Syllabus: *Chem 151N - General Chemistry I*

Course Information	
Course Prefix/Number: CHM 151N Semester: Fall 2020 Class Days/Times: Tues,Wed,Thurs / 4:45 - 7:00pm	Credit Hours: *5* Course Title: General Chemistry I Room: Zoom Meeting

Instructor Information:	
Name: Rajneesh Verma, PhD	Phone/Voice Mail: 520-383-1114 E-mail: rverma@tocc.edu Office location: 108, Faculty Building

Course Description:

This integrated lecture-lab course is designed to develop a basic understanding of the central principles of chemistry that are useful to explain and predict the properties of chemical substances based on their atomic and molecular structure. Topics covered include atomic structure, chemical bonding, reaction stoichiometry, behavior of gases, and reactions in solutions, and thermochemistry. Additionally, students will be introduced to modern laboratory techniques and participate in experimental activities that promote the development of basic and advanced science-process skills. The course is designed for students who require a strong foundation in general chemistry, such as science and engineering majors, pre-medical and pre-pharmacy students.

Student Learning Outcomes

During this course, the students will be able to

1. Convert between SI (metric) units.
2. Name a chemical compound when supplied with the formula and write the formula when supplied
3. Identify trends in periodic properties of the elements on the periodic table.
4. Write and balance molecular, ionic and net ionic chemical equations
5. Convert among atoms, moles, grams, and molarity / volume of one substance to atoms, moles, grams, and molarity / volume of the same or a different substance.
6. Determine oxidizing agent, reducing agents, reduced species, oxidized species, and oxidation number of participating elements in reactions and compounds.
7. Predict solubility and dissociation of substances in water and the effects that the solubility and dissociation has on the solution.
8. Predict ideal gas behavior under differing conditions of pressure, temperature, volume, and quantity of gas.
9. Calculate energy values from thermochemical data.
10. Predict the behavior and properties of electrons and photons and their interactions.
11. Predict the structure and electrical properties of molecular compounds

Course Structure:
This course is an integrated lab/lecture course where the labs are integrated into the regular class periods. This course consists of three units. Each unit consists of PowerPoint lectures, assigned reading, films, in-class activities, chemical thinking research report, discussions, laboratory project and several quizzes.

Texts and Materials:
1) The book is Chemistry 2e available online through openstax. A link is provided below
https://openstax.org/details/books/chemistry-2e

2) you are required to have an account with
https://www.101edu.co

The instruction to set up the account and enrolling in CHM 151 on CHM101 website will be provided

Evaluation 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 though 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 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 20 pts

Homework: 10 homework assignments will be given. Each worth 5 points. These will correspond to the chapters and material on each of the exams.

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**
2 Exams	200	30
10 Labs. 25 points each	250	25
10 Quizzes, 20 points each	200	20
Attendance	150	5
10 Home work assignment, 5 point each	50	10
Lab exam	50	10
TOTAL	900	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 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. Introductory Concepts **(August, week 3 & 4)**
A. The Chemist's tool bag 1. Measurements and Significant Figures
2. Dimensional Analysis
B. The Scientific Method
C. Classifying Matter and its Properties
D. Traditional Knowledge of Chemistry

II. Atomic Structure **(September, week 1, 2 & 3)**

A. Introducing the Atom and its component parts
B. Developing the wave mechanical view of the atom
C. Applying the electronic nature of the atom to:
D. Electron configurations
E. The Periodic Table
F. Periodic Trends

III. Chemical Bonding **(October, week 2)**

A. Ionic and Covalent Bonding
B. Lewis Structures and Molecular Shapes
C. Bond Polarity and Hybridization

IV. Chemical Reactions and Stoichiometry **(October, week 3 & 4)**

A. Working with Chemical Equations
B. Stoichiometry calculations
C. Reactions in Aqueous Solution & Chemical Kinetics
D. Acid and Bases

V. Introduction to Thermodynamics **(November, week 1 & 2)**

A. Chemical reaction enthalpies
B. Thermal energy and changes in temperature

VI. Studying the States of Matter **(November, week 3,4 & December, week 1)**

A. Kinetic-Molecular Theory

B. Intermolecular Forces
C. Gas specific 1. Modeling Gases
2. Mixtures of gases and partial pressures
D. Liquid specific
E. Solutions 1. Characteristics
2. Concentration
3. Colligative Properties (Optional)
F. Electrochemistry

VII. Illustration/Reinforcement/Extension of Above Content in Actual Laboratory Setting A. Development of expertise in the skills and techniques of the chemistry laboratory
1. Pipetting
2. Massing
3. Titration
4. Other
B. Gain experience with laboratory apparatus including one or more technologically sophisticated pieces of instrumentation
C. Explore the process of testing/verifying hypothesis through experimental design and hands-on experimentation.

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 151 syllabus (including course objectives, policies, requirements and schedule), 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

_____