the next level. Or, the student has made consistent progress in the class but is unable to complete the class due to extenuating circumstances, such as major health, personal or family emergencies. Students requesting for N grade must provide a formal letter of request before the final examination with supporting evidences.

The other grades I, W, Cr, NC to be assigned are described in the current college catalog. These options must be discussed with the instructor. The deadline to change from A-F to Cr/NC grade option is on October 2, 2012.

If you drop out from the course without any notice you will get a ‘F’ grade. To avoid this, please be sure to withdraw officially by October 29, 2012.

LEARNING RESOURCES

1. Instructor Lecture Notes (spiral bound available at WCC Bookstore) - required
3. Calculator (required) & Periodic Chart
4. Course website: https://aulima.hawaii.edu
5. Practice quizzes & exams in Resources (Laulima)
6. Supplemental instructor – schedule will be posted

HOW TO STUDY FOR THIS COURSE
Chemistry should be three words. **Chem. Is Try.** Nothing is more important to your academic success that strong study skills. On average you should spend about nine hours per week outside of class to study for this class. You are responsible for your learning. I am there to help you do this.

1. Please use the Course Schedule (found on the last page) throughout the semester. It contains the topics, reading requirements and due dates. You are responsible to MEET ALL DEADLINES as listed on the class schedule.  
2. Please come to class every day. Bring the Instructor Notes (and calculator) to class. Be on time. There will be a short quiz during the first 5 minutes of class based on the lecture from the previous class which is worth 10 points If you miss a quiz with a good reason, you may make it up during office hours.  
3. Focus on the objectives of each chapter. Read the notes and textbook with the objectives in mind before coming to class.  
4. Use your lecture notes. Take notes during lecture, and, also when watching videos, tutorials, and animations. If you don’t write your notes, you will forget the material when you reach the final exam. Ask questions, if you do not understand.  
5. Participate in all the course activities including group activities.  
6. Review your notes soon after class. Do assigned practice problems and drills.  
7. Chapter Quizzes on-line. There will be a 10 question quiz on Laulima after each chapter. You may use your notes or textbook but you must take the quiz without another person helping you.  
8. Supplemental instruction is available after class. Students should use tutoring from the very beginning of the semester before running into difficulty. After attending 5 hours of SI, each 2 hours adds ½ grade point to your final grade.  
9. If you have any problems, please do not hesitate to see me. I am available from 7:45 AM before class as well as during office hours.  
10. If you are at home and need a tutor, use Brainfuse.  
11. You should plan to spend at least 6 hours outside class time per week on this course:  
   -- two hours reading chapter notes and  
   - two hours doing self-assessments, learning checks, worksheets and assignment  
   - two hours summarizing each lecture and and attending SI sessions  
12. In case you missed a lecture, you must view the multimedia materials available in the Laulima course website.  
13. Back up all your submissions (assignments and research paper)

**POLICIES**

1. **Quizzes are worth 10 points each.** At the end of the semester, I will drop your four lowest quizzes.  
2. All **midterms and final** exam are **closed books and notes** (no cheat sheet). There will be four midterm exams, each about 30% of the course material. The final exam will be cumulative covering ALL topics taken throughout the semester
and will take about 2 hrs long. **Check the course schedule.**

3. Only one missed exam (with requisite doctor’s note, police report or obituary note) can be made up if you notify (email) the instructor before or on the day of the exam. There will be no make-up for the final exam.

4. Exams and quizzes cannot be retaken to obtain better grades.

5. **Assignments:** There are a total of eight assignments (see list below). Homework/assignments are found in the Instructor Notes and their due dates are announced in class. **These assignments must be turned in on-line using Laulima.**

   - Assign #1 - (only for online)
   - Assign #2 - Risk Benefit Analysis & DQ (Ch1 p.3) Notes p.10
   - Assign #3 – Redi’s Hypothesis (Ch1 p.5) Notes p.12
   - Assign #4 – Chemicals in Tobacco (Ch4 p.26) Notes p.81
   - Assign #5 - Reactions of the Atmosphere (Ch5 p.7) Notes p.91
   - Assign #6 – Practice mass-mass conversion (Ch5 p.24) Notes p.108
   - Assign #7 – Vitamin A & E (Ch6 p.13) Notes p.132
   - Assign #8 – What is the chemistry of airbags? (Ch6 p.18) Notes p.137
   - Assign #9 – What are the different types of antacids? (Ch7 p.16) Notes p.15
   - Assign #10 – Give an example of a redox reaction in everyday life. Write the reactants and the products and its application.
   - Assign #11 – Find a current topic about organic or polymer chemistry.

   Each assignment has its own rubric based on the instructions and is worth 5 points. Please follow the detailed instructions of the assignment in the Instructor Notes. You have to read relevant information or do online research before writing up the assignment. Please do not write an assignment just by reading the title of the assignment.

6. **Homework:** At the end of every chapter, I will give you a hand out review sheet to do. These problems will be similar to test and quiz questions. Please have the SI check them.

7. **Research Paper or Service Learning or PowerPoint Presentation:**

   The **research paper** is a three-page (double space) paper of at least 700 words to make a **connection between a chemistry concept covered in the course and an application in everyday life.** This will be made based on textbook readings and online resources. A sample paper and a handout “tips on how to search for references” are downloadable in Laulima.

   The paper grade will be based on the following rubrics:
   - contains title and purpose (1 point)
   - explains at least one chemistry concept in detail (1 point)
   - discusses at least one application or current issue in detail (2 points)
   - connects the concept to application (2 points)
   - body has correct length (at least 700 words) (1 point)
   - does not have spelling and grammar errors (1 point)
   - citations are included (1 point)
   - reference list of at least five reliable sources is included (1 point)
Research paper topics need to be pre-approved. Topics like the Kreb’s cycle, Glycolysis, or Prebiotics, etc., (textbook topics in nutrition, biology and zoology, etc courses) and airbags, antacids and fuel cells (already included in assignments and sample paper) are NOT acceptable. You will submit your first draft on Turnitin.com. I will give you a rough grade with suggestions. You may then resubmit your paper for a higher grade.

You may also do a Service-Learning Project or present a PowerPoint on Air or Water or Household Chemicals. Rubrics will be posted on Laulima.

7. **An "F" will be assigned to students involved in cheating** (in quizzes, homework, research paper, midterms or final) and will be reported to the Dean.

8. **Extra Credit. You can earn** extra credit up to a **maximum 2 Extra Credit Points added to your final grade.** Attendance in a chemistry forum with a written summary is one half grade point. The forum schedule will be posted at [http://www.wcc.hawaii.edu/chemistry_forum](http://www.wcc.hawaii.edu/chemistry_forum). Other extra credit possibilities besides the chapter reviews and assignments in the textbook will be available during class and posted on Laulima.

SI sessions will be held several times a week. Ten hours are required before the Midterms and finals. You may attend more frequently and will receive ½ grade point for every two hours (up to a maximum of 2 grade points).

9. I will post grades on Post'Em on Laulima.

10. Disruptive behavior, such as activated cell phones, text messaging, eating, sleeping, prolonged chattering, reading other materials not pertinent to class, making noise, etc. will not be tolerated. The instructor reserves the right to exclude students who take part in disruptive behavior from class, and will be reported to the Dean.

11. If you have any **special learning needs**, including hearing/visual impairment, please inform the instructor as soon as possible if you cannot come to my office, please email me for grade-related and personal questions, and **check your hawaii.edu email account for the responses**. Please ALLOW 24 HOURS for responses to emails or messages. You may also call at 236-9116.

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**DISABILITIES ACCOMMODATION**
If you have a physical, sensory, health, cognitive, or mental health disability that could limit your ability to fully participate in this class, you are encouraged to contact the Disability Specialist Counselor (and instructor) to discuss reasonable accommodations that will help you to succeed in this class. Ann Lemke can be reached at 235-7448 or lemke@hawaii.edu or you may stop by Hale 'Akoakoa 213 for more information. Also, inform your instructor ASAP.

**COURSE CONTENT AND SCHEDULE**
Holidays: January 20, February 17, March 24 to 28,
Important Dates:
Last day for withdrawal, CR/NC February 3
Last day of instruction, May 7
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<thead>
<tr>
<th>Topic</th>
<th>Study Materials</th>
<th>Schedule*</th>
<th>Learning Outcomes</th>
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<tbody>
<tr>
<td>Orientation &amp; Chemistry</td>
<td>Chap 1 &amp; 2</td>
<td>January 13</td>
<td>Scientific method, DQ, matter, classes, properties</td>
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<td>January 15</td>
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<td>Assignment #2</td>
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<td>Chemical Bonds</td>
<td>Chap 4</td>
<td>January 29</td>
<td>Name chemical compounds. Write chemical formulas. Ionic &amp; covalent compounds. Polar and Nonpolar molecules</td>
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<td>Review and Review</td>
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<td>February 3</td>
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<td>Assignment #3</td>
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<td>Review</td>
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<td>February 5</td>
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<td>Midterm 1</td>
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<td>February 10</td>
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<td>Chemical Accounting I</td>
<td>Chap 5a</td>
<td>February 12</td>
<td>Solve problems involving mole ratios. Solve using unit factor method. Solution concentration</td>
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<td>Bring a calculator</td>
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<td>Assignment #4</td>
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<td>Chemical Accounting II</td>
<td>Chap 5b</td>
<td>February 24</td>
<td>Solve problems involving mole ratios. Solve using unit factor method. Solution concentration</td>
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<td>Review</td>
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<td>March 3</td>
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<td>Midterm 2</td>
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<td>March 5</td>
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<td>Gases, Liquids, Solids &amp; Intermolecular</td>
<td>Chap 6</td>
<td>March 10</td>
<td>Describe the relationship between properties and structure of matter. IMF. Gases.</td>
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<td>Assignment #6</td>
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<td>Acids &amp; Bases</td>
<td>Chap 7</td>
<td>March 17</td>
<td>Identify acid-base reactions and their applications to everyday lives.</td>
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<td>Bring a calculator</td>
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<td>Assignment #7</td>
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<td>Oxidation &amp; Reduction</td>
<td>Chap 8</td>
<td>March 31</td>
<td>Identify redox reactions and their applications to everyday lives.</td>
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| Organic Chemistry & Polymers         | Chap 9 & 10     | April 14   | April 16   | Assignment #9  
| Paper First Draft and References    |                 | April 21   |            |                                                                                                                                             |
| Nuclear Chemistry PowerPoints       | Chap 11         | April 21   | Assignment #10 | Balance nuclear equations. Identify nuclear reactions and their applications to everyday lives                                        |
| Air PowerPoints                     | Chap 13         | April 23   |            | Explain the composition of air. Oxygen cycle, Nitrogen Cycle, Acid rain,                                                                        |
| Water PowerPoints                   | Chap 14         | April 28   | Assignment #11 | Explain the composition of water. Hard water. BOD. Water treatment                                                                    |
| Review for Midterm 4                |                 | April 30   |            |                                                                                                                                             |
| Midterm 4                           |                 | May 5      |            |                                                                                                                                             |
| Household Chemicals PowerPoints     | Chap 21         | May 7      |            | Explain the chemistry of household chemicals. Soaps. Bleach. Cosmetics                                                                  |
| Term Paper Final Draft Due          |                 | May 7      |            |                                                                                                                                             |
| Final Exam Review with SI           |                 | May 9      |            |                                                                                                                                             |
| Final Exam                          | 8:30 to 10:30   | May 12     |            | 10:00 to 12:00 Cummulative                                                                  |