

CHEM 30A Course Syllabus

4 units

3 hours Lecture

CHEM 30A Inorganic Chemistry for Health Occupations

3 hours Laboratory

Covers chemical concepts such as atomic structure, acids and bases, salts, buffers, electrolyte systems and nuclear chemistry. Appropriate for students interested in physiology and paramedical fields.

Instructor Jason Camara, Ph.D.

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Schedule Lecture: M-Th 8:00 – 10:10 am – **Room 609**

Laboratory: M-Th 10:20 – 12:30 am – **Room 606**

Final Examination: Thursday July 25th, Room 609 8:00 am – 11:00 am

Materials Smith, J. G. *Principles of General, Organic, and Biological Chemistry, 4th Edition*; McGraw-Hill: New York, **2019** (ISBN: 978-1-259-88398-9). About your textbook: The textbook listed above is the full general, organic, and biological chemistry text published by McGraw-Hill. This book contains content for both Chem 30A and Chem 30B. This is the same text that the bookstore is renting to students. The textbook listed for the course is a custom published textbook which has been divided into two volumes, the first for Chem 30A and the second for Chem 30B. The only thing different about these books is the cover and price, all content is exactly the same. Due to a custom publishing deal with McGraw-Hill we were able to obtain a better price for the students for the soft cover one semester books sold through the bookstore.

Cabrillo College. *CHEM 30A Laboratory Manual*

Requisites Prerequisites: MATH 152 or MATH 152A and MATH 152B or MATH 142 or MATH 142A and MATH 142B

- Student Learner Outcomes**
1. Investigate the properties of matter through measurement and mathematical relationships and describe those properties using the language of chemistry.
 2. Compare and contrast the macroscopic behavior of solids, liquids and gases in terms of kinetic molecular theory.
 3. Synthesize conclusions from observations.
 4. Predict the products, and explain observed results, of common chemical reactions including nuclear, acid-base, combustion, and double displacement.
 5. Evaluate common chemical names and measurements found in allied health and consumer applications in a meaningful and accurate way.

Assessment Your grade will be based on your knowledge and command of the subject as demonstrated through problem solving exercises - lab work, quizzes, exams, cumulative final. Lab will account for 20% of your total grade. The remaining 80% of your grade is composed of quizzes, exams and the final exam.

Lab work (20.0 %) - There will be 15 laboratory experiments and 3 worksheet exercises over the six week course. Each lab experiment will count for 20 points (18 labs \times 20 pts = 360 pts). The points for lab will be summed and normalized to 20 points or 20% of your total grade. (your total score / 360 points \times 20 points = laboratory component).

Homework (18.2%) - For each of the 10 chapters there are homework problems assigned plus ~5 additional assignments to be handed out. Each problem set and worksheet will be worth 10 points (15 assignments \times 10 pts = 150 points).

Quizzes (19.4%) - Quizzes will be in class independent timed exercises. The date and content of each quiz is detailed in the schedule. Quizzes will last from 10 to 15 minutes, consist of up to four problems, and count for 20 points. There will be a total of eight quizzes (8 quizzes \times 20 pts = 160 pts). **There will be no make-up quizzes.**

Exams (24.2%) - There will be a total of two 100 point exams this semester. The date and content of each exam is detailed in the schedule (2 exams \times 100 pts = 200 pts). **Should you miss an exam due to an emergency or illness you must contact me at your earliest convenience, preferably prior to the exam.**

Cumulative Final (18.2%) - The final will be cumulative over the semesters material and consistent in format with the midterm exams. This exam will count for 150 points.

Assessment

The points for homework, quizzes, exams and the final will be summed and normalized to 80 points or 80% of your total grade (your total score / 660 points × 80 points = lecture component).

Disabilities

I encourage students with disabilities to explain their needs and appropriate accommodations, as evidenced by a counselor or specialist's recommendations, to me during office hours. As required by the Americans with Disabilities Act (ADA), accommodations are provided to insure equal opportunity for students with verified disabilities. If you need assistance with establishing accommodations, please contact the Accessibility Support Center (ASC), Room 1073 (479-6379).

Classroom

Listed here are some of the common courtesies and conduct expect in my classroom as well as the ramifications for not following them.

Conduct**and****Instructor****Policies**

Cell phones - Please turn off your cell phone ringer prior to entering the classroom. If you need to be connected to the outside world during lecture (i.e. - ailing relative, child care issues, volunteer fireman....), sit along the isles and quietly leave the room before answering your phone.

Attendance - I don't take attendance other than on the first few days of class. My attendance policy is show up if you want to learn. Once in a while people are late for various reasons. If you come late to class, be respectful of your fellow students. Quizzes and exams start on time at the beginning of the lecture. If you come late to a quiz or an exam you will have only as much time as remains for the class. Missed quizzes may not be made up. If you must miss an exam you must contact me at your earliest convenience, preferably prior to the start of the exam. Exam make-ups are at the discretion of the instructor. Simply forgetting, missing the bus, oversleeping, parking issues, etc. are not valid reasons for requesting a make-up exam.

Grade disputes - I encourage all of my students to regularly attend office hours. The proper place to ask about grading is during office hours. If you feel that your answer is correct and that I have made a mistake in my grading, please take it up with me in office hours. I am more than happy to go over the grading of any work, however before class, during class and immediately after class are too chaotic for me to give you the attention you deserve for a grading issue.

Cheating - Cheating has never been a problem in my class, however it is your responsibility to not give me cause to think that you are cheating, in other words keep your eyes on your own work. Cheating on an exam or quiz will result in a zero for that assignment and in addition a disruptive student report filed with the Dean of Student Services. A second offense will result in being dropped from the course and receiving a failing grade.

Disruptions - A disruption is classified as an act that disrupts the normal function of the classroom, be it a distraction to me while lecturing or to your fellow students, that a reasonable person would not engage in. Examples of such disruptions are cell phones ringing after first warning, answering cell phones in class, engaging in disruptive conversations while lecture is proceeding, attempting to sit in the center of the room when coming to class tardy during lecture, quiz or exam (incredibly disruptive to your fellow classmates attempting to concentrate), etc.... The consequences for disruptive behavior are a three strikes policy. First disruptive behavior warrants a verbal warning, second time garners a Disruptive Student Report to the Dean of Student Services, third time you will be excused from the class and dropped from the role.

Chemical Stockroom - The chemical stockroom is off limits to students. Should you require materials such as chemicals or glassware you must ask one of the Laboratory Technicians (Larysa Owens) or one of the Student Employees for assistance. Students are not allowed to enter the stockroom.

Unauthorized Experiments - Unauthorized experiments are expressly forbidden. Unauthorized experiments can lead to extremely dangerous situations and endanger yourself and your fellow classmates. Anyone caught performing unauthorized experiments will be removed from the class for that day, receive a zero for the entire assignment (write-up, technique, lab notebook), and will have a disruptive student report filed with the Dean of Student Services. A second offense will result in being dropped from the course and receiving a failing grade.

Laboratory Materials and Equipment - The laboratory materials (chemicals and resources) and equipment are the property of Cabrillo College and may not be removed from the classroom. This includes all chemicals you isolate or synthesis. Removal of any chemicals, resources or equipment from the classroom will result in a Disruptive Student Report to the Dean of Student Services and a lowering of your final grade for the course by one grade level. A second offense will result in being dropped from the course and receiving a failing grade. Mistreatment of the laboratory equipment is not to be tolerated. Mistreatment of the laboratory equipment will follow a three strikes policy. First offense warrants a verbal warning, second time garners a Disruptive Student Report to the Dean of Student Services, third time you will be excused from the class and receive a failing grade.

Waste Disposal - Waste disposal is extremely important. Everything has a place in terms of waste disposal. Proper waste disposal is covered at the beginning of the semester and specifics are given for individual experiments. If you don't know where something is to be disposed of it is your responsibility to ask prior to making a mistake. Failure to follow proper waste disposal procedures will result in the three strikes policy. First offense warrants a verbal warning, second time garners a Disruptive Student Report to the Dean of Student Services, third time you will be excused from the class and receive a failing grade.

Classroom Conduct and Instructor Policies Accidents/Injuries - From time to time accidents and occasional injuries happen in the lab. While accidents and injuries do not affect your grade in anyway, unless they result from disruptive behavior or unauthorized experiments, how you deal with the accidents and injuries is important. If the accident results in a small spill that is easily contained and cleaned up, do so immediately. If the accident results in a spill that you do not know how to deal with, calmly call for my attention and I will assist you. If I am not in the lab call for the attention of one of the stockroom technicians. If the accident results in you being exposed to the chemicals such as on your hands, arms, legs, face, clothing ... you should follow the safety procedures outlined at the beginning of the experiment immediately. Ask a classmate to get my attention or call out for help. Failure to notify me of any chemical exposure or injury occurring in the classroom can put your health in serious risk. You must notify me of all accidents and injuries. **In the event of chemical exposure or injury, you must clear it with me prior to leaving the classroom.**

Tutoring There are a number of tutoring resources available for this course on campus. The campus tutorial center is located on the second floor of the library. They have a number of very talented tutors which are available for free during the regular year and summer sessions. The STEM Center, located on the back side of the 800 building (not the ocean side), often has a number of people who have taken higher levels of chemistry and can be of assistance in demonstrating how to solve problems. The STEM Center is a nice place to go if you are looking for a place to work. STEM Center hours for the summer are Monday through Thursday 11 am to 5 pm, and Friday 12 pm to 4 pm. There is also the Math Learning Center located on the second floor of the library. The Math Learning Center tutors can also help you with the basic algebraic manipulations needed for solving many of our chemistry problems. The Math Learning Center is open Monday through Thursday 11 am to 6 pm and Sunday 11 am to 6 pm, they are closed Friday.

WEEK	DATE	LECTURE TOPIC - LAB TOPIC	QUIZ/EXAM
Week 1	M, June 17 T, June 18 W, June 19 Th, June 20	chpt 1 - Measurement; Lab Check in, Act 1 Math and Calc. WS chpt 1 - Measurement; Act 2 Dimensional Analysis WS chpt 2 - Atoms and Periodic Table; Handout - Measurement Lab chpt 2 - Atoms and Periodic Table; Handout - Hot Hands	Quiz 1
Week 2	M, June 24 T, June 25 W, June 26 Th, June 27	chpt 3 - Ionic Compounds; Act 3 Atoms and Elements chpt 3 - Ionic Compounds; Act 4 Writing Formulas WS chpt 4 - Covalent Compounds; Act 5 Compounds and Formulas chpt 4 - Covalent Compounds; Open Review	Quiz 2 Quiz 3
Week 3	M, July 1 T, July 2 W, July 3 Th, July 4	Exam 1; Act 7 Chemical Changes chpt 5 - Chemical Reactions; Act 8 Chem. Names and Formulas chpt 5 - Chemical Reactions; Open Review ***** 4th July Holiday *****	Exam 1 - 1, 2, 3 Quiz 4
Week 4	M, July 8 T, July 9 W, July 10 Th, July 11	chpt 6 - Energy/Rates/Equilibrium; Act 13 Measuring Mass chpt 6 - Energy/Rates/Equilibrium; Act 11 Energy Changes chpt 7 - Gas/Liquid/Solid; Act 16 Synthesis and Analysis Gas chpt 7 - Gas/Liquid/Solid; Open Review	Quiz 5
Week 5	M, July 15 T, July 16 W, July 17 Th, July 18	Exam 2; Act 15 Molar Mass of a Gas chpt 8 - Solutions; Handout - Precipitation Reactions chpt 8 - Solutions; Handout - Electrolytes chpt 9 - Acid/Base; Act 21 Proton Transfer	Exam 2 - 4, 5, 6 Quiz 6
Week 6	M, July 22 T, July 23 W, July 24 Th, July 25	chpt 9 - Acid/Base; Act 27 Mass Titration chpt 10 - Nuclear Chemistry; Act 23 Intro to Radioactivity chpt 10 - Nuclear Chemistry; Open Review FINAL EXAM 8:00AM - 11:00AM	Quiz 7 Quiz 8 Cumulative

Homework Summer session moves very fast. It is imperative that you keep up with the homework. **Assignments** Proficiency with these concepts only comes with sufficient practice, and the concepts build on each other. Listed below are all of the homework assignments for the course and the due dates.

A word about homework - Homework is not something you just throw together and turn in to get the points. Homework is critical practice for the quizzes and exams. I want the work you turn in to be neat and organized. I want to see the work used to solve the problems, not just the answers. Your work should be clean, with good space between steps. Work in pencil, not pen. Do not try to save paper by cramming everything in as tight as possible. Make the effort and turn in something that you are proud of. I promise you the added effort will result in improved study skills that will bring rewards throughout your entire educational career.

Chapter 1. 35, 37, 39, 41, 43, 45, 47, 49, 51, 53, 55, 57, 59, 62, 63, 67, 69, 71, 73, 75, 77, 79, 80, 82, 85, 88, 91. (Due - Wednesday, June 19)

Chapter 2. 20, 21, 23, 29, 31, 33, 37, 39, 41, 43, 45, 49, 55, 57, 58, 61, 63, 67, 69, 73, 75, 77, 81, 85, 86. In addition do Activity 26 Electron Configuration Worksheet (pg 154 Lab Manual). (Due - Monday, June 24)

Chapter 3. 17, 19, 23, 25, 27, 29, 30, 31, 36, 37, 44, 45, 47, 49, 53, 55, 59, 61, 63, 65, 67, 71, 76, 77, 78, 79, 87, 88. In addition do Activity 9 Nomenclature Worksheet (pg 65 Lab Manual). (Due - Wednesday, June 26)

Chapter 4. 15, 17, 19, 23, 25, 27, 29, 30, 33, 35, 37, 38, 42, 43, 45, 48, 54, 56, 57, 59, 61, 63, 65, 67, 69, 71, 73, 77, 79, 88, 89. In addition do Lewis Structures Internet Exercise (pg 71 Lab Manual). (Due - Monday, July 1)

Chapter 5. 25, 31, 32, 43, 45, 47, 50, 51, 52, 53, 55, 57, 61, 63, 64, 65, 66, 67, 69, 73, 75, 79, 85, 87, 89, 93, 95, 97. In addition, do Activities 12 (Balancing Chemical Equations) and 14 (Mole Worksheet) from the laboratory manual. On Activity 14 (Mole Worksheet), **do not do problems 4 and 7**. (Due - Wednesday, July 3)

Chapter 6. 12, 13, 15, 17, 21, 25, 27, 29, 31, 33, 37, 38, 39, 41, 43, 47, 53, 55, 57, 65, 69, 71, 77, 81, 83. (Due - Tuesday, July 9)

Chapter 7. 19, 21, 27, 33, 34, 37, 41, 45, 47, 49, 51, 53, 57, 59, 61, 65, 67, 71, 75, 79, 81, 83, 87, 91, 93, 99, 100. (Due - Thursday, July 11)

Chapter 8. 25, 29, 31, 37, 47, 49, 51, 53, 55, 57, 59, 61, 66, 75, 79, 81, 83, 97, 99, 103. In addition do Activity 17 Solutions Worksheet (pg 105 Lab Manual). (Due - Wednesday, July 17)

Chapter 9. 21, 23, 25, 27, 33, 35, 37, 39, 45, 47, 51, 57, 63, 65, 69, 71, 73, 74, 77, 81, 83, 87, 89, 91, 97, 99, 101, 102, 109. In addition do Activity 22 Acid/Base Worksheet (pg 134 Lab Manual). (Due - Tuesday, July 23)

Chapter 10. 21, 23, 25, 27, 33, 35, 37, 39, 41, 47, 49, 55, 57, 59, 60, 63, 65, 71, 75, 79. In addition do Activity 24 Radioactivity Worksheet (pg 147 Lab Manual). (Due - Thursday, July 25)