



TOHONO O'ODHAM COMMUNITY COLLEGE

## Course Content Form

**PREFIX** CHM 121N

**COURSE NAME:** Chemistry and Society

Instructor: Lucinda Begay Campus: Main Semester Dates: Summer 2018 Class Days/Times: MTWTH/3:45-5:45pm	Credit Hours: 4 Lecture Periods: 3 Lab Periods: 3
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<b>Instructor Information:</b> Name: Lucinda Begay	Phone (message only) : 623-6175 E-mail: lbegay@tocc.edu Office location: N/A Office hours: Appointments before or after class
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**Prerequisites:** MAT 92 or placement in MAT 142H

**Course Description:**  
This course covers the foundations of chemistry and its relationship to everyday experiences. Skills such as conversions and problem-solving techniques are also covered. Students will be introduced to laboratory techniques and participate in experimental activities that promote the development of basic and advanced science-process skills.

**Information:** *(Please include any information specific to this course.)*  
N is the integrated version of the course with the lecture and lab taught simultaneously

**Student Learning Outcomes:**  
Upon completion of the course, the student will be able to do the following:

1. Differentiate between physical and chemical properties and changes, and between elements, compounds, and mixtures.
2. Discuss current science problems and potential problems of the future.

3. Use appropriate chemical terminology and conventions to interpret symbols and formulas, balance chemical equations, name and write formulas for common inorganic compounds, and identify various types of chemical reactions.
4. Perform calculations involving the metric system, scientific notation, the mole concept, and concentration terms including molarity, percent, ppm, ppb and dimensional analysis.
5. Use periodic table to identify metals, nonmetals, and metalloids, and list general physical properties for each category including Lewis dot structure.
6. Identify and properly use lab equipment such as flasks, balances, beakers etc.

**Course Outline:**

- I. Classification and Structure of Matter
  - A. Atomic, ionic, or molecular nature of all material
  - B. Atomic structure
  - C. Electronic arrangement
- II. Radioactivity
  - A. Nuclear decay, radiation types
  - B. Power source
  - C. Societal implications, current usage
- III. Compound Formation from Elements
  - A. The Periodic Table of Elements
  - B. Metals and non-metals; their valence electrons, and periodic perspective
  - C. Atomic elements to ionic or molecular compounds; electron transfer and sharing
- IV. Electron Transfer: Electricity, Oxidation and Reduction
  - A. The electrochemical cell
  - B. Construction of batteries
  - C. Corrosion, rust, and bleaching
- V. Acids, Bases and Salts
  - A. Definition and reaction with indicator dyes
  - B. pH Scale
  - C. Common acids and bases; and their relative strengths
  - D. "Acid Rain" or other environmental topics related to pH
- VI. Chemical Quantities
  - A. The mole concept
  - B. Calculation of molar mass of pure substances
  - C. Interconversion of mass, mole and number of particles
  - D. Molar solutions
- VII. Stoichiometry
  - A. The balanced equation
  - B. Equation molar and mass relationships
- VIII. The Liquid State
  - A. Water and its unique properties
  - B. Solutions and solubility
  - C. Contaminants and purification

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- IX. The Gas State
  - A. Comparison to solid, liquid states: particle density
  - B. Effects of temperature and pressure on volume
  - C. The atmosphere and atmospheric pressure
  - D. Modeling the gaseous state
- X. Special Topics
  - A. Traditional Knowledge of Chemistry
  - B. Lab techniques: use of flasks, balances and other classroom
  - C. appropriate activities
  - D. Other special topics selected by instructor as relevant

**Evaluation and Grading & Assignments:**

Exams: There are 4 exams during the course of the semester.

<b>Evaluation:</b>	<b>Points:</b>	<b>Percent of Total Points</b>
Exams	400 (4 @ 100 pts)	40%
Labs-8 @ 10 pts	80 pts	25%
8 Quizzes & 8 Homework Assignments	160 pts	25%
Lab Exam	60 pts	10%
<b>TOTAL</b>	<b>700</b>	<b>100</b>

***Himdag Cultural Component:***

Course will explore existing elements, materials and environmental issues where this applies to culture chemical thinking to continue improving or restoring components of Himdag. Students will also formulate a personal ethic regarding the use of chemical thinking in science teaching and research, incorporating perspectives from Western science and TOCC Core values.

**CHM 121IN—Chemistry**

TENTATIVE SCHEDULE SUMMER 2018

BEGAY

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<b>Date</b>	<b>Assigned Reading</b>	<b>Topic</b>	<b>Assignments, Labs, Class Activities</b>
5/29-5/31	Ch. 1-2	Intro to Class, syllabus, chemical safety, Measurement	Lab 1: HW1 Quiz 1
6/4-6/7	Ch. 3-4	SI Unit, Matter	Lab 2: HW2 Quiz 2
6/11-6/14	Ch. 5	Atoms and Molecules Review/EXAM 1	Lab 3 HW 3 Quiz 3
6/18-6/21	Ch. 6-7	Chemical Periodicity Chemical Bond	Lab 4 HW 4 Quiz 4
6/25-6/28	Ch. 8	Review/ EXAM 2 Chemical Nomenclature	Lab 5 HW 5 Quiz 5
7/2-7/5	Ch. 9-10	Chemical Calculations	Lab 6 HW 6 Quiz 6
7/9-7/12	Chemical Application	Review/EXAM 3	Lab 7 HW 7 Quiz 7
7/16-7/19	Chemical Application	Chemical Equations	Lab 8 HW 8 Quiz 8
7/23-7/24		Review/Final Exam/Lab Exam	

**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.

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## Acknowledgment of Receipt of Syllabus

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

Lucinda Begay  
Tohono O'odham Community College  
P.O. Box 3129  
Sells, AZ 85634

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- I have received my CHM 121IN 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.

My reason(s) for taking this course:

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My background in this area includes:

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

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Print Name Clearly Here	Sign Name Here
Student ID Number	Telephone Number
Current Mailing Address/City/State/Zip	E-mail Address