



Syllabus: **Chem 152N - General Chemistry II**

Course Information

Course Prefix/Number: CHM 152N	Credit Hours: 5
Semester: Spring 2020	Course Title: <i>General Chemistry II</i>
Class Days/Times: Mon/Tue/Wed/Thurs: 12:30pm-2:00pm	Room: <i>IWK 5</i>

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: This integrated lecture-lab course is a continuation of CHM 151IN Fundamentals of Chemistry I. This course includes topics such as chemical kinetics, spontaneity of chemical change, chemical equilibrium, precipitation reactions, acid and base equilibria, complex ions, oxidation-reduction reactions, and nuclear reactions.

Student Learning Outcomes:

During this course, the students will be able to

1. Calculate solution concentrations.
2. Analyze concentration data to calculate reaction rates.
3. Calculate equilibrium constants and reaction extents.
4. Calculate equilibrium acidities and pH values.
5. Analyze buffer concentrations to calculate titration curves for strong or weak acids.
6. Calculate concentrations of soluble species in reactions.
7. Analyze bonding rearrangements to calculate thermodynamic equilibria.
8. Calculate quantities in electrochemistry reactions.

9. Calculate rates of radioactive decay and radiochemical dating.

10. Demonstrate the proper techniques for using scientific lab equipment properly and safely to perform a variety of chemical procedures and techniques, such as to obtain chemical data, measure and dispense reagents, to analyze samples by performing titration experiments, or to do chemical qualitative analysis of a solution of multiple ions through selective precipitation of specific ions.

11. Prepare written reports: organize data in a logical format, analyze and interpret data, and report conclusions, using the scientific method. The lab report should be clear, understandable and complete.

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, discussions, laboratory project and several quizzes.

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

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 1ea. 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
4 Exams, 75 points each	300	30
12 Labs, 20 points each	240	25
5 Quizzes, 40 points each	200	20
11 Homework assignment, 10 points each	110	10
Attendance	50	5
Presentation/Report: Chemistry around you /History of Chemistry	50	5
Lab exam	50	5
TOTAL	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:

- 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 responsibility 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:

I. Chemical Kinetics (3rd and 4th week of January, Lab 00-02, Quiz 1, HW 1-2)

- A. Reaction rate, the rate law and its components
- B. Concentration-time relationships, integrated rate laws
- C. Effects of temperature and catalysts on reaction rates
- D. Reaction mechanisms

II. Chemical Equilibria (1st, 2nd and 3rd week of Feb, Lab 03-05, Quiz 2, HW 3, 4)

- A. Equilibrium constant, solubility product, and reaction quotient
- B. Le Chatelier's principle
- C. Precipitation reactions and the common ion effect

III. The Chemistry of Acids and Bases (4th week of Feb, 1st and 2nd week of March, Lab 06, HW 5,6, Quiz 3, Exam 1)

- A. Arrhenius and Bronsted concept of acids and bases
- B. Water and the pH scale
- C. Strong and weak acids and bases, acid/base dissociation constants
- D. Molecular structure and acidity
- E. Acid-base reactions
- F. Buffer solutions
- G. Acid/base titration curves

IV. Thermodynamics (4th week of March, 1st and 2nd week of April Lab 07-09, HW 7,8, Quiz 4, Exam 2)

- A. Thermodynamic versus kinetic control of a chemical reaction
- B. First and second laws of thermodynamics
- C. Gibbs free energy

V. Electrochemistry (2nd and 3rd week of April, Lab 10, 11 HW 9, 10 Quiz 5)

A. Redox reactions

- B. Electrochemical cells
- C. Electrolysis
- D. Corrosion
- E. Applications of electrochemical principles in industry

VI. Optional topics:

VII. Thermochemistry

- A. Enthalpy changes for chemical reactions
- B. Calorimetry
- C. Hess's Law and standard enthalpies of formation

VIII. Solutions

- A. Solution concentrations
- B. Principles of solubility
- C. Colligative Properties

IX. Nuclear Chemistry (3rd and 4th week of April, Lab12, Exam 3)

- A. Binding energy
- B. Fission, fusion
- C. Radioactivity

X. Organic Chemistry (4th week of April, 1st week of May, Presentation / report, Final exam)

- A. Introduction to nomenclature
- B. Functional groups
- C. Simple reaction types
- D. Polymers

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

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 152 N 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
