



UNIVERSITY of HAWAII®  
**WINDWARD**  
COMMUNITY COLLEGE

## **BIOC 141: FUNDAMENTALS OF BIOCHEMISTRY**

3 Credits (CRN 63039)

Online

**INSTRUCTOR:** Dr. Christopher Guay

**OFFICE HOURS:** via email anytime or online conference by appointment

**EMAIL:** cguay@hawaii.edu

**EFFECTIVE DATE:** Fall 2022

### **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**

Introduces biological chemistry stressing integration of the fundamental concepts of general chemistry, inorganic chemistry, and organic chemistry with broad application of these principles to the study of living systems. (Formerly BIOC 241)

*Prerequisite: MATH 82 with grade C or better, or placement at least MATH 100, or consent.*

*Recommended Prep: High school science.*

*Articulation Code: DP*

### **ACTIVITIES REQUIRED OUTSIDE OF REGULAR CLASS TIMES**

You should plan on spending *at least 12 hours per week* to study for this class.

- **1 hour per day watching the lecture videos posted on our course website.** This will consist of watching the assigned lecture videos and going through my lecture notes/slides, which are also posted on the course website.
- **3-4 hours for textbook reading assignments.** This will consist of reading the assigned sections in the text. This can be done using the electronic copy of the course text available via the Connect portal or a hard copy of the textbook (purchasing a hard copy of the text is optional – it is fine to just use the electronic copy of the text if you are OK with that). Reading the material in the textbook is very important to gaining understanding of the biochemistry concepts that we will cover in this class – just watching the lecture videos is not enough! You will not succeed in this course if you do not do the assigned text readings.
- **4-5 hours working on homework problems and additional practice problems.** It is very important to practice solving problems in order to consolidate your understanding of the course material. You should practice writing out and solving calculation problems by

hand even though all of the homework assignments will be submitted online via Connect. For the exams in this course, you will be required to solve problems by hand and show all of your work, so you should make sure to practice this when doing the homework problems. You can work on the problems using your notes and the text at first until things start to click. Then you should try doing some problems without any notes to make sure that you really understand things (this will also be good practice for what you will need to do on the exams).

- **1-2 hours working on other class assignments.** These include online quizzes, online Discussion Board readings and posts, and work on the research project that will be due at the end of the course

## STUDENT LEARNING OUTCOMES

1. Utilize precise chemical language to effectively communicate chemical and biochemical concepts and results.
2. Analyze and apply appropriate procedures for solving chemical and biochemical-related calculations using dimensional analysis.
3. Analyze and apply appropriate procedures solving chemical and biochemical-related calculations involving solids, liquids, gases, and solutions.
4. Relate the location of an elements in the periodic table to it's electron configuration, the number of subatomic particles, and the subsequent chemical reactivity based on the periodic trends.
5. Describe ionic and covalent bonding theories and apply them to the construction of proper Lewis structures and prediction of molecular characteristics.
6. Relate chemical and biochemical concepts, theories and laws to everyday phenomena.

## COURSE TASKS

- **Online activity and class participation:** You will be required to post your thoughts and comments on assigned topics and respond to your classmates' posts on the Discussion Forum on our Lualima course website. Posting topics and deadlines will be announced throughout the course.
- **Homework assignments:** Online homework assignments will be given through our course website via the Connect portal. Refer to the schedule on Connect for the due dates for each assignment. Note that assignments are due on or before the specified date even if that date is a holiday.
- **Quizzes:** Online quizzes will be given roughly twice per week. The quizzes will be available through our course site on Lualima. The quizzes will have a time limit (roughly 20 minutes, but may be longer or shorter depending on the material covered on the quiz). You will need to complete each quiz by the specified deadline.
- **Research Project:** You will be asked to create a power point presentation (~10 slides) summarizing and discussing an article from a scientific journal related to biochemistry. Instructions for preparing the research project will be posted on our course website on Lualima.

- **Midterm Exams and Final Exam:** There will be three midterm exams, each of which will cover approximately one-third of the course. Each midterm will last for 75 minutes. The final exam will cover all topics presented in the course (*i.e.*, the final exam is cumulative). You will be given 2 hours to complete the exam. Exams must be taken in person at one of the UH campus testing centers.

## ASSESSMENT TASKS AND GRADING

Grades will be based on the following categories:

- i. Homework and online activity
- ii. Quizzes
- iii. Research project
- iv. Midterm Exam 1
- v. Midterm Exam 2
- vi. Midterm Exam 3
- vii. Final Exam

Your percentage score in each category will be determined, and an average percentage score for the seven categories will be calculated and used to assign your grade for the course as follows:

- A: 100 - 90.0 %
- B: 89.9 - 80.0 %
- C: 79.9 – 70.0 %
- D: 69.9 – 60.0 %
- F: below 60 %

Grades of I, W, CR, NC are described in the current college catalog. Changing from letter grading (A-F) to CR/NC option must be done by the deadline for the current term – this must be discussed previously with the instructor.

## LEARNING RESOURCES

- **Text:** J.G. Smith, *General, Organic, & Biological Chemistry*, 5th ed. You will be able to access an electronic copy of our text via the Connect portal, which is linked to our Laulima page. For instructions, click on the “Getting Started with Connect” link under the General Course Information tab on our Laulima course website.
- Note that you are NOT required to purchase a hard copy of the text – it is fine to just do all of the readings in the e-text accessible through the Connect portal. If you want to purchase a hard copy of the text as a supplemental study resource (this is purely optional), you can look for a used copy -- older editions of the textbook can often be found at a significantly lower price, and these would be fine to use for studying.
- **Course website:** Lecture videos, copies of the lecture slides, exam study guides, online quizzes, discussion board postings, and announcements will be posted on our course website. There will also be links to online tutorials and interactive exercises that you can work with for extra practice.
- You will need to have a standard scientific calculator and Internet access.

## 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 Accommodation Services Office (ASO) to discuss reasonable accommodations that will help you succeed in this class. They can be reached by email at [uhmcds@hawaii.edu](mailto:uhmcds@hawaii.edu).

## ACADEMIC INTEGRITY (VERY IMPORTANT!!)

Make sure that you are familiar with the sections related to “Academic Dishonesty” in the College’s policies governing student conduct (available on the WCC website). The fundamental principle governing academic integrity and academic dishonesty is that **each student is responsible for presenting his/her own work at all times.**

It is fine to discuss homework assignments with other students and help each other out – I strongly encourage you to study with your classmates outside of class. But it is also important that you learn how to solve problems on your own, and **you must submit your own work.**

Of course it is not OK to collaborate on exams. The following rules will be enforced:

- You may not communicate with anyone else – verbally, by phone, text, email, etc. – while taking the exam.
- You may not look up anything on the internet while taking the exams. During the exam, you may only have one browser window open for the exam through the online proctoring service. All other applications except the browser being used to take the exam must be closed.
- You may use one page of hand-written notes (single sided) on a 8.5” x 11” sheet of paper. You may also use a copy of the standard periodic table that I have provided for you on our Laulima course website. No other materials may be used during the exams.
- You may use a standard scientific calculator during the exams. You may not use cell phones, PDA’s (iPhones, Blackberrys, etc.), mini-computers, or any device that can connect to the internet, communicate with other devices, or has data storage capacity..
- No listening to any audio devices (phones, iPods, etc.) during exams.

If you are observed cheating on any of the class assignments (homework, quizzes or exams), you will receive an F for the assignment and I will refer the matter to the Department Head and the Office of the Dean. Cheating is unfair to everyone involved: the teacher, the cheater, and especially the honest students in the class. I adhere to a **zero-tolerance** policy regarding cheating and academic dishonesty, so consider this your first and only warning – there will be no "second chances" in this area.

**Trust me – you do NOT want to test me on this!!!** I have come down hard on students in my classes for cheating before and will not hesitate to do so if necessary in the future.

FOR MORE INFORMATION.

### **TITLE IX**

Title IX prohibits discrimination on the basis of sex in education programs and activities that receive federal financial assistance. Specifically, Title IX prohibits sex discrimination; sexual harassment and gender-based harassment, including harassment based on actual or perceived sex, gender, sexual orientation, gender identity, or gender expression; sexual assault; sexual

exploitation; domestic violence; dating violence; and stalking. For more information regarding your rights under Title IX, please visit: [https://windward.hawaii.edu/Title\\_IX/](https://windward.hawaii.edu/Title_IX/).

Windward Community College is committed to the pursuit of equal education. If you or someone you know has experienced sex discrimination or gender-based violence, WCC has resources to support you. To speak with someone confidentially, contact the Mental Health & Wellness Office at 808-235- 7393 or [Kaahu Alo](mailto:Kaahu.Alo), Designated Confidential Advocate for Students, at 808-235-7354 or [kaahualo@hawaii.edu](mailto:kaahualo@hawaii.edu). To make a formal report, contact the Title IX Coordinator, Karla K. Silva-Park, at 808-235-7468 or [karlas@hawaii.edu](mailto:karlas@hawaii.edu).