



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

Course Information

Course Prefix/Number: CHM 080

Semester: Spring 2020

Class Days/Times: Tues/ Thurs:
10:15am-11:30am

Credit Hours: 3

Course Title: Preparation for General
Chemistry

Room: GSK 2

Instructor Information:

Name: Rajneesh Verma, PhD

Phone/Voice Mail: 520-383-1114

E-mail: rverma@tocc.edu

Office location: Faculty Building, #103

Office hours: Monday: 8:30am-12:00pm,

Wednesday: 10:30am-12:00pm

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: Glencoe Chemistry: Matter and Change

Evaluations and Grading & Assignments:

Course assessment consists of exams, quizzes, discussions, short written assignments, informal in-class assessments, and laboratory reports. Study guides will be available to help you prepare for exams. In accordance with my teaching philosophy in which I believe student learning occurs primarily through hands-on, real world application of course materials, exams usually comprise 50% or less of the final grade (although they are still an important aspect of course assessment and your grade). In order to facilitate on-going faculty-student feedback and provide formative assessment, many class projects are divided into smaller intermediate steps such as topic choice, project proposals, and rough drafts. Student-to-student assessments are also included in this course through peer review of group participation and written assignments. 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 determined 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 1 ea. 8.5 x 11 sheet of reference notes. The 4th exam, the Final, is cumulative and is required. Each exam is worth 75 points and consists of both multiple choice and short answer problems

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

Evaluation	Points	Percent of Total points
Exams and Finals (4x100)	400	30
Quizzes (5X60)	300	30
Homework (11x20)	220	15
Presentation/Report	200	15
Attendance	100	10

Himdag Cultural Component: This course includes a unit on comparing water chemistry to the sacred nature of water as recognized by indigenous cultures. It also includes a unit on macro- and micronutrients of traditional Tohono O’odham foods. Course assessment includes an oral component through the final presentation.

Policies and Expectations:

Course Policies:

- 1) There is no extra credit work.
- 2) If a student misses class(es) because of absence(s), it is his/her responsibility to catch up and cover the material that was taught during the absence(s).
- 3) Students are expected to stay in class and work diligently throughout the whole time. Sleeping, frequent/continued exiting (more than once) from the class during the class period will constitute one (1) absence.
- 4) No cell phone use is allowed during class. Use of cell phones during class, unless permitted by instructor, is a violation of the T-So: son. You will be given one verbal warning on your first violation and a written one on your second violation. After that administrative action(s) will be taken
- 5) Your behavior in the class will decide whether you will get a recommendation letter or not from me.
- 6) Students are expected to attend each class, arriving on time, except in the case of an excused emergency.
- 7) Students are expected to contact instructor prior to absences, coming late to class or leaving early.
- 8) Unexcused late arrivals or early departures will count against attendance record.
- 9) Class participation and preparation are essential to student success. Students must read textual material, prepare for projects, complete required research as stated on the course schedule.
- 10) Students are expected to come to class prepared for class and having done any preliminary work required as per the course schedule.
- 11) Failure to submit a project results in a grade of zero (0). An F is a better grade!
- 12) No work accepted after the last class

Classroom Behavior

- 1) Visitors may be only allowed at class sessions or on field trips with instructor approval, visitor's safety and behavior are the responsibly of the student.
- 2) Possession of drugs, alcohol or firearms on college property is illegal.
- 3) Food and beverages are allowed in classrooms at discretion of the instructor.
- 4) Cellphones should be turned off during class, unless the instructor is allowing students to use their tools (calculator, internet access).
- 5) Students creating disturbances that interfere with the conduct of the class or the learning of others will be asked to leave.
- 6) Student behavior is also detailed in student handbook under Student Code of Conduct Violations

Make-up policy:

Late assignments that can be made up will be accepted but will be penalized 25%. Laboratories cannot be made up except in the case of college closure. 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, or the original work of your group. While you may discuss assignments with other class members, the final written project must clearly be original. 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. If you are uncertain about proper citations ask your instructor or the librarian.

Course Feedback:

All assignments will be graded and returned to the students promptly, typically within a week after the assignment is closed for handing in. 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. Quarterly grade reports will be provided to each student, either in person, by email or via the electronic system of Canvas.

Attendance Policy

You are expected to arrive to class on time and be prepared to participate in 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 school or work-related travel or for personal or family emergency. If you will be absent, please notify the instructor as soon as possible (approved by Faculty Senate April 2014).

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. The student must have 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 [date of 45th day found in Academic Calendar on TOCC website] are assumed NOT to be participating in the class and may be withdrawn at the faculty member's discretion. [faculty members should be clear in their withdraw policy, if you do not withdraw students please note in appropriate sections].

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 [withdrawal deadline date found in Academic Calendar on TOCC website] if you do not expect to complete the class, otherwise you may receive an "F" grade.

Special Withdrawals (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.

Equal Access Statement/Disability Accommodations

Tohono O'odham Community College seeks to provide reasonable accommodations for qualified individuals with disabilities. The College will comply with all applicable regulations, and guidelines with respect to providing reasonable accommodations as required to ensure an equal educational opportunity. This process includes self-identifying as a student with a disability, providing supporting documentation of their disability, and being approved for services through the Disability Resources Office (DRO). It is the student's responsibility to make known to their instructor(s) the student's specific needs within the context of each class in order to receive appropriate accommodations. We will work together in order to develop an accommodation plan specifically designed to meet the individual student's requirements.

For more information or to request academic accommodations, please contact: Anthony Osborn, TOCC Disabilities Resource Coordinator, aosborn@tocc.edu, or 520-360-5044 for additional information and assistance.

Title IX

Tohono O'odham Community College encourages each student to have the knowledge and skills to be an active bystander who intervenes when anyone is observed or being harassed or endangered by sexual violence. Sexual discrimination and sexual violence can undermine students' academic success and quality of life on campus and beyond. We encourage students who have experienced or witnessed 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 Title IX Coordinator/Counselor, Alberta Espinoza, M.Ed. located in I-We:mta Ki: Room 18. Phone 520-383-0033 email: aespinoza@tocc.edu

Conduct: Bias, Bullying, Discrimination and Harassment

Tohono O'odham Community College faculty and staff are dedicated to creating a safe and supportive campus environment as a core value. Harassment based on age, class, color, culture, disability and ability, ethnicity, gender, gender identity and expression, immigration status, marital status, political ideology, race, religion/spirituality, sex, sexual orientation, and tribal sovereign status will not be tolerated.

Courses Outline: Course Outline:

I. Fundamental Concepts (3rd and 4th week of January, [Quiz 1, HW 1-2](#))

A. Scientific method

B. Classification of matter

C. Mathematical tools for problem solving in chemistry

D. SI and English units of measurement

II. Nomenclature 1st, 2nd and 3rd week of Feb, Quiz 2, HW 3,4)

A. Names and formulas of common cations, anions

B. Naming acids, bases, salts

C. Naming binary molecules

III. Chemical Quantities (4th week of Feb, 1st and 2nd week of March, HW 5,6, Quiz 3, Exam 1)

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 ((4th week of March, 1st and 2nd week of April HW 7,8, Quiz 4, Exam 2)

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 (2nd and 3rd week of April, HW 9, 10 Quiz 5)

A. Compound formation: molecules, ions

B. Ionic bond and covalent bond: Lewis dot structures

C. Electronegativity and bond type

Optional Special Topics (4th week of April, 1st week of May, Presentation / report, HW 11, Exam 3, Final exam)

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.

Date:

Please read, sign and return the following acknowledgment to me in class, or return to me at the following address:

Dr. Rajneesh Verma
Tohono O'odham Community College P.O. Box 3129
Sells, AZ 85634

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

I have no objection to receiving an occasional call from the instructor at the number given with my registration materials.

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

My reason(s) for taking this course:

My background in this area includes:

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

_____ Print Name _____ Signature

_____ Student ID Number

_____ Telephone Number

Current Mailing Address/City/State/Zip E-mail Address
