Syllabus **Chaminade University of Honolulu, Fall 2017**
CH 250 **BIOLOGICAL CHEMISTRY FOR NURSES**

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Lecture: 01 Tues/Thurs 11:30-12:50 PM, Henry 202
Office Hours: Tuesday 2:00-4:00 PM
Friday 9:00-11:00 AM
or by appointment

Course Requirements

- E-textbook (eBook): 'General, Organic, & Biological Chemistry' by Smith, 3rd Edition ISBN: 9781259815072, General, Organic, & Biological Chemistry (GOB) with McGraw-Hill Connect Access Card Stand Alone (1 Semester)
- Scientific calculator
- Computer with web access

Course Description

A nursing-centered approach will be used in studying the concepts in General, Organic and Biological Chemistry that are foundational to an understanding of normal cellular processes. General chemistry topics that will be covered include measurements, atomic structure, bonding, chemical reactions, properties of gases and liquids, solutions, equilibrium, acids and bases, pH, buffers, nuclear chemistry, and nomenclature. The organic chemistry portion of this course will cover the properties and select reactions of organic compounds need to understand the biological chemistry – the study of chemistry in living organisms. Bioorganic chemistry will investigate the structures and reactions of the four macromolecules that make up all living things: carbohydrates, lipids, proteins, and nucleic acids. In addition, this course will study the various processes that are essential to life, in which these macromolecules partake. (3 credits)

Course Prerequisites

- BI152/L, BI250/L, MA107 *(B or better recommended)*
- One year of high school general chemistry or its equivalent
- Restricted to students accepted in the CUH Nursing Major

Learning Objectives

- To appreciate the importance of the role of chemistry in the nursing profession
- To understand and apply the basic principles of general, organic and biological chemistry relevant to health and medicine
- To evaluate chemical concepts for effective decision-making and problem-solving

Course Competencies

- Understand and employ the scientific method in solving complex problems associated with natural science.
- Recognize the importance of maintaining health and the hazards of common chemicals found in a laboratory.
- Understand how technology and science impacts daily lives.
- Awareness of ethical values and how they relate to personal values.
- Develop the ability to make sound judgment based on quantitative/qualitative assessment using logical deductive reasoning.
- Integrate knowledge and concepts learned from the various scholarly disciplines within natural science.
- Possess college level quantitative literacy.
- Apply mathematical skills for solving day-to-day problems.
- Apply algebraic and statistical analysis for solving real-world problems.
- Ability to understand/create graphical and/or tabulated data to represent results.

Specific Course Objectives

- Determine the number of subatomic particles in a given isotope of any element.
- Write chemical formulas and give the chemical name of ionic and simple molecular compounds.
- Understand and apply the mole concept in a variety of chemical calculations.
- Use conversion factors to change units and application of conversions in a clinical setting.
- Recognize different types of chemical reactions and transformations.
- Discuss the properties of solids, pure liquids, solutions and gases.
- Understand the basic principles of energy transfer involving chemical systems.
- Describe the molecular geometry of simple molecules.
- Understanding Le Chatelier's Principle and the effect of changes on concentration on the system.
- Calculate dilutions.
- Perform pH calculations.
- Predict acid/base equations and understand buffer systems in the body.
- Identify functional groups and name basic organic compounds.
- Identify and classify organic molecules based on their functional groups
- Provide simple IUPAC name for a given organic compound
- Illustrate the hydrolysis/dehydrolysis mechanism common to many biological reactions
- Identify the product(s) of a reaction when given the reactants and conditions
- Evaluate the roles of carbohydrates, lipids, proteins, and nucleic acids in biochemical processes
- Use the properties and reactions of organic compounds to explain the reactions that occur in biochemical pathways
- Relate organic and bioorganic chemistry in the field of health and medicine
- Understand the benefits of organic chemistry as well as the negative effects on the environment and the relationship of these chemicals on biological processes.

Homework: Homework problems from each chapter will be assigned in class and online via McGraw Connect. The homework will include preparative work before the lecture as well as problems post lecture. The homework will be added to your overall grade. Using McGraw Connect you will have access to all assigned Homework, my PowerPoint slides used in lecture, worksheets done in-class, electronic access to your Smith Chemistry textbook, and a lot of other resources such as additional problems and example exam questions to help you succeed in CH 250. See below for CONNECT information:

CONNECT BY McGraw Hill

Go to:

- CANVAS.
- Once logged in, click on 'Fall 2017 CH250-'Your Section'
- Select 'Module' for the menu on the left
- Click on 'MH CAMPUS'
- Click on 'CONNECT'
- You will now need to register in CONNECT and need your eBook license number ('General, Organic, & Biological Chemistry' by Smith, 3e. ISBN: 9781259815072)

Worksheets: There will be ten worksheets handed out this semester. We will work on these worksheets together in class. However, you are encouraged to work in groups or with a tutor to review them well and understand the material covered. Quizzes will be made directly from the questions on these worksheets.

Quizzes: Ten quizzes will be given on the content of the ten worksheets done in class. Quizzes will be performed using Kahoot and will require access to a mobile device (smartphone, tablet, or laptop). If you do not have access to a device you can use for one or more quizzes, you must communicate directly with your instructor prior to the quiz or will be assigned a grade of zero. Quizzes will be given at the beginning of class periods; students who are late and do not take the quiz will be assigned a grade of zero unless a written and valid explanation is submitted to the instructor within 24 hours.

Midterm Exams: There will be three midterm exams given this semester. Each exam will be 100 points and you will be responsible for all lecture material covered up to the exam dates. These exams are tentatively scheduled to be taken on **September 29** (Chapters 1-4)**, November 3** (Chapters 5, 7-9)**,** and **December 8** (Chapters 19-22, Bonus on Chapter 25). More information about these exams will be given in class. **Final exam TBA.**

Attendance: If you miss a lecture, please send me an email or leave a phone message explaining your absence. If you miss a quiz or midterm exam, a written and valid explanation (i.e. medical problem with a doctor's excuse for yourself or immediate family members) should be turned in or you will receive a score of zero.

Student Conduct: Please refer to the Student Handbook for the CUH policies on Classroom Behavior and Academic Dishonesty.

Music Devices and Cell phones: Unless specifically allowed by the instructor, the use of music devices and cell phones is prohibited during all Natural Science and Mathematics classes at Chaminade. It can be discourteous and may lead to suspicion of academic misconduct. Students who cannot comply with this rule will be asked to leave class. Please refer any questions to the Dean of Natural Sciences and Mathematics.

ADA Accommodations: Students with special needs who meet criteria for the Americans with Disabilities Act (ADA) provisions must provide written documentation of the need for accommodations from the CUH Counseling Center (Dr. June Yasuhara; phone 735-4845) by the end of week three of the class, in order for the instructor to plan accordingly. Failure to provide written documentation will prevent your instructor from making the necessary accommodations. Please refer any questions to the Dean of Students and review the procedures at http://www.chaminade.edu/student_life/sss/counseling_services.php.

Opportunities for Help: If you need assistance with the material for this course, come to my office for help! I have set office hours, but I am often available at other times. Feel free to drop by, phone, or send me an email (using your Chaminade account) to set up a specific appointment. There are also chemistry tutors available at the AAP.

Course Grades: The course grades will be based on the following point total and scale. Any changes will be announced in class.

Online Homework	400
Quizzes	200
In-Class Worksheets	100
Exams	300
	1000 total points

GRADE	Total Pts	PERCENTAGE
A	900 - 1000	90-100 %
B	800 - 899	80-89 %
C	650 - 799	65-79 %
D	450 - 649	45-64 %
Fail	below 450	below 45 %

Additional Departmental and University Polices

1. Electronic Devices

Use of music devices and cell phones is prohibited during all Natural Science and Mathematics classes at Chaminade, unless specifically permitted by your instructor. Use of cellphones and music devices in laboratories is a safety issue. In addition, use of cellphones and music devices in any class is discourteous and may lead to suspicion of academic misconduct. Students who cannot comply with this rule will be asked to leave class and may be subject to laboratory safety violation fines. You will be asked to leave class and marked absent if you do not comply. This will negatively affect your grade. Please refer any questions to the Dean of Natural Sciences and Mathematics.

2. ADAA Statement

2.1 Pursuant to several federal and state laws, including the Americans with Disabilities Act of 1990, as amended by the ADA Amendments Act of 2008, and Section 504 of the Rehabilitation Act of 1973, all qualified students with disabilities are protected from discrimination on basis of disability and are eligible for reasonable accommodations or modifications in the academic environment to enable them to enjoy equal access to academic programs, services, or activities. If a student would like to determine if they meet the criteria for accommodations, they should contact the Counseling Center at 808-735-4845 for further information.

3. Attendance & Tardiness

3.1 Students are expected to attend regularly all courses for which they are registered. Students should notify their instructors when illness or other extenuating circumstances prevents them from attending class and make arrangements to complete missed assignments. Notification may be done by emailing the instructor's Chaminade email address, calling the instructor's campus extension or by leaving a message with the instructor's division office (Natural Science and Math 1 (808) 440-4204). It is the instructor's prerogative to modify deadlines of course requirements

accordingly. Any student who stops attending a course without officially **withdrawing** may receive a failing grade.

3.2 Unexcused absences equivalent to more than a week of classes may lead to a grade reduction for the course. Any unexcused absence of two consecutive weeks or more may result in being **withdrawn** from the course by the instructor, although the instructor is not required to **withdraw** students in that scenario. Repeated absences put students at risk of failing grades.

3.3. Tardiness [At the Discretion of Instructor]

4. Policy on Make-Up Tests [At the Discretion of Instructor]

5. Policy on Communication
5.1 The University provides a Chaminade email address for all students. Official Chaminade communications will be sent to the students' Chaminade email address and instructors will use only this email to communicate with students. It is the responsibility of the student to check their email frequently. Report email-related problems to the Helpdesk at 808-735-4855 or helpdesk@chaminade.edu.

6. Laboratory Safety Information
The following guidelines are established to provide instructions in maintaining safety for students, staff, and faculty while using any of the science laboratories at Chaminade University. The Division of Natural Sciences and Mathematics (NSM), along with the University Environmental Safety Office are responsible for enforcing the regulations set forth in the current Student Handbook. Queries should be addressed to: Dean of Natural Sciences and Mathematics (808) 440-4204; Environmental Safety Officer (808) 739-4811

7. Title IX Declaration
Chaminade University of Honolulu recognizes the inherent dignity of all individuals and promotes respect for all people. Sexual misconduct, physical and/or psychological abuse will NOT be tolerated at CUH. If you have been the victim of sexual misconduct, physical and/or psychological abuse, we encourage you to report this matter promptly. As a faculty member, I am interested in promoting a safe and healthy environment, and should I learn of any sexual misconduct, physical and/or psychological abuse, I must report the matter to the Title IX Coordinator. Should you want to speak to a confidential source you may contact the following:
• Chaminade Counseling Center| 808 735-4845.
• Any priest serving as a sacramental confessor or any ordained religious leader serving in the sacred confidence role.

8. Academic Honesty
Students are expected to have read and to abide by the "Student Rules of Conduct" which are available in your copy of Chaminade University's Student Handbook. Cheating in the form of plagiarism, collusion, deception and will not be tolerated and will negatively affect your grade.

9. The instructor may modify elements of this syllabus according to the operational needs of the class.

Fall 2017 CH 250 Course TENTATIVE Schedule:

Date	TOPICS	Online Homework Due Date:
8/29	WASC Assessment. Course Introduction	
8/29	Online Ch 1 Homework: Matter and Measurement	9/10
8/31	Lecture on Units and Conversions	
9/5	Lecture on Ch 1: Matter and Measurement	
9/7	Worksheet #1 (Ch 1) on Matter and Measurement	
9/12	Quiz 1 (WS #1). Lecture on Ch 2: Atoms and the Periodic Table	
9/12	Online Ch 2 Homework: Atoms and the Periodic Table	9/17
9/14	Worksheet #2 (Ch 2) on Atoms and the Periodic Table	
9/19	Quiz 2 (WS #2). Lecture on Ch 3 & 4: Ionic (Ch 3) & Organic (Ch 4) Compounds	
9/19	Online Ch 3 & 4 Homework: Ionic (Ch 3) and Organic (Ch 4) Compounds	9/24
9/21	Worksheet #3 (Ch 3 & 4) on Ionic and Organic Compounds	
9/26	Quiz 3 (WS #3). Review of Chapters 1 - 4	
9/28	Exam I (Chapters 1-4)	
9/28	Online Ch 5 Homework: Chemical Reactions	10/9
10/3	Lecture on Ch 5: Chemical Reactions	
10/5	Worksheet #4 (Ch 5) on Chemical Reactions	
10/10	Quiz 4 (WS #4). Lecture on Ch 7: Gases, Liquids & Solids	
10/10	Online Ch 7 Homework: Gases, Liquids & Solids	10/16
10/12	Worksheet #5 (Ch 7) on Gases, Liquids & Solids	
10/17	Quiz 5 (WS #5). Lecture on Ch 8: Solutions	
10/17	Online Ch 8 Homework: Solutions	10/23
10/19	Worksheet #6 (Ch 8) on Solutions	
10/24	Quiz 6 (WS #6). Lecture on Ch 9: Acids and Bases	
10/24	Online Ch 9 Homework: Acids and Bases	10/30
10/26	Worksheet #7 (Ch 9) on Acids and Bases	
10/31	Quiz 7 (WS #7). Review of Ch 5, 7, 8 & 9	
11/2	Exam II (Chapters 5, 7, 8, & 9)	
11/7	Lecture on Ch 10: Nuclear Chemistry	
11/7	Online Ch 10 Homework: Nuclear Chemistry	11/13

11/9	*Veterans Day – No Classes*	
11/14	Lecture on Ch 11: Introduction to Organic Compounds	
11/14	Online Ch 11 Homework: Introduction to Organic Compounds	11/20
11/16	Worksheet #8 (Ch 10 & 11) on Nuclear and Organic Chemistry	
11/21	Quiz 8 (WS #8). Lecture & Worksheet #9 on Ch 19 (Lipids) and Ch 20 (Carbohydrates)	
11/21	Online Ch 19 & 20 Homework: Lipids (Ch 19) & Carbs (Ch 20)	11/27
11/23	*Thanksgiving – No Classes 11/23 & 24*	
11/28	Quiz 9 (WS #9). Lecture on Ch 21 (Amino Acids, Proteins & Enzymes) and on Ch 22 (Nucleic Acids)	
11/28	Online Ch 21 & 22 Homework: Amino Acids/Proteins/Enzymes (Ch 21) & Nucleic Acids (Ch 22)	12/4
11/30	Worksheet #10 on Ch 21 (Amino Acids, Proteins & Enzymes) and on Ch 22 (Nucleic Acids)	
12/5	Quiz 10 (WS #10). WASC Assessment. Lecture on Ch 25 (Body Fluids)	
12/7	Review of Chapters 19-22	
12/13	Exam III: 8:30-10:30 AM **(Finals Week)**	