



Syllabus: **CHM 080, Preparation for General Chemistry**

Course Information	
Course Prefix/Number: Chem 080	Credit Hours: 3
Semester: Fall 2019	Course Title: Preparation for General Chemistry
Class Days/Times: Tues, Thurs/ 1:00 - 2:15pm	Room: GSK1

Instructor Information: Name: Rajneesh Verma, PhD	Phone/Voice Mail: 520-383-1114 E-mail: rverma@tocc.edu Office location: 108, Faculty Building Office hours: Mon/Wed: 12pm - 2:30pm
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Course Description: Fundamentals of chemistry. Includes nomenclature, atomic structure, bonding, chemical equations, moles, stoichiometry, the periodic table, conversions, problem-solving techniques and study skills.

Student Learning Outcomes

1. Define chemistry and give examples of chemicals and chemical changes.
2. Identify and describe the steps of the scientific method.
3. Distinguish between mass and weight.
4. Distinguish between elements and compounds.
5. Distinguish between pure substances and mixtures.
6. Classify a specific mixture as being homogeneous or heterogeneous.
7. Distinguish between physical and chemical properties of substances.
8. Convert SI lengths, volumes and masses to other equivalent SI units.
9. Use dimensional analysis and conversion factors to set up and solve problems involving both SI and English quantities.
10. Use experimental data to discuss uncertainty in measurement.
11. Determine number of significant figures in data and calculations.
12. Write numbers in scientific notation, and use these in calculations.
13. Make conversions involving density and also temperature on the Fahrenheit, Celsius and Kelvin scale.
14. Use correct spelling for the names and symbols of common elements.

15. Give formulas of the elements that exist as diatomic molecules.
16. Use periodic table to identify metals, nonmetals, and metalloids, and list general physical properties for each category.
17. Give names, symbols, relative charges and masses for the three major subatomic particles.
18. Determine the atomic number, mass number, and number of protons, neutrons and electrons for isotopes of the elements.
19. Describe the atom in terms of a nucleus containing protons and neutrons and a highly organized arrangement of electrons outside the nucleus.
20. Describe chemical change in terms of loss or gain of specific "valence" electrons from the outer boundaries of the atom.
21. Identify all periods and groups shown on the periodic table.
22. Compare sizes of atoms within families of elements.
23. List general properties and some specific uses of common elements within each group.
24. Relate column numbers in the periodic table to the number of valence electrons available for use in chemical change.
25. Draw Lewis electron dot symbols for the main group elements based on periodic table positions.
26. Use Lewis dot structures to represent the formation of the ionic bond between main group metals and the nonmetals.
27. Use Lewis dot structures to represent the formation of the covalent bond between non-metallic elements.
28. Define ionic, polar covalent and covalent bonding, including concept of electronegativity.
29. Write formula and name for common cations and anions.
30. Write a formula for a simple acid, base or salt when the name is given.
31. Name a simple acid, base or salt when the formula is given.
32. Write formula or name binary compounds of the non-metals.
33. Describe the chemical mole and Avogadro's Number.
34. Define molar mass and determine molar mass for elements and compounds.
35. Interconvert mass, moles and number of ions or atoms in any given substance.
36. Describe how to prepare solutions with molar concentrations
37. Balance a chemical equation for which all formulas are given
38. Describe on a particle and mole level the significance of a balanced equation.
39. Use the balanced equation to calculate gram and mole quantities of reactants and products

Course Structure: This course consists of five units. Each unit consists of PowerPoint lectures, assigned readings, homework assignments, hands-on class activity or laboratory, and exam. The final project for the course is a presentation on

“Chemistry: materials and applications.”

Texts and Materials: Required Text: Introduction to Chemical Principles, Eleventh Edition H. Stephen Stoker

Evaluation, Grading & Assignments:

Course assessment will consist of exams, homework, hands-on activities, laboratories and final presentation. Study guides will be available to help you prepare for exams. In order to facilitate on-going faculty-student feedback and provide formative assessment, there will be frequent homework assignments, which will be graded and returned promptly. I welcome student feedback about the course anytime. I will also provide students an opportunity to give me feedback on their course experience through an anonymous mid-course and final course evaluation

Your grade will be evaluated by the following:

Exams: There are 4 exams during the course of the semester. 3 regular semester unit exams are in-class and you are allowed 1ea. 8.5 x 11 sheet of reference notes.

The 4th exam, the final, is cumulative and is required. The final may not be dropped for purposes of grading. Each exam is worth 75 points and consists of both multiple choice and short answer problems. Of the 3 semester exams the lowest can be replaced by taking the Make-up exam during finals week. This means that if you do not do well on one of the 3 regular semester exams or if you cannot take one then it can be made up at the end of the semester.

Quizzes: 10 quizzes will be given with each worth 30 pts.

Homework: 5 homework assignments will be given, each worth 20 points

90 and above is an A
80 - 89 is a B
70 - 79 is a C
60 - 69 is a D
Under 60 is Failing

Your grade will be determined by the following:

Evaluation:	Points:	Percent of total points:
Exams and Final	300	30
Quizzes/Projects	300	30
Attendance	300	30
Homework	100	10
TOTAL POINTS	1000	100

Himdag Cultural Component: Tohono O’odham traditions and cultural beliefs will be discussed as relevant course topics, and only as appropriate to the Tohono O’odham nation’s traditional standards for sharing information as determined by the Himdag committee.

Policies and Expectations

Course Policies Requirements: (1) Attend class regularly; (2) Complete in-class and out-of-class assignments and submit to the instructor; (3) Attend all field trips; (4) Take all exams (5) Complete all class projects & presentations.

Attendance Policy: You are expected to arrive to class on time and actively participate each class period. Four unexcused absences may result in withdrawal and a “W” or “Y” will be recorded. You may request to be excused from class for religious observances and practices, for illness, for travel or for personal or family emergency. If you will be absent or have been absent, please notify the instructor as soon as possible.

Make-up policy: Missed exams can be made up within two days of the exam date. Late assignments that can be made up will be accepted but will be penalized 25%. Laboratories cannot be made up. At the instructor’s discretion, extra credit opportunities and optional activities may be provided.

Academic Integrity: Violations of scholastic ethics are considered serious offenses by Tohono O’odham Community College, the Student Services Department, and by your instructor. Students may consult the TOCC Student Handbook sections on student code of conduct, on scholastic ethics and on the grade appeal procedure. Copies are available at Tohono O’odham Community College.

All work done for this class must be your own. While you may discuss assignments with other class members, the final written project must clearly be your own. You

may use work from books and other materials if it is properly cited. Copying from a book without proper reference or from a person under any circumstances will result in an "F" for the assignment, and at the instructor's discretion, possibly an "F" for the course.

ADA Compliance:

Tohono O'odham Community College strives to comply with the provisions of the Americans with Disabilities Act and Section 504 of the Rehabilitation Act. If you have a learning problem, physical disability, or medical illness that requires you to have any special arrangements, please inform your instructor at the beginning of the semester so your academic performance will not suffer because of the disability or handicap.

Classroom Behavior:

- Because of insurance limitations, non-registered visitors are not allowed at class sessions or on field trips.
- Possession of drugs, alcohol or firearms on college property is illegal.
- Food and beverages are allowed in classrooms.
- Pets are not allowed in the classroom.
- Pagers and electronic devices that distract students are NOT allowed in classrooms.
- Telephones should be turned off during class.
- Students creating disturbances that interfere with the conduct of the class or the learning of others will be asked to leave.

Course Feedback:

All assignments, written papers and quizzes will be graded and returned to the students promptly, typically within a week after the assignment is due. E-mail and phone messages will be returned within two days. A student or the instructor may request a student conference at any time during the semester. A mid-semester grade report will be provided to each student by October 6th.

Incomplete Policy

Incomplete (I) grades are not awarded automatically. The student must request an "I" from the instructor who can choose to award an Incomplete only if all three of the following conditions are met:

1. The student must be in compliance with the attendance policy.
2. There must be an unavoidable circumstance that would prohibit the student from completing the course.
3. The student must have completed over 75% of the course requirements with at least a "C" grade.

Incompletes are not a substitute for incomplete work due to frequent absences or poor academic performance. Incomplete grades that are not made up by the end of the ninth week of the following semester will be automatically changed to an F if the agreed upon work, as stipulated on the written form signed by the instructor and the student when the I grade is awarded, is not completed.

Instructor Withdrawals

Students who have missed four consecutive classes (or the equivalent) not submitted any assignments nor taken any quizzes by the 45th day census report, due on 10/3/2019 are assumed NOT to be participating in the class and may be withdrawn at the faculty member's discretion.

Student Withdrawals

Students may withdraw from class at any time during the first 2/3 of the semester without instructor permission and without incurring any grade penalty. Please be sure to withdraw yourself by 11/4/2019 if you do not expect to complete the class, otherwise you may receive an "F" grade.

Special Withdrawal (Y) Grade

The "Y" grade is an administrative withdrawal given at the instructor's option when no other grade is deemed appropriate. Your instructor must file a form stating the specific rationale for awarding this grade. "Y" grades are discouraged since they often affect students negatively. Your instructor will not award a "Y" grade without a strong reason

Reasonable Disability Accommodations (Americans with Disabilities Act):

TOCC seeks to provide reasonable accommodations for all qualified individuals with disabilities. The College will comply with all applicable federal, state and local laws, regulations, and guidelines with respect to providing reasonable accommodations as required to provide an equal educational opportunity. It is the student's responsibility to make known to the instructor his or her specific needs in order to determine reasonable accommodations. We will work together in order to develop an Accommodation Plan specifically designed to meet the individual student's requirements.

Title IX

Tohono O'odham Community College faculty and all staff are dedicated to creating a safe and supportive campus. Title IX and our school policy prohibit discrimination on the basis of sex- this includes sexual misconduct; harassment, stalking, domestic and dating violence and sexual assault.

Sexual discrimination and sexual violence can undermine students' academic success and quality of life on campus and beyond. We encourage students who have experienced any form of sexual misconduct to talk about their experience and seek the support they need.

Confidential support and academic advocacy can be found with: Student Services.

Course Outline:

- I. Fundamental Concepts (**August, week 3 & 4**)
 - A. Scientific method
 - B. Classification of matter
 - C. Mathematical tools for problem solving in chemistry
 - D. SI and English units of measurement
- II. Nomenclature (**September, week 1 & 2**)
 - A. Names and formulas of common cations, anions
 - B. Naming acids, bases, salts
 - C. Naming binary molecules
- III. Chemical Quantities (**September, week 3 & 4**)
 - A. The mole concept
 - B. Calculation of molar mass of pure substances
 - C. Interconversion of mass, mole and number of particles
 - D. Molar solutions
- IV. Stoichiometry (**October, week 2 & 3**)
 - A. The balanced equation
 - B. Equation molar and mass relationships
- V. Pure Substances I: Elements (**October, week 4 & November, week 1&2**)
 - A. Atomic structure, subatomic particles
 - B. Periodic table: names, symbols, types of elements
 - C. Periodic property trends
 - D. Valence electrons and Lewis dot symbols
- VI. Pure Substances II: Compounds (**November, week 4 & December, week 1**)
 - A. Compound formation: molecules, ions
 - B. Ionic bond and covalent bond: Lewis dot structures
 - C. Electronegativity and bond type

Optional Special Topics

1. Lab techniques: use of flasks, balances and other classroom appropriate activities
2. Applications of material to societal concerns, relationships to familiar household products, and current scientific research
3. Other topics as considered appropriate by the instructor

DISCLAIMER: This syllabus is designed to evolve and change throughout the semester based on class progress and interests. You will be notified of any changes as they occur.

Acknowledgment of Receipt of Syllabus

Please read, sign and return the following acknowledgment to me in class

I have received my CHM 080 syllabus (including course objectives, policies, requirements and schedule) and have read and understood all the enclosed materials

I prefer that the instructor not call or contact me by phone anytime during the semester.

I would like to be contacted by the instructor regarding the following concerns:

Print Name Clearly Here

Student ID Number

Current Mailing Address/City/State/Zip

Telephone Number

E-mail Address

Sign Name Here

