



CHEM 1211 CHEMISTRY I

MASTER COURSE SYLLABUS

Instructors will provide students with additional course-specific information, including attendance/makeup policies, assignment/test scheduling, and instructor contact information, as necessary and appropriate.

Prerequisite(s):	MATH 1111 with a grade of C or higher
Co-requisite(s):	CHEM 1211L
Term(s) Offered:	Fall, Spring, Summer
Class Hours:	3
Lab Hours:	0
Credit Hours:	3

Course Description

This course provides an introduction to basic chemical principles and concepts which explain the behavior of matter. Topics include measurement, physical and chemical properties of matter, atomic structure, chemical bonding, nomenclature, chemical reactions, and stoichiometry and gas laws.

Course Competencies and Student Learning Outcomes

Measurement

Order	Description
1	Use basic metric measurement prefixes and factor multipliers to convert units within the metric system. Describe justifications for S.I. convention.
2	Perform calculations involving density, specific gravity, mass, and volume measurements.
3	Apply the conventions of exponential notation and significant figures to mathematical operations.
4	Convert between the Fahrenheit, Celsius and Kelvin temperature scales.
5	Use dimensional analysis (unit-factor analysis) in calculations involving conversions from one set of units to another.
6	Perform gravimetric analysis and volumetric analysis.

Physical and Chemical Properties of Matter

Order	Description
1	Describe and distinguish the general properties of gases, liquids, and solids.
2	Explain changes of state (phase changes) in matter and relate to heat.
3	Define physical and chemical changes of matter.
4	Classify an element as a metal, non-metal or metalloid and relate this to its position on the periodic table.
5	Identify diatomic elements.
6	Determine the relative electronegativity, atomic radius and other characteristics of an atom by its position on the periodic chart.

- 7 Describe pure substances and mixtures. Introduce mixture separation strategies.

Atomic Structure

Order	Description
1	Describe Dalton's model, Bohr's model and the modern quantum mechanical theory of atomic structure.
2	Describe the electron configuration of any element and how its electron configuration relates to its properties and its position on the periodic table.

Chemical Bonding

Order	Description
1	Describe and identify ionic and covalent bonding and van der Waals forces.
2	Draw Lewis dot structures for molecules.
3	Determine the change of monoatomic ions and simple inorganic radicals. Explain oxidation numbers of elements and compounds.
4	Assign electronic geometry and molecular geometry from Lewis dot structure of a molecule.

Nomenclature

Order	Description
1	Name inorganic compounds by the IUPAC system based on their formulas.
2	Write formulas of common inorganic compounds based on their IUPAC names.
3	Determine if a compound is an acid, base, salt, or covalent compound.

Chemical Reactions

Order	Description
1	Calculate molar mass and percent composition of compounds.
2	Convert between mass, moles, and number of atoms using formula, formula weight, and Avogadro's number.
3	Calculate empirical formulae and molecular formulae of compounds.
4	Write and balance chemical equations.
5	Predict reactions in aqueous solutions: acids, bases, salts.

Stoichiometry

Order	Description
1	Perform calculations involving composition stoichiometry and reaction stoichiometry.
2	Classify chemical reactions as to type of reaction. Write examples of each type of chemical reaction.

Gas Laws

Order	Description
1	Summarize the general properties of gases and relate them to the kinetic molecular theory of gases.
2	Describe factors that affect the pressure, volume, and temperature of a gas.
3	Solve problems associated with gas laws including: Boyle's Law, Charles's Law, Gay-Lussac's Law, Combined Gas Law, Dalton's Law of Partial Pressures, and Ideal Gas Law.

Required Textbook(s) and Materials

Students enrolled in this course are obligated to have the following:

Kotz, Treichel, & Townsend. *Chemistry and Chemical Reactivity*. 8th Edition. Brooks/Cole Publishing.

Grading Scale

The grading scale is detailed in the *Catalog and Student Handbook* and listed below for reference. All faculty members follow this scale when assigning grades to reflect a given student's performance in the classroom.

Grade	Numerical Equivalent	Grade Point
A/A*	90-100	4
B/B*	80-89	3
C/C*	70-79	2
D/D*	60-69	1
F/F*	0-59	0

Effective Summer Quarter 2006, Athens Technical College replaced the S/U grading system used for learning support classes with an A*-F* grading system. The registrar uses an asterisk (A*, B*, C*, D*, F*, W*, WF*, WP*) to designate learning support course grades on transcripts and grade reports because these grades are not components of the term grade point average.

Academic Support Center:

The Academic Support Centers of Athens Technical College (ATC) provide free tutoring for enrolled students. Both instructors and peer tutors provide tutoring in almost all subjects offered by the college. Information about the Center is accessible via the ATC website at <http://www.athenstech.edu/StudentDevelopmentServices/AcademicSupportCenter>. To find out the specific services available on the Athens, Greene, and Walton Campuses, please call (706) 583-2839. To contact the Academic Support Center on the Elbert County Campus, please call (706) 213-2129.

Attendance

Regular class attendance is important and expected. The college considers both tardiness and early departure from class as forms of absenteeism. Students absent from class for any reason are still responsible for all work missed. Instructors have the right to determine whether work missed can be made up and have the liberty to set reasonable expectations for attendance based on frequency of class meetings and on the instructional delivery method, subject, type, and level of the class. Class attendance policies will be clearly stated for students by their respective instructors on separate documents (course outlines/schedules) or appendices to the master syllabus.

Course Withdrawal

Students may withdraw from a course without academic penalty until the midpoint of the term. Students withdrawing after the midpoint of the term receive grades of WP – Withdrawal Passing, or WF – Withdrawal Failing. Students who stop attending class(es) without formally withdrawing risk earning a final grade of F, which will appear on the academic transcript. Withdrawing from a course may impact financial aid status, academic standing, and GPA. Refer to the ATC *Catalog and Student Handbook* for further details. <http://www.athenstech.edu/Catalog/>

Course Technology

Course addendum will provide details concerning the use of technology in the course. Course schedule types include **web-enhanced** – taught face-to-face; **online** – taught online using the internet, may require proctored exam; **hybrid** – class time is split between face-to-face and online; **video conference** – taught at two or more campus locations simultaneously with instructor located at one of the classroom locations. More details are available on the Athens Technical College website. <http://www.athenstech.edu/eLearning/CourseList.cfm>

Continuation of Instruction

In the event of severe weather or other emergency, students will be expected to continue participating in learning activities via ANGEL, Athens Technical College email, or other modality. Instructors will provide a plan for the continuation of instruction.

Work Ethics:

To fulfill the responsibility to teach essential workplace ethics, the college provides students instruction in, and evaluates students on, the following ten work ethics traits: attendance, character, teamwork, appearance, attitude, productivity, organizational skills, communication, cooperation, and respect. To best equip students for successful workplace experiences in their chosen profession, instruction and evaluation takes place in the context of their program of study.

Academic Honesty

Academic honesty is expected at all times. Any student found to have engaged in academic misconduct such as cheating, plagiarism, or collusion is subject to disciplinary sanctions as outlined in the Student Code of Conduct detailed in the *ATC Catalog and Student Handbook*. See the following link for the complete Academic Honesty policy.

<http://www.athenstech.edu/StudentAffairs/AcademicHonesty/Academic%20Honesty.pdf>

Students are also advised to complete the tutorial on Academic Honesty available here:

<http://www.athenstech.edu/StudentAffairs/AcademicHonesty>

Americans with Disabilities Act

It is our goal at Athens Technical College to provide equal access to education for all students. Any student with a documented disability is eligible to receive reasonable academic adjustments and auxiliary aids in the classroom and/or for testing at Athens Technical College, as long as appropriate documentation of the disability has been submitted to the Disability Services Office in a timely manner. Students can access the application packet on our website.

http://www.athenstech.edu/CurrentStudents/orientation/files/disability_services_application.pdf

Cell Phones and Electronic Devices

Cell phone use in the classroom for non-instructional purposes, with the exception of receiving emergency notifications, is prohibited.

Food/Drinks in Classroom

Food and beverages (other than water) are not allowed in classrooms/labs.

Communication with ATC Faculty and Staff

Students, faculty, and staff must use Athens Technical College email and ANGEL accounts for all college-related communications. Students are obligated to check their email and ANGEL accounts on a regular basis, preferably daily.

Warranty of Graduates

The Technical College System of Georgia warrants every graduate of technical programs in which students may earn technical certificates of credit, diplomas, or associate degrees. The warranty guarantees that graduates demonstrate the knowledge and skills and can perform each competency as identified in the industry-validated standards established for every program of study. If one of our graduates educated under a standard program or his/her employer finds that the graduate is deficient in one or more competencies as defined in the course/program standards, Athens Technical College will retrain the employee at no instructional cost to the employee or the employer. This guarantee is in effect for two years after graduation.

TEACH Act

According to the TEACH Act of 2002, Athens Technical College is obligated to advise you that instructional material included in this course may be subject to copyright protection. As such, you must not share, duplicate, transmit, or store the material of this course beyond the purpose and time frame explicitly stated in the syllabus of your course. If you are not certain whether a particular piece of material is covered by copyright protection, you should contact your instructor and obtain his/her written clarification. Failing to observe copyright protection is a violation of law.