CHEM 1305.500 Introductory Chemistry I
Online Course
3 Credits
Spring, 2024

QUESTIONS: Please read this syllabus first and then check the Announcements and the Course Questions in D2L. If you have any questions and can’t find answers there, then email me via D2L. Thank you!

* Please remember that you are responsible for knowing and abiding by all information in this syllabus. The content and dates may be modified at the instructor’s discretion. Any changes made will be informed via course announcements in D2L.*

This syllabus is your top go-to guide for assignments and due dates. If you see something on the syllabus but cannot locate it within D2L, please do not assume the assignment has been deleted. Instead, email your instructor.

Instructor Information:

Instructor: Matibur Zamadar, Ph.D.
College: College of Sciences and Mathematics
Department: Chemistry and Biochemistry
Office: Room 104A; Chemistry
Student Hours: Monday, Wednesday, Thursday 11:30 am-12:30 pm and Tuesday 12:00-2:00 pm.
Office Phone: (936)-468-2243
Email: Message me via D2L please by logging into the course and using the email icon to the top right (alternative, IF D2L is down: zamadarmr@sfasu.edu).

COURSE DESCRIPTION:
Introductory Chemistry. Introduction to the principles and concepts of chemical thought.
Co-requisite: CHEM 1105. Prerequisite: eligibility for College Algebra. This course is intended for non-chemistry majors.

This course is for 3 credits (fully online) and spans 15 weeks plus meets for a 2.5-hour final examination. The course contains extensive written and video content that includes the same information students in a face-to-face lecture course receive, requiring students to engage the online modules for at least three hours per week. Students have significant weekly reading and homework assignments involving critical thinking and quantitative reasoning. Students are tested over the material via quizzes and several exams during the semester including a
Course Information:

Times: There are no required face-to-face meetings as this course is delivered fully online via D2L, however, please remember that each “Week” starts on Monday morning and ends on Sunday at 11:59pm. All due dates in the syllabus and D2L are based on CDT/CST (Texas) time zones. Late assignments or extensions will not be considered due to difference in time zones.

Text and Materials:

Course Materials:

MC, Chemistry 111 Chemistry 112 for Stephen F Austin State University, SFASU


To be successful in this course you should do the following:

• Begin the course with positive attitude and desire to learn!
• Get prepared on your first day of the session with your textbook, syllabus, and computer/internet.
• Read the syllabus carefully and mark your calendar for all assignments and deadlines accordingly. Take a note of course policies and other important directions.
• Familiarized yourself of how to use SFA's online D2L system for this course: http://www.sfaonline.info/d2ltutorials
• Check daily course announcements and D2L email for updates in course information, due dates, assignments, changes etc.
• Sign up for D2L notifications. This will allow you to receive messages in your email, as well as in your phone about due dates, announcements, grades, and more: For signing up, log into D2L, and click on the arrow by your profile (upper right-hand corner), and click on Notifications to manage these settings.
• Although, all due dates and assignments will be announced weekly via course announcement on the D2L course page but make sure, you always check due dates and assignments listed in the syllabus in a daily basis.
• Take notes while you are reading chapters and watching/listening to any course materials. A well-organized note always helps to do well in the exams. All materials including videos, homework, as well as quizzes will be considered as materials for the exam.
• Consider of submitting any assignments at least a few hours early and double-check to confirm what you submitted is the correct version in correct format. Please remember that whatever you have submitted by the deadline is what will be graded.
• Do not wait until the last minute to turn in your assignment.
• Do not forget to take a screenshot of all submitted course work and save them and also save all D2L submission receipts of Dropbox assignments.
• Should act as a problem-solver when issues arise (call tech support; use your back-up computer etc.)

I Am Having Trouble in Class. Where Can I Get Help?

• Paying a private tutor is many times NOT what students need if they are having trouble in the class. There are a number of resources that you have already paid for available to you on campus. I strongly recommend that you take advantage of following resources before paying additional money to a private tutor.

Some of these resources are:

• Your instructor: Come see me during office hours or email me to make an appointment. I should be your first line of defense. I know what material is being taught, what material will be on exams, and what material you need to know (after all, I am the one who writes the quizzes & exams). You’ve already paid for me when you paid your course tuition. Don’t hesitate to come for help. I want to see you improve and do well. Don’t think that your question is unimportant or that you are wasting my time. I have office hours to help you. That’s why they are there. Even if you are behind, come get help. In addition, take advantage of office hours to build professional relationships with your professors. You never know when you’ll need a recommendation letter from them -- it is a lot easier to write a letter for a student who has done well and we know well

• You can get one-on-one tutoring at the AARC. Contact the AARC for more specific information on how to get a one-on-one tutor. You need to do this quickly, as only a limited number of slots are available and they fill up rapidly. There is also a Chemistry walk-in table at the AARC. Check with the AARC for more information.

• There will be a SI for this class.

Communication

There are a number of ways for us to communicate in this course:

• Discussions—Course discussion forum is designed to answer course-based questions throughout the semester. Please post any general questions about the course, the course content, or learning activities, to this discussion. We will use this forum to make sure we are connecting and that we all understand important course concepts together. I strongly encourage you to answer other students’ questions posted under Course Questions. If everyone is stuck, then your instructor will answer your question for more clarifications.

• E-mail—Please e-mail me via D2L by logging into the course and using the email icon to the top right. You can also use my alternative email address (zamadarmr@sfasu.edu) for communications. I will check the e-mail at least once in each weekday (Monday to
Friday), and once on the weekend (probably Sunday nights). Please make sure you log on to the course each day and check for e-mails and responses.

- **Office Hours**—If you have any questions about the course materials, your grades, study tips or more related to the course, I strongly ask you to come visit me during my office hours. My office is located in the Chemistry building and room number is 104A. For this semester, my office hours on **Monday & Wednesday 12:30 pm-2:00 pm, Thursday 11:00 am-1:00 pm via zoom or in-person**. If I need to reschedule due to some unforeseen reason(s), I will announce in D2L.

- **Appointments:** You may request an office appointment with me, but I must have 24 hours advance notice, and we must mutually agree on an acceptable time.
- **Phone:** You can also contact me by calling at 936.468.2243 during my office hours.

**Grading Policy:**

*Quizzes* —There will be 9 weekly quizzes administered via D2L. Every quiz will consist of multiple choice questions. Look quizzes under quiz section in D2L. For quiz, only credit will be given for correct answers. Two lowest quiz grades will be dropped. The 7 best quiz grades will be kept. Each quiz is worth 20 points. A total of 140 points from quiz is possible. Please remember quiz will be due in the evening (11:30 pm).

*4-exams (80 pts per test).* There will be 4 non-cumulative, multiple-choice Exams on the materials to our textbook and lectures administered via D2L. Each exam will have 40 questions and will be worth 80 points each. Please check the dates and exam availability in course schedule. Students must have a working computer and internet access and need to log in promptly for taking exam. For any technical help, please call the D2L help line at 936-468-1919. Please remember they are available for assistance from Monday to Friday from 8:00 to 5:00 pm only. Exams will be online on D2L and will be proctored using Proctorio service provided by the university.

*Comprehensive Final Exam* – The final exam will be a comprehensive, multiple-choice Exams on the materials to our textbook and lectures. Final exam will have 80 questions and will be worth 200 points. Please check the dates and exam availability in course schedule. Students must have a working computer and internet access and need to log in promptly for taking exam. For any technical help, please call the D2L help line at 936-468-1919. Please remember they are available for assistance from Monday to Friday from 8:00 to 5:00 pm only. Exam will be given only on D2L and will be proctored using Proctorio service provided by the university.
Missed Exams (Homework or Quizzes): Technological difficulties, lack of internet or computer access, failing to check D2L reminders and announcements, inability to access or use D2L, misremembering or mishearing exam deadlines will NOT be considered as valid excuses for missing an exam. Make-up exams are very rarely given, and require proper documentation (e.g., note of hospitalization) before the exam deadline has passed (in very rare cases, notification within 24 hrs of the missed exam may be accepted). It is up to the instructor to determine whether the documentation warrants a make-up exam. If you forget to take an exam, oversleep, or do not have a documented “excuse” for missing an exam, you need to schedule an appointment with me to discuss the matter and your ability to pass the course. In the absence of proper documentation, IF a make-up exam is given (not guaranteed & rarely offered), 30-50% will be deducted from the exam grade. For a proven, excused absence for an exam during the semester, a comprehensive make up exam will be given on Thursday, July 11.

Method of Evaluation: The final grade will be based upon percentage of points obtained in the following:

<table>
<thead>
<tr>
<th>item</th>
<th>point value</th>
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<tbody>
<tr>
<td>Exam I</td>
<td>100</td>
</tr>
<tr>
<td>Exam II</td>
<td>100</td>
</tr>
<tr>
<td>Exam III</td>
<td>100</td>
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<tr>
<td>Exam IV</td>
<td>100</td>
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<tr>
<td>Final Exam</td>
<td>200</td>
</tr>
<tr>
<td>Quizzes</td>
<td>100</td>
</tr>
<tr>
<td>TOTAL POINTS</td>
<td>700</td>
</tr>
</tbody>
</table>

Grading scale (Based on total of 750 points possible)
>90% = A; >80% = B; >70% = C; >60% = D; < 60% = F

Attendance Check

Register your Attendance

Go to the Course Tools section and open the Discussion Tool, you will find at the top, 3 attendance checks--one for the first class day, one for the 5th class day, and one for the twelfth class day. Please read and follow the directions for each one, so that you will be counted present for the official class roll.
First class day attendance: Please post your name, where you are from, and how long you have been at SFA as your first class day check in.

Fifth class day attendance: Please post your name and one really cool thing you have learned from previous week’s modules for your fifth class day roll call.

Twelfth class day attendance: Please post your name and your career ambitions and objectives for your twelfth class day attendance.

Academic Integrity

The Code of Student Conduct and Academic Integrity outlines the prohibited conduct by any student enrolled in a course at SFA. It is the responsibility of all members of all faculty, staff, and students to adhere to and uphold this policy.

Articles IV, VI, and VII of the new Code of Student Conduct and Academic Integrity outline the violations and procedures concerning academic conduct, including cheating, plagiarism, collusion, and misrepresentation. Cheating includes, but is not limited to: (1) Copying from the test paper (or other assignment) of another student, (2) Possession and/or use during a test of materials that are not authorized by the person giving the test, (3) Using, obtaining, or attempting to obtain by any means the whole or any part of a non-administered test, test key, homework solution, or computer program, or using a test that has been administered in prior classes or semesters without permission of the Faculty member, (4) Substituting for another person, or permitting another person to substitute for one’s self, to take a test, (5) Falsifying research data, laboratory reports, and/or other records or academic work offered for credit, (6) Using any sort of unauthorized resources or technology in completion of educational activities.

Plagiarism is the appropriation of material that is attributable in whole or in part to another source or the use of one’s own previous work in another context without citing that it was used previously, without any indication of the original source, including words, ideas, illustrations, structure, computer code, and other expression or media, and presenting that material as one’s own academic work being offered for credit or in conjunction with a program course or degree requirements.

Collusion is the unauthorized collaboration with another person in preparing academic assignments offered for credit or collaboration with another person to commit a violation of any provision of the rules on academic dishonesty, including disclosing and/or distributing the contents of an exam.

Misrepresentation is providing false grades or résumés; providing false or misleading information in an effort to receive a postponement or an extension on a test, quiz, or other assignment for the purpose of obtaining an academic or financial benefit for oneself or another individual or to injure another student academically or financially.
Withheld Grades *Semester Grades Policy (5.5)*

Please copy and paste the following information regarding Withheld Grades into your syllabus. Add additional information as needed to meet your departmental or course needs.

Ordinarily, at the discretion of the instructor of record and with the approval of the academic chair/director, a grade of WH will be assigned only if the student cannot complete the coursework because of unavoidable circumstances. Students must complete the work within one calendar year from the end of the semester in which they receive a WH, or the grade automatically becomes an F. If students register for the same course in future terms the WH will automatically become an F and will be counted as a repeated course to compute the grade point average. For additional information, go to [https://www.sfasu.edu/policies/course-grades-5.5.pdf](https://www.sfasu.edu/policies/course-grades-5.5.pdf).

Students with Disabilities

Please copy the following statement and paste it into your course syllabus.

To obtain disability-related accommodations, alternate formats, and/or auxiliary aids, students with disabilities must contact the Office of Disability Services (ODS), Human Services Building, and Room 325, 468-3004 / 468-1004 (TDD) as early as possible in the semester. Once verified, ODS will notify the course instructor and outline the accommodation and/or auxiliary aids to be provided. Failure to request services promptly may delay your accommodations. For additional information, go to [http://www.sfasu.edu/disabilityservices/](http://www.sfasu.edu/disabilityservices/).

Please copy everything below and paste it into your course syllabus.

**Student Wellness and Well-Being**

SFA values students’ overall well-being, mental health and the role it plays in academic and overall student success. Students may experience stressors that can impact both their academic experience and their personal well-being. These may include academic pressure and challenges associated with relationships, emotional well-being, alcohol and other drugs, identities, finances, etc.

If you are experiencing concerns, seeking help, SFA provides a variety of resources to support students’ mental health and wellness. Many of these resources are free, and all of them are confidential.

**On-campus Resources:**

**The Dean of Students Office** (Rusk Building, 3rd floor lobby)
[www.sfasu.edu/deanofstudents](http://www.sfasu.edu/deanofstudents)
936.468.7249
dos@sfasu.edu

**SFA Human Services Counseling Clinic** Human Services, Room 202
The Health and Wellness Hub “The Hub”
Location: corner of E. College and Raguet St.

To support the health and well-being of every Lumberjack, the Health and Wellness Hub offers comprehensive services that treat the whole person – mind, body and spirit. Services include:

- Health Services
- Counseling Services
- Student Outreach and Support
- Food Pantry
- Wellness Coaching
- Alcohol and Other Drug Education

Crisis Resources:
- Burke 24-hour crisis line: 1.800.392.8343
- National Suicide Crisis Prevention: 9-8-8
- Suicide Prevention Lifeline: 1.800.273.TALK (8255)
- johCrisis Text Line: Text HELLO to 741-741

ADDITIONAL INFORMATION:

This course meets educator preparation standards for one or more certification programs; a complete listing of all the educator preparation standards this course meets can be found at: https://sfasu.edu/docs/jacksteach/jacksteach-standards-alignment-chart.xlsx
CORE OBJECTIVES AND RESOURCES

General Education Core Curriculum Objectives: The Texas Higher Education Coordinating Board has identified six core learning objectives: Critical Thinking Skills, Communication Skills, Empirical and Quantitative Skills, Teamwork, Personal Responsibility, and Social Responsibility. SFA is committed to the improvement of its general education core curriculum by regular assessment of student performance on these six objectives. Although this chemistry course develops the first four core-learning objectives, it only submits assessment assignments to the University Core Assessment Committee every even Spring for the Teamwork general education core curriculum requirement. If this is an even spring semester, another, “shell” course has been created to collect student artifacts to meet this state requirement. You will see this course on your D2L list.

During the even spring semester, you will receive an assignment in the laboratory portion of the course that fulfills both the requirements of the lab and the needs of Stephen F. Austin State University’s Core Curriculum Assessment Plan with the Texas Higher Education Coordinating Board. When you complete this one assignment, you need to upload the assignment to both the Chemistry dropbox and the Teamwork dropbox. Please note that this only applies to the specific teamwork assignment given in the lab section of this course. All other assignments should be submitted according to regular class operations. If you have any questions, please see your instructor or contact the University Assessment Specialist at (936) 468-1267 or jstringfield@sfasu.edu.

Below is a description of each Core Objective, followed by a chart that shows the topics covered in this course with their corresponding core objectives.

Core Objective 1: Critical Thinking: to include creative thinking, innovation, inquiry and analysis, evaluation and synthesis of information.

Definition of CRITICAL THINKING: disciplined thinking that is clear, rational, open-minded, and informed by evidence.


Critical thinking involves the use of a group of interconnected skills. The skills needed can be broken down into six steps.

Six Steps of CRITICAL THINKING

1. Knowledge means a student must have basic knowledge about the subject.
2. **Comprehension** requires understanding of the subject. Students that comprehend the new knowledge are able to relate the new knowledge to what they already know. Comprehending goes beyond simply parroting material back.

3. **Application** requires both knowledge and comprehension. Students must be able to carry out a task or apply their knowledge and comprehension to an assigned task.

4. **Analysis** involves breaking the knowledge down into smaller parts so it become clear how the smaller parts are related to other ideas.

5. **Synthesis** involves the ability to put together the parts you analyzed with other information to create something original.

6. **Evaluation** occurs once we have understood and analyzed what is said or written and the reasons offered to support it. Then we can appraise this information in order to decide whether you can give or withhold belief, and whether or not to take a particular action.

Adapted from:
http://www.mhhe.com/socsicence/philosophy/reichenbach/m1_chap02studyguide.html
(accessed May 23, 2013)

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**Core Objective 2: Communication Skills: to include effective development, interpretation and expression of ideas through written, oral, and visual communication.**

**COMMUNICATION SKILLS in the sciences**

For an excellent resource in scientific communication from a highly reputable source see the information provided on the Nature website link shown below.

http://www.nature.com/scitable/topic/scientific-communication-14121566 (accessed May 31, 2013)

Three especially informative links within the link shown above are:

- Effective Communication
- Effective Writing
- Audience/Purpose

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**Core Object 3: Empirical and Quantitative Skills: to include the manipulation and analysis of numerical data or observable facts resulting in informed conclusions.**

**EMPIRICAL AND QUANTITATIVE SKILLS**
Chemists rely on observations to explain the nature of the substances they study. There are two types of observations exist: qualitative and quantitative. A **qualitative observation** is an observation made with the senses and is usually expressed using words instead of numbers. Qualitative observations about a person sick in the hospital might include that the person is breathing rapidly, has a high temperature, and is very thin.

A **quantitative observation** is an observation that requires a numerical measurement and describes something in terms of "how much". The quantitative observation that a person has a temperature of 103.6 °F is much more useful information than just knowing that the person has a fever. Quantitative observations are preferred by scientists. Often quantitative data is acquired in lab.

One or more measurement is always a part of any quantitative observation. A **measurement determines the dimensions, capacity, quantity, or extent of something**. The most common types of measurements made in chemical laboratories are those of mass, volume, length, temperature, pressure, and concentration. Measurements always consist of two parts: a **number**, which tells the amount of the quantity measured, and a **unit**, which tells the nature or kind of quantity measured. A measured number without a unit is meaningless.

Once quantitative data is obtained, chemists then mathematically manipulate and analyze data. 

*Adapted from saplinglearning.com; accessed May 31, 2013*

**Core Objective 4: Teamwork: to include the ability to consider different points of view and to work effectively with others to support a shared purpose or goal.**

Definition of **TEAMWORK**: work done by several associates with each doing a part but all subordinating personal prominence to the efficiency of the whole.


**TEAMWORK General Rules**

Each team member needs:
- all ideas evaluated critically;
- treat others in the group with respect
- everyone needs to pull their weight, meet deadlines, and contribute equally;
- actions need to be followed through;
- reporting needs to be accurate and comprehensive;
- problems with under-performing team members need to be discussed openly and resolved quickly; and
- peer assessment should be given fairly

**Summary:**
Course Syllabus: CHEM 1305-500          Introductory Chemistry I          Spring 2024

Core Objective 1: Critical Thinking Skills
To include creative thinking, innovation, inquiry, and analysis, evaluation and synthesis of information.

Core Objective 2: Communication Skills
To include effective development, interpretation and expression of ideas through written, oral, and visual communication.

Core Objective 3: Empirical and Quantitative Skills
To include the manipulation and analysis of numerical data or observable facts resulting in informed conclusions.

Core Objective 4: Teamwork
To include the ability to consider different points of view and to work effectively with others to support a shared purpose or goal. *This Core Objective is Strongly Emphasized in Lab.*

Student Learning Outcomes: Upon completion of this course, the students are expected to
- apply chemistry concepts using critical thinking skills and the scientific method to analyze and evaluate information to reach conclusions within problem sets and lab experiments. (COs 1 & 3)
- use communication skills to demonstrate their interpretation and analysis of scientific data. (CO 2)
- apply logic, quantitative reasoning, and pattern recognition to analyze and evaluate numerical data/observable facts to reach conclusions within problem sets and lab experiments. (COs 1 & 3)
- demonstrate the ability to cooperate within groups to gather results of an experiment, analyze data, and draw conclusions using communication skills. (COs 2 & 4)

Course Topics: (Course Calendar follows this chart)

<table>
<thead>
<tr>
<th>Ch</th>
<th>Topic</th>
<th>Core Objective</th>
<th>Specifics…</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Definition of Chemistry</td>
<td>Core Objective 1: Critical Thinking Skills</td>
<td>Analyzing and Interpreting data from a scientific investigation. Inquire about the natural world.</td>
</tr>
<tr>
<td></td>
<td>Scientific Method/Processes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Measurement</td>
<td>Core Objective 3: Empirical and Quantitative Skills</td>
<td>In problem solving, learn to apply significant figures and apply the terms accuracy and precision to measurements.</td>
</tr>
<tr>
<td>3</td>
<td>Atoms and Periodic Table;</td>
<td>Core Objective 2:</td>
<td>Identify and justify as a class classification of</td>
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<tr>
<td></td>
<td>Classifying Matter; Physical and</td>
<td></td>
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<tr>
<td></td>
<td>Chemical Properties and Changes; Energy</td>
<td>Communication Skills</td>
<td>Matter and types of changes.</td>
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<tr>
<td>4</td>
<td>Parts of the Atom (subatomic particles); Ions and Isotopes</td>
<td>Core Objective 1: Critical Thinking Skills</td>
<td>Analyze composition of ions after gaining or losing electrons. Calculating atomic mass.</td>
</tr>
<tr>
<td>5</td>
<td>Writing and Naming Chemical Compounds</td>
<td>Core Objective 1: Critical Thinking Skills, Core Objective 2: Communication Skills, Core Objective 4: Teamwork</td>
<td>Analyze and communicate with class both molecular vs. ionic compounds; construct proper formulas and discuss and justify names of compounds.</td>
</tr>
<tr>
<td>6</td>
<td>Chemical Composition: Introducing the Mole and its Relationship with Grams.</td>
<td>Core Objective 3: Empirical and Quantitative Skills</td>
<td>Convert between particles, grams, and moles; calculate mass percent and empirical formulas.</td>
</tr>
<tr>
<td>7</td>
<td>Types of Reactions</td>
<td>All Core Objectives</td>
<td>Identify type of reaction; analyze reactants and determine products; balance reactions</td>
</tr>
<tr>
<td>8</td>
<td>Stoichiometry and Enthalpy Problems</td>
<td>Core Objective 3: Empirical and Quantitative Skills</td>
<td>Given an amount of a reactant or product, be able to calculate the amount of all other compounds/molecules in the reaction. Determine limiting reactant and % yield. Calculate heat given off or absorbed given an amount of reactant.</td>
</tr>
<tr>
<td>9</td>
<td>Electromagnetic Spectrum; Emission Spectra; Models that Explain Light Emission and</td>
<td>Core Objective 2: Communication Skills</td>
<td>Use visual communication to illustrate electron placement in electron</td>
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<tr>
<td>Course</td>
<td>Topic</td>
<td>Core Objectives</td>
<td>Additional Notes</td>
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<tr>
<td>Lewis Dot Structures</td>
<td>Lewis Dot Structures and 3-D Molecular Geometry of Molecules. Lewis Dot Structures of Ionic Solids. Polarity.</td>
<td>Core Objective 1: Critical Thinking Skills</td>
<td>Analyze and construct a 3-D model of a molecule given valence electrons. Determine the overall polarity of molecules by evaluating polar bonds within the molecule.</td>
</tr>
<tr>
<td>Gas Behavior</td>
<td>Gas Behavior Given Various Conditions and Changes.</td>
<td>Core Objective 1: Critical Thinking Skills; Core Objective 2: Communication Skills Core Objective 3: Empirical and Quantitative Skills</td>
<td>Communicate the effect on a gas when either volume, pressure, or temperature of a gas is changed. Calculate exact values of these changes using the gas laws.</td>
</tr>
<tr>
<td>Intermolecular Forces</td>
<td>Intermolecular Forces</td>
<td>Core Objectives 1-3</td>
<td>Communicate how intermolecular forces determine state of matter, volatility, and viscosity. Perform enthalpy calculations for vaporization and fusion.</td>
</tr>
<tr>
<td>Solution Concentration, Types of Solutions, Titrations, and Colligative Properties</td>
<td>Solution Concentration, Types of Solutions, Titrations, and Colligative Properties</td>
<td>All Core Objectives</td>
<td>Solve for Concentration in a solution or for a titration; Analyze how solute particles affect vapor pressure, melting point, boiling point, and osmotic pressure. Discuss the effect of hyper-, hypo- and isosmotic solutions on cells.</td>
</tr>
<tr>
<td>Acid and Base Definitions and Properties</td>
<td>Acid and Base Definitions and Properties</td>
<td>Core Objective 1: Critical Thinking</td>
<td>Identify acid and base properties. Analyze an</td>
</tr>
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<td></td>
<td>Skills; Core Objective 3: Empirical and Quantitative Skills</td>
<td>acid’s and base’s conjugate pair. Calculate pH, pOH, [H₃O⁺] and [OH⁻]</td>
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<td>--------------------------------------------------------------------</td>
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<tr>
<td>15</td>
<td>Equilibrium</td>
<td>Core Objective 1: Critical Thinking Skills;</td>
<td>15</td>
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<tr>
<td></td>
<td></td>
<td>K_{eq} calculations and Le Chatelier’s Principle</td>
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<tr>
<td>17</td>
<td>Nuclear Chemistry</td>
<td>Core Objective 2: Communication Skills</td>
<td>17</td>
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<tr>
<td></td>
<td></td>
<td>Types of radioactive decay; Fission vs. fusion</td>
<td></td>
</tr>
</tbody>
</table>
## Introductory Chemistry
### CHEM 1305-500.
**Tentative Class Calendar Spring 2024**
**Dr. Matibur Zamadar**
*(All the due date times on the timeline are based on Central Standard Time)*

<table>
<thead>
<tr>
<th>Unit</th>
<th>Date</th>
<th>Topics/Content</th>
<th>Readings from book</th>
<th>Activities &amp; Assignments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Jan 18-Feb 12</td>
<td>Getting Started</td>
<td>Syllabus and chapter 2</td>
<td>Extra Credit: Introduction Discussion Due date: Jan 19 2 11:30 PM on D2L</td>
</tr>
<tr>
<td>2</td>
<td>Jan 18-Feb 12</td>
<td>Ch2: Chemistry measurement and problems</td>
<td>Chapter 2</td>
<td>Quiz 1 Due date: Feb 12, 11:30 PM on D2L</td>
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<td>Jan 18-Feb 12</td>
<td>Ch3: Mater and Energy</td>
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<td>Ch4: Atoms and Elements</td>
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<td>Feb 13-March 18</td>
<td>Ch5: Atoms and Elements</td>
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<td>Worksheet # Ch 5 on D2L Quiz 3 Due date: Mar18, 11:30 PM on D2L</td>
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<td>Feb 13-March 18</td>
<td>Ch6: Chemical Composition</td>
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<td>Feb 13-March 18</td>
<td>Ch7: Chemical Reactions</td>
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<td>Ch8: Quantities in Chemical Reactions</td>
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<td>Ch9: Electrons in Atoms and the Periodic Table</td>
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<td>Ch12: Liquids, Solids, &amp; Intermolecular Forces</td>
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<td>Ch14: Acids and Bases</td>
<td>Chapter 14</td>
<td>Quiz 9</td>
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