Chem 162 General Chemistry II
3 credits (CRN 63080)
WWW

INSTRUCTOR: Leticia Colmenares, Ph.D.
OFFICE: Imiloa 116
OFFICE HOURS: M 10:30-11:30 pm, T 11:30-12:30 am
E-MAIL: Leticia@hawaii.edu
Chat Room (162): R 8:00-9:00 pm
TELEPHONE: 236-9120
EFFECTIVE DATE: Spring 2015

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

Second course of a two-course sequence designed to meet the one-year General Chemistry requirement for pre-med, science and engineering majors. Topics include thermochemistry, kinetics, acid-base equilibrium, solubility equilibrium and electrochemistry. Emphasis on problem solving.

Prerequisites: A grade of "C" or better in CHEM 161, credit or concurrent registration in MATH 135, or instructor’s consent.
Co-requisite: Concurrent registration in CHEM 162L (override is provided)
WCC: DP

STUDENT LEARNING OUTCOMES

1. Predict properties (boiling point, melting point, osmotic pressure, vapor pressure) of solutions based on concentrations.
2. Determine reaction rate law and calculate rate constants and half-life based on experimental data.
3. Calculate the equilibrium concentration of chemicals in solution involved in precipitation, acid-base and redox reactions.
4. Predict spontaneous reactions based on enthalpy and entropy considerations.
5. Determine the electrochemical potential of redox reactions.

ABOUT this Course

Students are expected to spend a total of 10 hrs per week. This includes 3 hours per week reading the lecture notes and watching video lectures at Laulima Course Website AND an additional 7 hours per week working on REACT problems (in Lecture Notes), Masteringchem.com assignments, taking practice and actual chapter quizzes and proctored exams.
COURSE TASKS

- Homework (masteringchemistry.com and REACT problems in Lecture Notes)
- Online chapter quizzes
- Four long exams (proctored)
- Cumulative Final exam (proctored)

IMPORTANT: The 4 long and one final exams will be proctored at the WCC Testing Center. You may use testing centers found in this link: http://www.hawaii.edu/dl/testcenters or if you are in the US mainland, you may use other testing centers in your locality. If you decide to take these exams at external sites, please email the instructor by the second week of classes for pre-approval.

GRADING

1. Grades will be based on the following categories: homework, quizzes, 4 long exams and a final exam (counted 2 times). Your performance (in %) in each category will be determined. The lowest % will be dropped. The average of the remaining seven categories will determine your course grade, as follows:

<table>
<thead>
<tr>
<th>Average</th>
<th>Course Grade</th>
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<tbody>
<tr>
<td>100-90 %</td>
<td>A</td>
</tr>
<tr>
<td>89-80 %</td>
<td>B</td>
</tr>
<tr>
<td>79-70 %</td>
<td>C</td>
</tr>
<tr>
<td>69-60 %</td>
<td>D</td>
</tr>
<tr>
<td>below 60 %</td>
<td>F</td>
</tr>
</tbody>
</table>

Curving might be employed if deemed necessary.

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/audit option (with Office of Admissions & Records) is on Mar 31, 2015.

If you drop out from the course without any notice, you will get ‘F’ grade. To avoid this, please be sure to withdraw officially (through MyUH) by Mar 31, 2015.

2. Homework: You have to solve all REACT Problems in the Lecture Notes and assigned problems in Masteringchemistry.com. As soon as possible, please go to masteringchemistry.com and register in Course ID COLMENARES63080 and indicate “Tro, Chemistry: A Molecular Approach, 3e as the textbook. It is the responsibility of
the student to complete and submit the assignments on time. You are **always**
allowed to view hints, without penalty. You get bonus points when you don’t used
hints. You are allowed to rework the problems after due date however, the new score
is not saved. Late submission has a small penalty of 10% per day, but the total
overall penalty is maxed at 50%. Late homework will be accepted for half-credit until
May 15, 2015 (end of semester).

3. **Quizzes.** Chapter quizzes will be given in Laulima. These are **timed. Each quiz
MUST be completed by the time and date set.** Always have a calculator and a periodic
chart when taking a quiz. Please turn off your cell-phone when taking a quiz. The reason
why the quiz is timed is to prevent cheating.

4. **Proctored long exams.** Each will cover approximately two chapters. Each will last for
about 100 min. All of these will be conducted in the Testing Center. This is closed
book (no cheat sheet is allowed). A picture ID and calculator are required.

5. **Final Exam.** The **final exam will cover all topics** (cumulative) 2 hrs. long. This will
be administered at the Testing Center on May 11 to May 12, 2015. No cheat sheet is
allowed. A picture ID and calculator are required.

6. **Extra Credit.** You can earn extra credit up to a **maximum of 20 points =2% added
on top of overall grade.** Attendance in the Blackboard Collaborate (online) or face2face
supplemental instruction (SI) during the first week of classes will earn 1.0 point.
Attendance in 5 SI sessions (TBA schedule) is required. Extra succeeding sessions will
earn 0.5 point each. Others listed in ‘chemistry help’ will earn points as follows: scoring
80% in practice quiz will earn 0.5 point. Each complete practice worksheet submitted on
or before due date will earn 2.0 points.

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**COURSE MATERIALS**

1. **Required Notes:** Chemistry 162 Lecture Notes by Colmenares (sold at WCC
Bookstore). Already available in bookshelf, $7.40. Order and check shipping policies
at http://www.bookstore.hawaii.edu/wcc

2. **Required. Access Code for homework** ([masteringchemistry.com](http://masteringchemistry.com)) for online
   homework (purchase the **access key** online).

3. **Required. Scientific Calculator** (cell-phone based calculator is not allowed)

Course Website: [http://laulima.hawaii.edu](http://laulima.hawaii.edu) (use UH email account login and password).
Course content is delivered via lecture videos (mp4).
Optional: Tro, Chemistry A Conceptual Approach, 3rd edition
Any General Chemistry Textbook (available at WCC Library Circulation Call # QD)

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**CHEMISTRY HELP**

1. Online F2F Supplemental Instruction (schedule to be announced later).
   [http://tinyurl.com/WCC-Elluminate-Room-1](http://tinyurl.com/WCC-Elluminate-Room-1)

2. F2F Lecture Class at WCC (MW 11:30-12:45) and F2F SI session
3. Online practice quizzes and sample midterm exams
4. Practice worksheets & end-of-chapter problem set in Lecture Notes (LN)
5. Laulima Chat Room Instructor online hours every Thursday at 8-9 PM. You may post questions there anytime. Also, Discussion Board.
6. OLA (Online Learning Academy) open everyday except Saturday.
   http://manoa.hawaii.edu/ola/

HOW TO STUDY FOR THIS COURSE

 généralement, les étudiants prennent des cours en ligne avec l’assumptions que ce sera plus facile que des cours en face à face. Malheureusement, ceci n’est PAS correct. Les cours en ligne nécessitent plus de discipline et effort individuel de la part de l’étudiant. L'accent est sur la learning rather than the TEACHER lecturing. However, you have more flexibility, when and where to study.

1. You are expected to login the course website every other day and watch the lecture videos. The website is your classroom and not coming to the site is like skipping class. Please schedule red-time hours for this course that you will routinely follow in real time (example: MWF 7-10 pm). It is mandatory to post at least a 30-word question, response or comment on each of the Discussion Board (due before each long exam). This counts as 2 points towards your assignments.

2. The course website is organized by chapter (chap 11 to 19). On average, each chapter is composed of 3-4 videos ~30 min each. Watch the videos to learn the concepts. Pause, and replay, when needed. Take notes on the margins of the Lecture Notes just like when you are in class during lectures. The powerPoints and narrations are downloadable from the Course Website. Some of the React problems are in the video (but not in the LN).

3. Learning Checks. As soon as you are finished with the videos, you are expected to DO ALL REACT problems in each chapter of the Lecture Notes. Scan, type or take a photo of your work and submit this as attachment under Laulima Assignments. It is expected that you check the instructor’s feedback 2 days after due date to learn what you are doing wrong.

4. Next, do the assignment on masteringchemistry.com. Most of these are tutorials. This will enhance your understanding of the material. Make a connection to the concepts in the LN. Your score in Laulima Assignment plus your masteringchemistry score will be your homework grade.

5. Self-assessment. You MUST take the practice quiz in Tasks, Tests and Surveys at least twice before the actual quiz (extra credit if score is 80% or better). It is important that you feel a certain level of confidence before taking the actual chapter quiz.

6. Reinforce learning. Practice by doing the worksheets and all other end-of-chapter practice problems found in the Lecture Notes. Then check your answers with the answer key that will be provided. This counts as extra credit, if turned in before due date.

7. Preparing for long exams (proctored). Focus on the objectives of each chapter. Re-read the notes with the objectives in mind. Practice taking the sample midterm as if you are taking the actual exam.
8. Use online **supplemental instruction (SI) and OLA online tutoring** from the very beginning of the semester before running into difficulty.

9. Have a **study buddy or study group**. Meet frequently to motivate each other.

10. **Chat Room.** It is expected that you ask questions and communicate with the instructor what you are having problems with. Do this during online office hours or asynchronously.

11. If you have any difficulties, please do not hesitate to **email** the instructor.

12. Please pay attention to deadlines. **Use the Course Schedule** (found on the last page) throughout the semester. The topics and test dates are listed there. You are responsible to **MEET ALL DEADLINES** as listed on the class schedule. **It is very hard to catch up when you fall behind.**

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### OTHER POLICIES

1. Software requirements.
   - Laulima and Bb Collaborate (for online SI) are best used in Firefox.
   - Videos are in mp4 format. Can be downloaded and viewed in most video players such as VLC player and Quicktime Player.
   - Powerpoints and Livescribe notes are in PDF format. Best viewed in Adobe Reader or Apple Preview. Update when needed.
   - Make sure Java is up to date. Download available at [https://www.java.com/en/download/](https://www.java.com/en/download/)

2. Technical problems in Laulima. Please make sure that your Internet connection is a **robust** connection when taking online quizzes. Please do NOT take your quiz at the coffee shop or using wireless connection.

   In case you **encounter a technical problem** (e.g., the computer crashes, Laulima is down, etc), **please submit a Request Assistance** form (at the bottom of Laulima page) immediately from the computer that the problem occurred. Please indicate the course, which quiz, what kind of computer, which web browser, and what kind of internet connection was used.

   Please notify me by email **immediately**. Upon **verification** by Laulima staff, your quiz will be reset and you will be allowed a second attempt.

3. Make-up or retaking quizzes will NOT be allowed. **Each quiz MUST be completed by the time and date set in the course schedule.** If you fail to take a quiz, for whatever reason, your score for that quiz will be zero. Your **eight highest** chapter quiz scores will be used in calculating your quiz grade.

4. Four long exams and one final exam **will be made available at The Testing Center (TTC). If you wish to take these at external testing sites, please arrange with the instructor as soon as possible.**
Hours of operation may vary from campus to campus. At the WCC Testing Center, the hours are found in this link: [http://windward.hawaii.edu/Testing_Center/index.php](http://windward.hawaii.edu/Testing_Center/index.php). After taking the exam/quiz, you must not tell anybody what is in the test, as this would fall under the guidelines of academic integrity. Any evidence of cheating will result in a score of zero for all parties involved, and this will be reported to the Vice Chancellor for disciplinary action.

5. **Communicating with instructor.** Please email the instructor using the Mailtool in Laulima. Please check your Hawaii.edu account for instructor response to your email. Please ALLOW 24 HOURS for responses to emails or messages. In emergencies, please call 236-9120.

6. You have access to your scores and grades 24/7 in *Laulima gradebook*.

7. An "F" will be assigned to students involved in *cheating* systems.

### MySuccess REFERRAL

At Windward community college we want every student to be successful. MySuccess is a system wide effort that seeks to support students early in the semester when they first begin experiencing difficulty in class. If I feel that you’re having difficulty in my class within the first few weeks of the semester (e.g. missing class, missing assignments, or low test scores) and working together to address your challenges shows that you would really benefit from being connected to resources outside of the classroom, I may refer you to your assigned counselor. Once referred, MySuccess will:

- Call you and send an email to your Hawaii.edu account to let you know about my referral; and
- Have a Counselor follow up with you by phone or by email to find out what kinds of help you might need and connect you with the necessary resources to help you devise a strategy for success.

I will not refer you without telling you. However, if I do refer you, know that I am doing so in an effort to connect you with all of the help you may need to do well this semester as your success is important to me.

### 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 to discuss reasonable accommodations that will help you succeed in this class. Ann Lemke can be reached at 235-7448, lemke@hawaii.edu, or you may stop by Hale ‘Akoakoa 213 for more information. Also, inform your instructor ASAP.

### COURSE CONTENT AND TENTATIVE SCHEDULE

**Important Dates:**
- 01/16/15 Last day to receive 100% tuition refund
- 02/02/15 Last day to receive 50% tuition refund
- 03/31/15 Last day to withdraw from class (“W” on transcript)
<table>
<thead>
<tr>
<th>Date*</th>
<th>Chapter</th>
<th>Topics</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/12 – 1/17</td>
<td>Introduction</td>
<td>Review</td>
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<tr>
<td>1/17 1/18</td>
<td>p.9-10 (Assignment) Masteringchem</td>
<td>Review Review</td>
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<td></td>
<td>11 - Liquids, Solids and Intermolecular Forces</td>
<td>Dispersion, Dipole-dipole forces, Hydrogen bonding, heating curve, phase diagrams, properties of liquids. Unit cell, types of solids, types of solids, semiconductors.</td>
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<tr>
<td>1/23 1/24 1/25</td>
<td>React (Assignment) Masteringchem Chap Quiz</td>
<td>Predict properties (boiling point, melting point, osmotic pressure, vapor pressure) of solutions based on concentrations. Solvation, factors affecting solubility, enthalpy and entropy of solution, Henry’s law.</td>
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<tr>
<td>2/6 2/7 2/8</td>
<td>React (Assignment) Masteringchem Chap Quiz</td>
<td>12 - Solution Properties</td>
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<tr>
<td>2/9-2/10</td>
<td>Proctored Long Exam #1</td>
<td>Available for 2 days (Mon/Tues)</td>
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<td>13 - Chemical Kinetics</td>
<td>Determine reaction rate law and calculate rate constants and half-life based on experimental data. Reaction mechanism, activation energy, catalyst, intermediate, Arrhenius equation, collision theory</td>
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<td>2/20 2/21 2/22</td>
<td>React (Assignment) Masteringchem Chap Quiz</td>
<td>14 - Chemical Equilibrium</td>
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<td>Characteristics of equilibrium, Equilibrium constant, K, Le Chatelier’s principle, equilibrium calculations, reaction quotient, Q.</td>
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<td>3/6 3/7 3/8</td>
<td>React (Assignment) Masteringchem Chap Quiz</td>
<td>3/9-3/10 Proctored Long Exam #2 Available for 2 days (Mon/Tue)</td>
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<td>15 - Acids &amp; Bases</td>
<td>Strong and weak acids and bases, conjugate acid/base, pH, salts and oxides, convert Convert between: ([H_3O^+]), (pH), ([OH^-]) and (pOH). Calculate Ka (or Kb), % ionization, pH, or ([H^+]) for a weak acid or weak base solution, Predict whether a salt solution will be acidic, basic or neutral.</td>
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<td>3/20</td>
<td>React (Assignment)</td>
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<tr>
<td>Date</td>
<td>Activity</td>
<td>Description</td>
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<td>3/21</td>
<td>Mastering Chap Quiz</td>
<td>Calculate the equilibrium concentration of chemicals in solution involved</td>
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<td>3/22</td>
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<td>acid-base reactions. Common-ion effect, Titrations, Buffers, pH curves,</td>
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<td>indicators. Calculate the equilibrium concentration of chemicals in</td>
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<td>solution involved in precipitation reactions. Calculate solubility, Ksp,</td>
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<td>predict whether precipitation occur.</td>
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<td>4/3</td>
<td>React (Assignment)</td>
<td>Predict spontaneous reactions based on enthalpy and entropy considerations.</td>
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<td>4/5</td>
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<td>Calculate $\Delta G^\circ$ from K and perform the reverse operation: $\Delta G^\circ = -RT\ln K$.</td>
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<tr>
<td>4/6-4/7</td>
<td>Proctored Long Exam #3</td>
<td>Determine the electrochemical potential of redox reactions. Electrochemical</td>
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<td>cells, electrolysis, anode/cathode, cell potentials, volts, coulombs.</td>
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<td>Interconvert $E^\circ$, $\Delta G^\circ$ and K for redox reactions, Use the</td>
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<td>Nernst Equation.</td>
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<td>4/15</td>
<td>React (Assignment)</td>
<td>Balancing nuclear equations, types of radiation, review first order reaction,</td>
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<tr>
<td>4/16</td>
<td>Mastering Chap Quiz</td>
<td>half life, radiocarbon dating.</td>
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<td>4/17</td>
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<td>5/2</td>
<td>React (Assignment)</td>
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<td>5/3</td>
<td>Mastering Chap Quiz</td>
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<tr>
<td>5/4-5/5</td>
<td>Proctored Long Exam #4</td>
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<td>Available for 2 days (Mon/Tue).</td>
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<td>5/11-5/12</td>
<td>Proctored FINAL Exam</td>
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<td>Available for 2 days (Mon/Tues).</td>
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This syllabus is subject to change. Please bring any error to the attention of the instructor.