

**CHEM 141 Fundamentals of
Biochemistry**
3 Credits
CRN 64577

INSTRUCTOR: Danilo L. Licudine, Ph.D.
OFFICE: Class meets online
E-MAIL: licudine@hawaii.edu
OFFICE HOURS: Online Chat Laulima, Wednesday 8-9 PM

TELEPHONE:
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

Biochemistry 141 focuses on the integration of concepts from general, inorganic, and biochemistry and their application to living systems. This course satisfies the one-semester requirement for pre-nursing and pre-dental hygiene majors.

Prerequisite: A grade of "C" or better in Math 25 or instructor's consent.

Corequisite: None

STUDENT LEARNING OUTCOMES

After successful completion of Biochemistry 141, students will be able to demonstrate their proficiency and understanding of the physical and chemical bases of processes that occur within living systems by being able to:

1. Utilize precise chemical language to effectively communicate biochemical and allied health-related concepts and results.
2. Analyze and apply appropriate procedures for solving biochemical and allied health-related calculations involving solids, liquids, gases, and solutions.
3. Describe the basic features of the modern day periodic table and relate the location of an element in the periodic table to its electronic configuration and chemical reactivity.
4. Describe ionic and covalent bonding theories and apply them to the construction of proper Lewis structures and prediction of molecular characteristics and properties.
5. Describe the different types of chemical reactions and solve problems involving the

- relationship between reactants and products in a chemical reaction.
- Describe the fundamental properties of solutions and calculate the concentration of a solution.
 - Relate biochemical and allied health-related concepts, theories, and laws to everyday phenomena.

COURSE TASKS

- Quizzes (online)
- Chapter homework assignments (online)
- Discussion Board (online)
- Research Paper (online)
- Two Midterm Exams
- Final Exam

GRADING

Grades will be based on the following:

Quizzes and Homework Assignments-----	100 points (total points may vary)
Research Paper (1) -----	30 points
Discussion Posts (2)-----	20 points
Midterm Exams (2) -----	200 points
Final Exam -----	100 points
Total -----	450 points

- IMPORTANT:** The two midterm and final exams are proctored exams at any of the testing centers of the UH community college system. If you are off-island or wish to take these exams at testing centers in other locations, please email me by the second week of classes.

Course grades will be assigned as follows:

405 – 450 points	A
360 – 404 points	B
315 – 359 points	C
270 – 314 points	D
269 and below	F

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 **Nov 4, 2013**.

If you drop out from the course without any notice you will get an 'F' grade. To avoid this, please be sure to withdraw **officially (through MyUH)** by **Nov 4, 2013**.

LEARNING RESOURCES

1. Textbook: *General, Organic, & Biological Chemistry* by Janice Gorzynski Smith, 2010, 2nd edition- bundled with Study Guide (Required) – Available at WCC Bookstore and LCC bookstore.
2. Calculator (required) & Periodic Chart of Elements
3. Course website: <https://laulima.hawaii.edu>
4. Multimedia (videos, animations, etc.) in Course Modules (*Laulima*)
5. Practice exercises in Resources and embedded in Course Modules (*Laulima*)
6. Online Learning Academy tutoring <http://manoa.hawaii.edu/ola/>
7. *Laulima* Chat Room online hours (every Wednesday 8-9 pm) for consultation and short and quick questions so other students will have opportunities also.
8. Paper anti-plagiarism and feedback tool <http://Turnitin.com>

HOW TO STUDY FOR THIS COURSE

*Students who take online courses have the wrong notion that since they don't have to be physically present in a classroom to attend the class, it will be a lot easier than taking face-to-face classes. Unfortunately, as early as the first week of the semester online students find out that this is NOT exactly the case. **Online courses require self-motivation, discipline, and initiative on the part of the student and the ability to adhere to a strict deadline. The main responsibility in order for the learning process to take place falls on YOU, the student with the TEACHER as your guide and mentor.***

1. Use the **Schedule** in Lualaba throughout the semester to check on deadlines for turning in homework assignments and the research paper because I will be very strict with submission deadlines. Do not wait until the deadline date and time to turn in homework assignments. You can always submit them any time before the submission deadline. If you wait until the last minute and a problem occurs whether it's your fault or not then all your effort could go to waste in terms of not getting the proper credit due to a missed deadline.
2. You are responsible to **MEET ALL DEADLINES** as listed on the class schedule.
3. **Login to the course website** at the very least three (3) times a week and spend at least two hours every time you login. The website is your classroom and not coming to the site is like skipping class. Please schedule real-time hours for this course that you will strictly follow. Your online 'attendance' will be monitored using '**Site Stats.**'
4. Focus on the **objectives of each chapter**, which are listed on the first page of each chapter in the textbook and also on the second slide in each chapter module. The objectives will serve as your guide as you navigate through each chapter. Go through the slides and videos and read the textbook with the chapter objectives in mind.
5. In addition to the **textbook, multimedia materials** will be used to deliver course content in the course website. These include voice over PowerPoint slides, videos, animations, audio recordings, movies and interactive websites that are organized by chapter. All the downloadable files and links are found under Modules in the course website.
6. **Have a notebook.** Take notes when reading the textbook, when watching videos, tutorials, and animations. If you don't write your notes, you will forget the material and then scramble before the exam. Ask questions in the Discussion Forum and during the scheduled Online Chat (8-9 PM, Wednesdays) if you have any questions on a concept or topic or if you need help with the practice exercises or assignments. Remember there is no such thing as a "dumb" question.
7. Please study the sample problems in the textbook and refer to the study guide for

detailed solutions of in-chapter and end-of-chapter odd numbered problems. Homework assignments to be given are even numbered end-of-chapter problems from the textbook. Self- assessment can be done by doing the practice exercises and learning check questions after the video clips.

8. If you cannot solve a problem or got stuck with a question, please post your question (as clearly as possible by citing the page number in the textbook) in the **Discussion forum**. I will monitor the discussion postings very closely and provide answers as needed. However, I strongly encourage you to discuss and provide answer to the posted questions. In articulating the answer you not only help your fellow students but you yourself get a deeper understanding of the concepts, and you can also earn extra credits. I will also give an extra credit (1 point) to the first three students who can point out any error in the videos or exercises.
8. If you have any problems, please do not hesitate to **email your instructor for consultation**. Online office hours at 8-9 pm will be held in the Chat Room every Wednesday.
9. **Free online tutoring is available** <http://manoa.hawaii.edu/ola/>. Students should use tutoring from the very beginning of the semester before running into difficulty.
10. Have a thumb-drive (flash drive) dedicated for this class for the sole purpose of saving and backing up all your notes, homework assignments, research paper, and anything related to the course. It will come in very handy if ever I need you to resubmit an assignment or research paper.

POLICIES

1. The first midterm exam will cover the first three chapters, and the second exam will cover chapters 4, 5, and 6. While the final and third exam is not 100 % cumulative approximately 30% of the final exam questions would cover topics/concepts learned from the first six chapters and the instructor will inform the class which specific topics to concentrate on for your review. **Check the course schedule for the dates of all exams. The final exam will be scheduled following the academic calendar for Fall 2013.**

The two midterms and final exam **will be made available for 2 days at the various testing centers within the UH community college system on Oahu. For external testing sites, please arrange with the instructor as soon as possible.**

2. **Homework/Assignments and Online Quizzes.** There will be a total of seventeen (17) homework assignments, nine (9) online quizzes and two (2) discussion posts. Each homework assignment is posted at the end of each Chapter Module in Lualima. Please be aware of the submission deadline by referring to the Schedule.

How to turn in assignment. The assignment should be saved in any of the file formats: .doc or .docx or .pdf but **NOT** in .txt or .wps. **IMPORTANT. If you are using a word-processing software other than Microsoft word, please convert your**

submission to .pdf so I can open it and grade it. Label the file with your family name, class CRN and homework assignment number (e.g. HW 1A) and upload into Laulima "Assignments" as attachment.

Each homework assignment will be scored based on its completeness and not necessarily according to accuracy of the answers. I want you to make a good effort at answering or at least make an attempt to answer all questions and problems in the assignment.

- 3. Discussion Posts must be posted in Discussion (Laulima).** Student interactions are required. You must comment on two discussion posts, and respond to your classmates making comments about your post. Please be professional and respectful to everyone at all times with your comments.

The rubrics for grading will be as follows:

- Posting is focused, organized, and clearly conveys ideas to reader (3 points)
- Posting shows integration of concepts from the notes, text or multimedia (3 points)
- Well-developed, use own words and stimulates discussion (2 points)
- Interacted timely at least twice in a thoughtful and respectful way (2 points)

- 5. The research paper** should be at least three pages (double space) long with a minimum of 750 words that makes a connection between a chemistry concept and an application/issue in everyday life. Your paper should be based on textbook readings and online resources.

Research paper topics need to be pre-approved by the instructor on or before October 31, 2013 (by email).

The research paper will be graded based on the following rubrics:

- Title and purpose (1 point)
- Explains at least one chemistry concept in detail (3 points)
- Discusses at least one application or current issue in detail (3 points)
- Connects the chemistry concept to application (3 points)
- Information is technically sound and coherent (3 point)
- Well-organized and body has correct length (at least 750 words) (2 points)
- No spelling errors (please use spell check in MS Word), correct grammar and use of English (2 points) (If concurrently taking an English class, you may request your instructor to proofread your paper but give him/her enough time before submission deadline)
- Citations are included (2 points)
- Reference list of at least five reliable sources is included (1 point)

- 6. Discussion Extra Credit.** Questions about the topic content should be posted on the "Discussion." If you give a correct response to your classmates' question in the Discussion you will be awarded 1 extra credit point. Interactions promote deeper learning hence I encourage you all to participate in this forum. If you post your questions, others will be able to benefit from the answers. Please remember when online

to follow netiquette rules. Avoid posting inflammatory comments. See <http://www.albion.com/netiquette/corerules.html>

7. **Other Extra Credit.** *You can earn* extra credit up to a **maximum of 20 points**.
- Opportunities to earn extra credits will be provided by the instructor. Examples of opportunities are solving challenge questions in the homework assignments or bonus questions in the exams or volunteering your services (at least one hour) during science activities at either LCC or WCC.
 - Attendance in chemistry forum is two points each. The dates of the chemistry forum will be posted at http://www.wcc.hawaii.edu/chemistry_forum.
8. **Communication with instructor.** Any questions about class procedures should be posted in the Chat Room. For other matters, 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.
9. When in doubt, please ASK. There is no such thing as a dumb question.

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 encourage 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.

COURSE CONTENT AND SCHEDULE

Important Dates: **Last day for withdrawal, CR/NC** Nov 4 (M)

Last day of instruction, Dec 12 (R)

Please print the course schedule and use the last column to record scores & extra credits.

Chapter	Topic	Readings/Tasks	Schedule*	Notes
1	Getting Started	Chapter 1 of textbook	Aug 26 to Sept 3	
	Matter and Measurement	View slides and video in Course Modules Do the practice exercises and the learning check questions after each video	<i>HW #1A due Sept 3</i> <i>HW # 2A due Sept 5</i>	

2	Atoms and the Periodic Table	Chapter 2 of textbook View slides and video in Course Modules Do the practice exercises and learning checks	Sept 5 to Sept 12 <i>HW #2A due Sept 12</i> <i>HW #2B due Sept 17</i>	
3	Ionic Compounds	Chapter 3 of textbook View slides and videos in Course Modules Do the practice exercises and learning check questions	Sept 17 to Sept 24 <i>HW #3A due 9/26</i>	
	Coverage for the 1 st exam will be chapters 1, 2, and 3. Review answer keys provided for each homework	EXAM 1	Sept 25 and 26 Take proctored exam at a testing center. You will have 1½ hours to finish the exam.	
4	Covalent Compounds	Chap 4 of textbook View slides and videos in Course Modules Do the practice exercises	Oct 1 to 8 <i>HW #3B due Oct 1</i> <i>HW #4A due Oct 8</i>	
5	Chemical Reactions	Chapter 5 of textbook View slides and videos in Course Modules	Oct 10 to 17 <i>HW #4B due Oct 10</i> <i>HW # 5A due Oct 17</i> Discussion #1 on Oct 10, 11 & 12	

6	Energy Changes, Reaction Rates, and Chemical Equilibrium	<p>Chap 6 of textbook</p> <p>View slides and videos in Course Modules</p> <p>Do the practice exercises and learning check questions</p>	<p>Oct 22 to 29</p> <p><i>HW #5B due Oct 23</i></p> <p><i>HW #6A due Oct 29</i></p> <p><i>HW #6B due Oct 31</i></p> <p>Oct 31, 2013 – Deadline to submit proposed outline for research paper. Of course you can always email me your proposed outline for approval before Oct 31.</p>	
	Coverage for the 2 nd exam will be chapters 4, 5, and 6.	EXAM 2	<p>Oct 30 and 31</p> <p><i>Take proctored exam at a testing center</i></p> <p><i>You will have 1½ hours to finish the exam</i></p>	
7	Gases, Liquids, and Solids	<p>Chap 7 of textbook</p> <p>View slides and videos in Course Modules</p>	<p>Nov 5 to 12</p> <p><i>HW #7A due Nov 12</i></p> <p><i>HW #7B due Nov 14</i></p> <p>Nov 10, 11 & 12</p>	
8	Solutions	<p>Chap 8 of textbook</p> <p>View slides and videos in Course Modules</p>	<p>Nov 14 to 21</p> <p><i>HW #7B due Nov 14</i></p>	
9	Acids and Bases	<p>Chap 9 of textbook</p> <p>Multimedia in Course Modules</p> <p>Research Paper</p>	<p>Nov 26, Dec 3 to 10</p> <p><i>HW # 8A due Nov 26</i></p> <p><i>HW # 8B due Dec 3</i></p> <p><i>HW #9 due Dec 10</i></p> <p>Final form of Research Paper due on or before 12 midnight of Dec 13, 2013</p>	

	<p>Seventy percent (70%) of the final exam will cover chapters 7, 8, 9 and the remaining 30% will come from specific topics discussed in chapters 1 to 6. Instructor will post what topics to concentrate review on.</p>	<p>EXAM 3 (Final Exam)</p>	<p>Nov 17-Nov 18</p> <p><i>Take final exam at a proctored testing center. You will have a maximum of 2 hours for the exam.</i></p>	
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* Assignment/exam calendars may change due to institutional, weather or class problem.

