CHEMISTRY 1010-1 (Lecture)
GENERAL CHEMISTRY 1
AUTUMN 2019

Instructor: Dr. Michael E. Ketterer, Adjunct Professor **Office:** SGM Room 111

Phone and email: (303) 871-2254 (Department office); (928) 853-7188 (mobile). Calls, voicemails, or texts to my mobile phone are OK; however, email is preferred for most matters: michael.ketterer@du.edu ***For emails, please only use your DU address.***

Class Meets: Monday, Wednesday and Friday 0900-0950 AM in Boettcher Center Auditorium 101; problem-solving session meets Thursday 0900-950 AM in Olin Hall, Room 205

Office Hours and Contact: MWF 1000-1100 AM. I expect to be in the office prior to class, starting at about 815 AM; hence you are also welcome to come by before class starts. I will not normally be on campus on Tuesdays.

Text: Silberberg and Amateis, Chemistry: The Molecular Nature of Matter and Change, 8th Edition. A Connect Plus account is ***not*** required. Previous editions of the book (5th – 7th) should also be useable. An additional supplementary text that is open-source, and available freely online is at: https://openstax.org/details/books/chemistry-2e

Canvas: canvas.du.edu is the platform that the University employs for online aspects of all of its courses. I will use this platform to electronically distribute all relevant materials to the students. Examples include: course syllabus; PowerPoint files of lecture notes; practice exams; solutions to in-class exams and quizzes; online workbook of problems; audio and video supplements to accompany course topics. Files may be in the formats PDF, PPT, PPTX, DOC, DOCX, XLS, XLSX, MP3, or MP4. You are responsible for your own software and computer resources needed to access the course content. Grade information ***will not*** be posted in Canvas. You will receive returned paper copies of your graded exams and quizzes; you are responsible for securing these, and monitoring/calculating your own progress and grade status in the course.

Other Required Resources: You will need an inexpensive calculator that has the capability for performing square roots, logarithms, and exponents. It is your obligation to understand these operations; please bring your calculator to class, and of course, to in-class exams. ***No use of a mobile phone-based calculator will be permitted during in-class exams or quizzes.***

Course Description: CHEM 1010 provides a foundation of chemistry – the science of matter and change. The structure, properties, and transformations of matter are the key focal points of the course. These concepts are presented in a way that challenges students to consider how

chemistry affects the surrounding world and their everyday life. The course addresses the essential skills of quantitative analysis and critical thinking.

Course Objective: After completing this course, you should be able to describe and apply essential concepts in the following areas, including:

> **Atomic/Electronic Structure**: Demonstrate foundational knowledge of the quantum nature of electrons and light. Relate atomic spectra to electronic transitions.
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> **Periodic Table:** identify the connection between the quantum model and the structure of the periodic table. Recognize and predict periodic trends.
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> **Bonding Theories:** Including Lewis, VSEPR, VBT, and MO theory. Identify when a bonding theory is most appropriate for a situation. Predict molecular shapes and polarity by applying VSEPR and electronegativity. Recognize different types of intermolecular interactions
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> **Stoichiometry:** Identify and balance different types of complex chemical reactions. Use stoichiometry to be able to predict amounts of products or reactants necessary for a reaction. Be able to design how to make and dilute solutions with a specific concentration.
>
> **Heat & Thermodynamics:** Describe and apply the first law of thermodynamics. Calculate heats of reactions from both a theoretical standpoint and using calorimetry.
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> **Develop a growth mindset:** Demonstrates significant effort. Acknowledge personal growth in various contexts and applications in chemistry.

Course Structure/Approach: CHEM 1010-1 will be conducted mainly in a lecture format during classroom meetings (75-80%). Questions, discussions, and interjections are most welcome; I will put forth topics and questions to solicit your response and participation. It is not my style to randomly call upon individuals in class, recognizing that individuals each have different personalities, cultural perspectives, and learning styles. The Monday/Wednesday/Friday sessions will concentrate on introducing new material; the Thursday sessions will focus on problem-solving skills.

The in-class materials will be presented as PowerPoint files. The order of presentation will be organized similarly to the Chapters in your text, and the materials will be posted on Canvas during the course of the Quarter.

Exams and Quizzes: ***You will have two hour-long in-class exams on October 4 and November 1.*** These exams will both cover several major topic areas from the course. In addition, during the Thursday recitation sessions, you will have seven 10-15 minute quizzes, covering a narrower scope of topics. ***These quizzes will be held on the following dates: September 19, September 26, October 10, October 17, October 24, November 7, and November 14.*** The instructor reserves the prerogative to change any of the quizzes to a take-home assignment.

Class Schedule *(approximate, and subject to changes and adjustments as announced)*

Dates	Topics	Text Chapter(s) and Sections
9/9, 9/11, 9/13	Keys to the Study of Chemistry The Components of Matter	1.1 – 1.5 2.1 – 2.6
9/16, 9/18, 9/20	Quantum Theory and Atomic Structure	7.1 – 7.4
9/23, 9/25, 9/27	Electron Configuration and Periodicity	8.1 – 8.4
9/30, 10/2	Models of Chemical Bonding	9.1 – 9.6
10/4	**Exam 1**	
10/7, 10/9, 10/11	The Shapes of Molecules Theories of Covalent Bonding	10.1 – 10.3 11.1 – 11.3
10/14, 10/16	Intermolecular Forces	12.1 – 12.5
10/18, 10/21, 10/23	Stoichiometry of Formulas and Equations	3.1 – 3.4
10/25, 10/28, 10/30	Major Classes of Chemical Reactions	4.1 – 4.7
11/1	**Exam 2**	
11/4, 11/6, 11/8	Gases and the Kinetic-Molecular Theory	5.1 – 5.6
11/11, 11/13, 11/15	Thermochemistry: Energy Flow and Chemical Change	6.1 – 6.6
11/19	**Final Exam 800 AM – 950 AM**	

Course Policies, Evaluation Methods, and Deadlines

* ***My guiding principles in dealing with all students are "consistency and fairness".***

* All rules and policies regarding drop/add, academic integrity, etc. as set forth by the University shall be in effect for this course. For more information, please consult your these documents; by inference, you are agreeing to all of these rules as a registered student. You are expected to abide by the Pioneer Pledge and the Honor Code of the University of Denver:

Pioneer Pledge: http://www.du.edu/studentlife/ccs/pledge.html

Honor Code Statement: http://www.du.edu/studentlife/ccs/honor_code_2011-2012.pdf

* University policy grants students excused absences from class or other organized activities for observance of religious holy days, unless the accommodation would create an undue hardship. Faculty are asked to be responsive to requests when students contact them ***in advance*** to request such an excused absence. Students are responsible for completing work or exams given during their absence, but should be given an opportunity to make up work missed because of religious observance. Once a student has registered for a class, the student is expected to examine the course syllabus for potential conflicts with holy days and to notify the instructor by the end of the first week of classes of any conflicts that may require an absence (including any required additional preparation/travel time). The student is also expected to remind the faculty member in advance of the missed class, and to make arrangements in advance (with the faculty member) to make up any missed work or in-class material within a reasonable amount of time.

* University policy also grants excused absences from class or other organized activities to students participating in official, University-sanctioned activities (e.g., athletic team participants, or any other type University-sponsored activities requiring absence from campus/classes). If this applies to you, it is your responsibility to submit these requests via email, as soon as the activity's schedule is known prior to the absence, along with appropriate documentation.

* I am obligated to make accommodations for University policy-excused in-person exams and/or quizzes; however, I am unable to provide more than cursory outside-of-class recap of missed class sessions.

* Students experiencing significant illnesses that preclude being present for an in-person exam, will be excused for situations warranting such, and accommodations will be made. I reserve the right to request appropriate documentation.

* I will make all necessary accommodations for students diagnosed with a learning disability. I will do so while maintaining complete confidentiality. Students requiring these accommodations have the responsibility of informing their instructors; please do so, in writing, during the first week of the Quarter. For further information, please see the University Disability Services' website: http://www.du.edu/disability/dsp/index.html.

* You are responsible for material assigned or covered regardless of your attendance/participation. In CHEM-1010-1, you will be graded strictly upon exam/quiz performance regardless of your overall effort, attendance, or time expended.

* Please be advised that there can never be an exact relationship between the effort you put in and the grade received; when asked this by students, the answer always is "it just depends", and it is not possible for the instructor to specify what the student must do, in order to receive a predetermined outcome. Nevertheless, students with erratic or sub-par attendance cannot expect to achieve above-average grades, and therefore, you will find that regular attendance and a few hours per week of work outside class is in your best interest.

* You are encouraged to read through the text, review the PowerPoint presentations and associated audio segments, and to review any supplementary journal articles, reports, websites and any other related materials recommended by the instructor. I am not a fan of testing people on small, trivial details; I will emphasize asking in-person exam questions that are based upon major ideas that have been well-covered in class.

* Course materials will be posted and distributed through University of Denver's Canvas system. You are responsible for securing your own software resources; I anticipate using common file formats such as PDF, XLS or XLSX, DOC or DOCX, PPT or PPTX, MP3, MP4, and WAV. The audio and video files (MP3, MP4 and WAV) should be compatible with many different media players. I cannot provide more than cursory assistance to you on IT-related issues; please seek assistance from the University of Denver IT Help Center if you require such.

* Short emails about course content and/or administrative matters are acceptable; these should be sent from your U of Denver email account. Please include CHEM 1010 or other immediately recognizable identifiers in the subject line; an email should include your full name; please write professional-type correspondence; it is always appropriate (as is the case in any business setting) to say "Dear So and So", "Please", "Thank you", "Sincerely"; be concise and organized, and use complete sentences with correct spelling, punctuation, and grammar. Important points buried in the text of lengthy messages are sometimes overlooked, so brevity is preferable. If English is not your native tongue, I owe my respect to you for learning a difficult additional language, and I will be understanding and tolerant of challenges you may experience.

* If you write from a non-DU email address, and/or do not identify yourself, I will not feel obligated to respond.

* Emails that convey hostility, disrespect, are argumentative, or are presenting completely unreasonable requests and demands will not receive a response. Reciprocally, I pledge that I will never correspond with anyone in this manner, either.

* Tardiness is disruptive; please try to arrive on time. Departing class early is also disruptive; if you must do so, please sit in the back, and exit quietly and inconspicuously.

* I respect the need for each individual to stay in contact with family and friends. The use of mobile devices, however, is disruptive to the learning environment for others. Thus, I request

that the ringers of all mobile devices be muted during class. If an emergency arises, and you need to accept/make a call on your phone, I request that you quietly leave the room and conduct your conversation out in the hallway. Sending or checking text messages during class is not encouraged, and these practices convey your lack of interest herein to everyone.

* Please note that all exams and quizzes will be held in-person on the specified dates. If extenuating circumstances beyond your control render you unable to fulfill an exam or quiz, please bring the matter to my attention via email. If you ask about these matters in person, I will still request that an email be submitted. Where circumstances warrant, I will make accommodations such as a makeup exam time, or omitting the specific exam or quiz from consideration. Please do not take advantage of these practices; I reserve the right to deny accommodations where circumstances do not warrant such. ***I am a reasonable person.***

* All individual exams will be graded as a percentage out of 100. The point weighting of the examinations is as follows:

Exam 1 (take-home)	25 %
Exam 2 (in-person)	25 %
Thursday quizzes (best 5 of 7)	25 %
Final exam (in-person)	25 %
Total	**100 %**

Extra credit is possible, but is not guaranteed; if given, it will amount to a modest amount, e.g., perhaps a total of 2 – 3 % of the total possible grade.

* Performance expectations are as given in the Table below. The instructor reserves the right to make downward adjustments to this scale (i.e. adjustments in the direction of leniency). In no event will the actual scale used be adjusted upward (harsher) from that above. Adjustments (if any) to this scale are not guaranteed, and will likely not be determined until the end of the semester.

A	94.0 – 100
A –	90.0 – 93.9
B +	87.0 – 89.9
B	84.0 – 86.9
B –	80.0 – 83.9
C +	77.0 – 79.9
C	74.0 – 76.9
C –	70.0 – 73.9
D +	67.0 – 69.9
D	64.0 – 66.9
D –	60.0 – 63.9
F	< 60.0