

Chemistry (CHEM) 1A Syllabus

Course Name

CHEM 1A

Chemistry I – Semester A

Course Information

CHEM 1A is the first semester of this two-semester course.

Introduction to Chemistry provides a foundation in the fundamental concepts and principles of chemistry. You will learn about elements, their symbols, atomic numbers, and how to work with significant figures. Scientific notation and the metric system, essential tools in chemistry, will also be covered. The course examines atomic structure, the periodic table, and trends across elements. Understanding chemical bonding is key, as you will identify chemical names and formulas, as well as the forces that hold atoms together in different compounds. Real-world examples and lab experiments will reinforce these concepts, demonstrating the role chemistry plays in everyday life. By the end of the course, you will have a solid grasp on the basics of chemistry.

Course Delivery Method

Online

Contacting Your Instructor

You may contact your instructor through the Learning Management System (LMS) messaging system. Technical support is available 24/7 at www.kl2.ttu.edu.

Course Objectives

After completing this course, you should be able to:

- 1. explain the steps of the scientific method and its application in chemistry.
- 2. explain the atomic structure and the organization of the periodic table.
- 3. identify elements and their symbols, atomic numbers, and masses.
- 4. analyze isotopes and their properties.

- 5. distinguish between ionic and covalent bonds.
- 6. draw Lewis Dot Structures and predict molecular geometries.
- 7. identify the types of chemical reactions including writing chemical names and formulas.
- 8. quantify chemical compounds through molar mass calculations, percent compositions, empirical formulas, and unit conversions using dimensional analysis.

CHEM addresses the required Texas Essential Knowledge and Skills (TEKS). These can be found at the <u>Texas Education Agency</u> website.

Textbook and Materials

Textbook

A textbook is not required for this course. All content is located on the learning management system (LMS) and through online resources.

An optional reference is available for purchase through the TTU K-12 partner bookstore:

• Savvas Learning (2025). *Experience Chemistry Texas*, 1 Year Digital Subscription. Savvas Learning Company, LLC. ISBN: 979-82-13-01465-5.

You can find the link to the bookstore on the <u>TTU K-12 website</u>.

Materials

Students are responsible for obtaining the required software and materials specified in student lab assignments. These materials are essential for completing the course assignment(s) within each unit. Failure to acquire the necessary materials may result in difficulty completing the coursework successfully.

Technical Requirements

- Internet access preferably high speed (for accessing the LMS)
- Email
- Word processing software such as Microsoft Word
- Adobe Reader (download from Adobe.com)
- Audio and video capabilities (for watching/listening to course content)

Technical Skill Requirements

Be comfortable with the following:

- using a word processor
- Internet search engines and browsers

Course Organization

This course consists of 10 units, a summative test for each unit, student activities, lab assignments, and a final exam. Each unit contains the following:

- Introduction and Instructions
- Learning Objectives and Curriculum Standards
- Learning Activities
- Test
- Assignments

Each unit includes activities that present content knowledge. Each unit also includes multiple graded assignments to ensure that you learn the content that has been presented in the activities. Some of the assignments are automatically graded tests, and some are lab assignments and activities that your instructor will grade. Be sure you read all instructions carefully and ask your instructor for help if something is not clear.

Course Outline

Please note that some assignments will be hidden from you when you start the course. As you move through the units and complete assignments, more will unlock for you.

| Unit | Торіс | Approximate Time for Completion |
|------------|--|------------------------------------|
| Unit 1 | Introduction to Chemistry | One week |
| Unit 2 | Matter and Change | One week |
| Unit 3 | Significant Figures, Scientific Notation, The Metric System and Density | Two weeks |
| Unit 4 | History of the Atom and Atomic Structure | One week |
| Unit 5 | Electrons in Atoms | Two weeks |
| Unit 6 | Periodic Table | One week |
| Unit 7 | Ionic and Metallic Bonding | One week |
| Unit 8 | Covalent Bonding | One week |
| Unit 9 | Chemical Names and Formulas | Two weeks |
| Unit 10 | Chemical Quantities | Two weeks |
| Final Exam | | |

Assignment Schedule

Each of the following must be completed to complete the course. Items with an asterisk (*) indicate that these are summative assessments. Keep in mind, the course is meant to be completed in a particular sequence, so some assignments may not appear until you've completed the prerequisite assignments.

| Unit | Weeks | Assignments |
|------|------------------|--|
| 1 | 1 (1 week) | Checkpoint 1 (non-graded) Unit 1 SoftChalk Activities Unit 1 Discussion Forum Unit 1 Lab Check Assignment 1 *Unit 1 Summative Test |
| 2 | 2 (1 week) | Unit 2 SoftChalk Activities Unit 2 Lab Check Assignment 1 Unit 2 Lab Check Assignment 2 Unit 2 Lab Check Assignment 3 *Unit 2 Summative Test |
| 3 | 3-4 (2 weeks) | Unit 3 SoftChalk Activities Unit 3 Summative Assignment 1* *Unit 3 Summative Test |
| 4 | 5 (1 week) | Unit 4 SoftChalk Activities Unit 4 Lab Check Assignment 1 Unit 4 Lab Check Assignment 2 *Unit 4 Summative Test |
| 5 | 6-7 (2 weeks) | Checkpoint 2 (non-graded) Unit 5 SoftChalk Activities Unit 5 Lab Check Assignment 1 *Unit 5 Summative Test |
| 6 | 8 (1 week) | Unit 6 SoftChalk Activities Unit 6 Discussion Forum Unit 6 Lab Check Assignment 1 Unit 6 Summative Assignment 2* *Unit 6 Summative Test |
| 7 | 9 (1 week) | Unit 7 SoftChalk Activities Unit 7 Lab Check Assignment 1 *Unit 7 Summative Test |

| 8 | 10 (1 week) | Unit 8 SoftChalk Activities Unit 8 Lab Check Assignment 1 *Unit 8 Summative Test |
|------------|--------------------|---|
| 9 | 11-12 (2 weeks) | Unit 9 SoftChalk Activities Unit 9 Discussion Forum Unit 9 Summative Assignment 1* *Unit 9 Summative Test |
| 10 | 13-14 (2 weeks) | Unit 10 SoftChalk Activities Unit 10 Lab Check Assignment 1 Unit 10 Summative Assignment 2* *Unit 10 Summative Test Checkpoint 3 (non-graded) |
| Final Exam | | Final Exam |

Course Credit

The course grade will be calculated as follows:

- 50% coursework average;
- 50% summative assessment average, including the final exam;
- A passing course grade is 70 or higher.

Students must attempt all assignments in the course. The final exam will not be available until all assignments have been accepted and graded by the teacher.

Students who score below 70% on the final exam will be eligible for one re-exam opportunity.

Coursework

The graded SoftChalk activities within each unit are formative in nature. This means that they are designed to assist you in applying and demonstrating the unit concepts, as well as identifying areas in which you need additional review. The course units also consist of lab check assignments to apply hands-on activities to the content. The coursework activities and lab check assignments are critical in grasping the new knowledge and skills of this course.

Summative Assessments

Summative assessments are those that allow you to demonstrate mastery of the course objectives. These are opportunities for you to show what you have learned by that point in the course. The summative assessments consist of unit summative tests and summative

assignments throughout the course along with the final exam. The summative assessments for this course are as follows:

- Summative Assessments (20% of Course Grade)
 - Unit summative tests (10)
 - Unit summative assignments (4)
- Summative Final Exam (30% of Course Grade)

Course Completion

- Students may not complete the course in less than 30 days.
- All courses expire six months after the enrollment date.

Academic Integrity

It is the aim of the faculty of Texas Tech University to foster a spirit of complete honesty and high standard of integrity. The attempt of students to present as their own any work not honestly performed is regarded by the faculty and administration as a most serious offense and renders the offenders liable to serious consequences, possibly suspension.

"Scholastic dishonesty" includes, but is not limited to, cheating, plagiarism, collusion, falsifying academic records, misrepresenting facts, and any act designed to give unfair academic advantage to the student (such as, but not limited to, submission of essentially the same written assignment for two courses without the prior permission of the instructor) or the attempt to commit such an act.

Student Expectations

You will be expected to log into the course regularly to be aware of possible announcements/reminders and to pace your progress in the course.

Students are expected to maintain an online environment conducive to learning, which includes "netiquette" (Internet etiquette). Please review the basic rules for <u>Online</u> <u>Discussion Netiquette</u>. Ensure that your email messages, discussion board postings, and other electronic communications are thoughtful and respectful. Diverse opinions are welcome in this course, and you are expected to demonstrate an open mind and courtesy when responding to the thoughts and ideas of others.

The following are prohibited:

- making offensive remarks in email or the discussion board;
- using inappropriate language or discussing inappropriate topics online;
- spamming;
- hacking;
- using TTU or the LMS email or discussion boards for commercial purposes;

- using all caps (considered shouting in online communications); and
- cyber-bullying or online harassment of any type.

Inappropriate behavior shall result in consequences ranging from a request to correct the problem, to removal from the course or even the university, depending on the severity of the behavior. Disciplinary actions will be taken according to the TTU K-12 Student Handbook.

Communication

- You can expect a reply from your instructor within 2 business days.
- Use the course messages tool for sending messages to your instructor.

Submitting Assignments

You will submit all assignments through the LMS, rather than by mail or email.

Technical Difficulties

Getting Help

For student assistance with the LMS, visit <u>TTU K-12 Support</u>.

Computer Problems

A working computer is necessary for online coursework. Computer problems will not be accepted as a valid reason for failure to complete course activities within the allotted time frame. Identify a second computer, before the course begins, that you can use if you experience computer problems.

Server Problems

When the LMS server needs to be taken down for maintenance, the LMS administrator will post an announcement in your course informing you of the time and date. If the server experiences unforeseen problems, your course instructor will notify you.

Lost or Corrupted Files

You must keep/save a copy of every project/assignment on an external disk or personal computer. In the event of any kind of technology failure (e.g., LMS server crash or virus infection, students' own computer problems, loss of files in cyberspace, etc.) or any disputes, the instructor may request or require you to resubmit the files. In some instances, the instructor may need to open another attempt within the LMS, so communication with your instructor is critical in these circumstances.