



## CHEMISTRY 101: CHEMISTRY TUTORIAL I

### Instructor Information

Dr. Stephen Starnes

Email: Stephen.Starnes@tamuc.edu

Office: Science 339

Phone: 903-886-5389

Office Hours: T-F: 11:00 am – 12:00 pm, or by appointment

### Course Materials

Lecture textbook: You have access to an electronic textbook for the course through the Inclusive Access McGraw Hill package purchased, which was automatically charged to your tuition bill (the charge was \$82.50). The inclusive access also provides you access to the online homework system (ALEKS). If you want a hard copy of a textbook, any textbook in General Chemistry is fine to use as a study resource, such as *General Chemistry*, 10th Edition, Ebbing, Gammon, Brooks/Cole Cengage Learning, Belmont, CA. ISBN: 978-1285051376. Older editions such as the 8<sup>th</sup>, 9<sup>th</sup> or 10<sup>th</sup> edition is fine to use as a cheap hardcopy if desired or the 11<sup>th</sup> edition of the textbook is also fine for you to use as a study resource, but a hard copy of a textbook is NOT required.

Classroom: Lecture

Section 01E: M 12:00-12:50 pm in STC 107 (Instructor: Ms. Joy Zhang)

Section 02E: T 3:00-3:50 pm in STC 135 (Instructor: Ms. Joy Zhang)

Section 03E: T 4:00-4:50 pm in STC146 (Instructor: Ms. Joy Zhang)

Section 04E: W 10:00-10:50 pm in STC135 (Instructor: Dr. Ni)

Section 05E: R 3:00-3:50 pm in STC135 (Instructor: Dr. Starnes)

Section 06E: F 11:00-11:50 pm in STC135 (Instructor: Dr. Starnes)

Section 07E: F 12:00-12:50 pm in NHS163 (Instructor: Dr. Starnes)

\*\* If you cannot attend your regularly scheduled class, you can attend one of the other sections IF you have prior instructor approval.

Contact information for each instructor:

**Qianying.Zhang@tamuc.edu, Bukuo.Ni@tamuc.edu, Stephen.Starnes@tamuc.edu**

Course Description: 1 Semester Hour: The course will act as a support to understand the fundamental chemistry covered in Chemistry 1311. Topics include the scientific method, making measurements, the SI system, dimensional analysis, atomic and molecular structure, chemical formulas, chemical reactions, chemical equations, thermochemistry, quantum theory, electron configurations, periodicity, chemical bonding, states of gases, and states of matter and solutions.

### Lecture Learning Outcomes / Course Objectives

Upon completion of the course, I intend for my students to have realized a number of objectives.

1. Students will be able to analyze, evaluate, or solve problems when given a set of circumstances, data, text or art. Be able to critically analyze a chemical problem and deduce a solution to the problem utilizing step-wise processes.
2. Students will be able to interpret, test and demonstrate principles revealed in empirical data and/or observable facts. General chemistry requires good algebra skills. By the end of this course, you should be able to utilize algebraic skills to solve chemical problems.
3. In written, oral, and/or visual communication, A&M-Commerce students will communicate in a manner appropriate to audience and occasion, with an evident message and organizational structure.
4. Students will be able to work together toward a shared purpose relevant to the course or discipline with a sense of shared responsibility for meeting that purpose.

### General Content Knowledge Students Should Obtain

1. Know the nature of the bonding in compounds.
2. Relate the structure found in a given molecule to its physical properties.
3. All students must know the basics of IUPAC nomenclature of compounds.
4. Know the importance of chemistry and its relationship to other disciplines and our daily lives.
5. Understand the basic structures of atoms, ions, and molecules, and ways to quantitatively describe the properties of atoms and molecules in the various phases of pure matter and in mixtures.
6. Understand the reactivity of atoms, ions, and molecules, and the various qualitative and quantitative methods for describing or depicting chemical reactions.
7. Understand the concept of chemical equilibrium, and the energies that drive chemical reactions: an introduction to the field of thermodynamics.
8. Understand the relationship between the electronic configurations of atoms and molecules and their chemical properties: an introduction to the field of quantum mechanics.
9. Understand the basic properties of gases with respect to temperature, pressure, volume and amount of gas.

### **Course Requirements: Minimal Skills Needed**

#### **Instructional Methods**

**Class Procedure:** The intent of the course is for you to work in small groups to complete the lesson for that day. You will be required to work in groups of 3-5 students. Groups made of less than 3 students or more than 5 students will not be allowed. I may change the groups periodically. You are expected to work together as a team to answer the questions posed in the lesson. Thus, you are highly encouraged and expected to discuss, with your group members, the lesson and the answers to the questions posed. The instructor for the course is not present to answer the questions for you. Rather, the instructor is present to guide you in your learning efforts. This has proven to be an effective way to learn Chemistry; we will be using methods similar to a National Science Foundation sponsored program called POGIL (Process Oriented Guided Inquiry Learning, [www.pogil.org](http://www.pogil.org)).

#### **Student Responsibilities or Tips for Success in the Course: Pointers to Succeed**

Material will be covered at the rate indicated by the *Tentative Class Schedule*. *Be sure to read the textbook and notes before coming to the lectures.* The class will focus on important chemistry

concepts but will not serve as a substitute for individual studying. Reading the textbook and completing the ALEKS homework is essential for success in the course. Chemistry is a physical science and it is imperative to master calculations to pass the course.

### Grading

Your course grade will be based on your participation (80%) and a weekly class assignment(s) grade (20%), as illustrated in the Table below. There are 15 class days in the semester.

Week	Participation grade (0-100 points)*0.8	Weekly Class Grade out of 100 points (total of group work, group quiz, pre-class worksheet, and/or individual quiz) * 0.2	Total points for the week (out of 100)
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
(Semester Total Points / 1500 points) *100% = Class Average %			

The final letter grade will be based on a standard scale 90-100% A, 80-89% B, 70-79% C, 60-69% D, and below 60% F. The grades may be curved, if warranted. Incomplete grades may be given only if the student has a current average  $\geq 70\%$  and is precluded from completion of the course by a documented illness or family crisis. The last drop date for the course is **October 31, 2024**. If you drop the Chem 1311 course you should also drop the Chem 101 course. You can remain enrolled in Chem 1111 (lab) if you drop Chem 101/1311.

**If you fail to sign the attendance sheet for a class period, you will be counted as absent even if you were in class that day; the sign-in sheet is the official record of your attendance in class. If you will miss your class one week, you can attend one of the other sections that same week with instructor approval. This will be your only option for earning credit for that week. There will be absolutely no make-ups for missed class attendance.**

Your participation grade is not based on you simply showing up to class. To receive participation credit for the class period you must meet the following requirements:

1. You cannot be *late to class*. Missing the introductory lesson at class time will equate to a non-attendance for that day.

- You must *participate in the class or group discussion*. Non-participation will equate to a non-attendance for that day.
- Disorderly conduct will equate to a non-attendance for that day.
- Your group must work diligently to complete the lesson for that day. If your group does not work diligently to complete the lesson you will receive a non-attendance for that day.

**Learning Assistants and Peer-Led Team Learning:** There will be two undergraduate students helping with this class. These students have recently completed this course and have demonstrated excellence in the subject matter. These students are employed as Learning Assistants (LAs). The purpose and goal of these student assistants is to help you learn chemistry, learn how to solve chemistry problems and successfully pass this course.

### TENTATIVE COURSE OUTLINE / CALENDAR

Date	PS	Chapter	Problem Set Related To:
August 26-30	1	Ice breaker, math review	
Sept 3-9	2	Chapter 1: Chemistry and Measurement	Mass conservation, matter, Physical Measurements, Dimensional analysis, significant figures, SI system
Sept 10-16	3	Chapter 2: Atoms, Molecules and Ions	Atomic theory and structure, isotopes, nuclide symbols
Sept 17-23	4	Chapter 3: Calculations with Chemical Formulas and Equations	mass and moles of a substance, Avogadro's number
Sept 24-Sept 30	5	Chapter 7: Quantum Theory of the Atom	Light wave and photons, Electronic structure of atoms, Bohr theory, Quantum mechanics, Atomic orbitals, Periodicity of the elements
Oct 1-7	6	Chapter 7: Quantum Theory of the Atom	Quantum mechanics, Atomic orbitals, Periodicity of the elements
Oct 8-14	7	Chapter 8: Electron Configurations and Periodicity	Periodic trends: atomic radii, ionization energies, electron affinity
Oct 15-21	8	Chapter 9: Ionic and Covalent Bonding	Covalent and ionic bonding, electronegativity, resonance, formal charge, Lewis Dot Structures
Oct 22-28	9	Chapter 10: Molecular Geometry and Chemical Bonding Theory	VSEPR model and geometry, valence bond theory, molecular orbital theory, polarity, dipole moment
Oct 29-Nov 4	10	Chapter 11: States of Matter; Liquids and Solids	London dispersion forces, dipole-dipole attractions, hydrogen bonding, viscosity, solubility, phase diagrams
Nov 5-11	11	Chapter 3: Calculations with Chemical Formulas and Equations	Stoichiometry of reactions, theoretical yield, percent yield, empirical formulas
Nov 12-18	12	Chapter 4: Chemical Reactions	Ions in aqueous solution, electrolytes, acids and bases, solutions, dilutions
Nov 19-25	13	Chapter 4: Chemical Reactions	Volumetric analysis, quantitative analysis, oxidation-reduction reactions

Nov 26-Dec 1	14	Chapter 5: The Gaseous State	Gas laws, Kinetic-molecular theory
Dec 2-6	15	Chapter 6: Thermochemistry	Reaction heat, enthalpy heat changes in processes, heat capacity, calorimetry, Hess's Law, standard heats of reaction
Dec 9-13		<b>No class</b>	<b>No class</b>

### Interaction with Instructor Statement

The best way to communicate with the instructor is via e-mail: [stephen.starnes@tamuc.edu](mailto:stephen.starnes@tamuc.edu) or stop by the instructor's office (Science 339) for clarification of course material and expectations.

## TECHNOLOGY REQUIREMENTS

### LMS – myLeo Online – D2L Brightspace

All course sections offered by Texas A&M University-Commerce have a corresponding course shell in the myLeo Online Learning Management System (LMS). Below are technical requirements

LMS Requirements:

<https://community.brightspace.com/s/article/Brightspace-Platform-Requirements>

LMS Browser Support:

[https://documentation.brightspace.com/EN/brightspace/requirements/all/browser\\_support.htm](https://documentation.brightspace.com/EN/brightspace/requirements/all/browser_support.htm)

YouSeeU Virtual Classroom Requirements:

<https://support.youseeu.com/hc/en-us/articles/115007031107-Basic-System-Requirements>

## ACCESS AND NAVIGATION

You will need your campus-wide ID (CWID) and password to log into the course. If you do not know your CWID or have forgotten your password, contact the Center for IT Excellence (CITE) at 903.468.6000 or [helpdesk@tamuc.edu](mailto:helpdesk@tamuc.edu).

**Note:** Personal computer and internet connection problems do not excuse the requirement to complete all course work in a timely and satisfactory manner. Each student needs to have a backup method to deal with these inevitable problems. These methods might include the availability of a backup PC at home or work, the temporary use of a computer at a friend's home, the local library, office service companies, Starbucks, a TAMUC campus open computer lab, etc.

## COMMUNICATION AND SUPPORT

If you have any questions or are having difficulties with the course material, please contact your Instructor.

### Technical Support

If you are having technical difficulty with any part of Brightspace, please contact Brightspace Technical Support at 1-877-325-7778. Other support options can be found here: <https://community.brightspace.com/support/s/contactsupport>

## COURSE AND UNIVERSITY PROCEDURES/POLICIES

### Syllabus Change Policy

The syllabus is a guide. Circumstances and events, such as student progress, may make it necessary for the instructor to modify the syllabus during the semester. Any changes made to the syllabus will be announced in advance.

### University Specific Procedures

#### Student Conduct

All students enrolled at the University shall follow the tenets of common decency and acceptable behavior conducive to a positive learning environment. The Code of Student Conduct is described in detail in the [Student Guidebook](#).

<http://www.tamuc.edu/Admissions/oneStopShop/undergraduateAdmissions/studentGuidebook.aspx>

Students should also consult the Rules of Netiquette for more information regarding how to interact with students in an online forum: [Netiquette](#)

<http://www.albion.com/netiquette/corerules.html>

#### TAMUC Attendance

For more information about the attendance policy please visit the [Attendance](#) webpage and [Procedure 13.99.99.R0.01](#).

<http://www.tamuc.edu/admissions/registrar/generalInformation/attendance.aspx>

<http://www.tamuc.edu/aboutUs/policiesProceduresStandardsStatements/rulesProcedures/13students/academic/13.99.99.R0.01.pdf>

#### Academic Integrity

Students at Texas A&M University-Commerce are expected to maintain high standards of integrity and honesty in all of their scholastic work. For more details and the definition of academic dishonesty see the following procedures:

[Undergraduate Academic Dishonesty 13.99.99.R0.03](#)

<http://www.tamuc.edu/aboutUs/policiesProceduresStandardsStatements/rulesProcedures/13students/undergraduates/13.99.99.R0.03UndergraduateAcademicDishonesty.pdf>

[Graduate Student Academic Dishonesty 13.99.99.R0.10](#)

<http://www.tamuc.edu/aboutUs/policiesProceduresStandardsStatements/rulesProcedures/13students/graduate/13.99.99.R0.10GraduateStudentAcademicDishonesty.pdf>

#### *ADA Statement*

##### **Students with Disabilities**

The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you have a disability requiring an accommodation, please contact:

##### **Office of Student Disability Resources and Services**

Texas A&M University-Commerce

Velma K Waters Library- Room 162  
Phone (903) 886-5150 or (903) 886-5835  
Fax (903) 468-8148

Email: [studentdisabilityservices@tamuc.edu](mailto:studentdisabilityservices@tamuc.edu)

Website: [Office of Student Disability Resources and Services](#)

<http://www.tamuc.edu/campusLife/campusServices/studentDisabilityResourcesAndServices/>

### **Nondiscrimination Notice**

Texas A&M University-Commerce will comply in the classroom, and in online courses, with all federal and state laws prohibiting discrimination and related retaliation on the basis of race, color, religion, sex, national origin, disability, age, genetic information or veteran status. Further, an environment free from discrimination on the basis of sexual orientation, gender identity, or gender expression will be maintained.

### **Campus Concealed Carry Statement**

Texas Senate Bill - 11 (Government Code 411.2031, et al.) authorizes the carrying of a concealed handgun in Texas A&M University-Commerce buildings only by persons who have been issued and are in possession of a Texas License to Carry a Handgun. Qualified law enforcement officers or those who are otherwise authorized to carry a concealed handgun in the State of Texas are also permitted to do so. Pursuant to Penal Code (PC) 46.035 and A&M-Commerce Rule 34.06.02.R1, license holders may not carry a concealed handgun in restricted locations.

For a list of locations, please refer to the [Carrying Concealed Handguns On Campus](#) document and/or consult your event organizer.

Web url:

<http://www.tamuc.edu/aboutUs/policiesProceduresStandardsStatements/rulesProcedures/34SafetyOfEmployeesAndStudents/34.06.02.R1.pdf>

Pursuant to PC 46.035, the open carrying of handguns is prohibited on all A&M-Commerce campuses. Report violations to the University Police Department at 903-886-5868 or 9-1-1.

### **A&M-Commerce Supports Students' Mental Health**

The Counseling Center at A&M-Commerce, located in the Halladay Building, Room 203, offers counseling services, educational programming, and connection to community resources for students. Students have 24/7 access to the Counseling Center's crisis assessment services by calling 903-886-5145. For more information regarding Counseling Center events and confidential services, please visit [www.tamuc.edu/counsel](http://www.tamuc.edu/counsel)

### **AI use policy**

Texas A&M University-Commerce acknowledges that there are legitimate uses of Artificial Intelligence, ChatBots, or other software that has the capacity to generate text, or suggest replacements for text beyond individual words, as determined by the instructor of the course. Any use of such software must be documented. Any undocumented use of such software constitutes an instance of academic dishonesty (plagiarism). Individual instructors may disallow entirely the use of such software for individual assignments or for the entire course. Students should be aware of such requirements and follow their instructors' guidelines. If no instructions are provided the student should assume that the use of such software is disallowed. In any case,

students are fully responsible for the content of any assignment they submit, regardless of whether they used an AI, in any way. This specifically includes cases in which the AI plagiarized another text or misrepresented sources.

13.99.99.R0.03 Undergraduate Academic Dishonesty

13.99.99.R0.10 Graduate Student Academic Dishonesty