Contents

Course Information

Course Title: General College Chemistry I

Course Prefix, Number & Section: CHE.111.102

Credits: 5

Course Description: Reviews basic chemistry and measurement: matter, chemical formulas, reactions and equations, stoichiometry and thermochemistry. Development of atomic theory is discussed, culminating in the use of quantum numbers to determine electron configurations of atoms, and the relationship of electron configuration to chemical bond theory and molecular orbital theory. The course concludes with gases, liquids, and solids. Problem-solving skills are emphasized. Laboratory experiments will provide hands-on opportunities to qualitatively and quantitatively support the learning of the above concepts.

Prerequisite(s)/Co-requisites: Pre-requisite:1 year high school chemistry or equivalent, or instructor permission, Co-requisite: MAT 121 – College Algebra

Semester and Year: Fall, 2017

Meeting Location, Times, and Days: WRECT 106, 9:15-10:30 am, MWF and WRECT 110, 7:25-9:05 am, TR

Start Date: August 21, 2017

End Date: December 13, 2017

Last date to drop with a refund: September 7, 2017

Last date to withdraw: November 13, 2017

Date and Time of Final Exam: Part 1 – December 12, 2017 7:45-9:45 am, Part 2 – December 13, 2017 7:45-9:45 am

Instructor Information

Name: Jay McLaughlin

Phone: 970-675-3254

E-mail: jay.mclaughlin@cncc.edu

Office Location: WRECT 119

Office Hours: M-R 10:45 am - 12:00 pm

Course Information

The instructor reserves the right to make changes to the course and course policies. Any changes will be noted in the addendum.

Required Course Materials

Chemistry a Molecular Approach, 4th edition, Pearson/Prentice Hall, ISBN-10: 0-13-4-11283-0, ISBN-13: 978-0-13-4-11283-1

Scientific Calculator

Access to www.chemhaven.org/che111

Course Competencies

1. Apply scientific notation and significant figures in measurement and stoichiometric calculations. I,IV, V, VII
2. Apply atomic theory to the periodic table to explain various kinds of chemical principles and concept. II, III
3. Illustrate polarity, geometry, bond angle, hybridization, physical and chemical properties of different compounds using Lewis structures. III
4. Interconvert masses, moles, numbers of particles, and volume. II
5. Interpret the computed outcome of a chemical calculation to determine its validity. I, II, IV, V< VII
6. Connect real world applications to chemical models. II, III, IV, V, VI, VII
7. Compare and contrast the basic bonding theories of valence shell electron pair repulsion theory, valence bond theory and molecular orbital theory, pointing out the strengths and weaknesses. III
8. Classify the basic types of chemical reactions and predict the products for a given set of reactants. IV
9. Conceptually and graphically illustrate the relationships of pressure, volume, mole quantity and temperature for a gas at ideal conditions. V
10. Predict the states of matter based on intermolecular forces of attraction. VI
11. Apply the first law of thermodynamics to thermal systems. VII
12. Identify strong and weak electrolytes. IV
13. Identify oxidation, reduction half reactions and oxidizing and reducing agents in a redox reaction. IV
14. Be able to name compounds from formula or write formula from names. II
15. Read, analyze, and apply to new situations, written material related to the study of chemistry.
16. Write and speak clearly and logically in presentations and essays about topics related to chemistry.
17. Demonstrate the ability to select and apply contemporary forms of technology to solve problems or compile information in the study of chemistry.

Topical Outline

I. Foundations of Chemistry
   a. Measurements
   b. Dimensional Analysis
   c. Matter, Classification of Matter, Physical and Chemical Changes, Properties of Matter
   d. Scientific Method

II. Atomic Theory and Structure
   a. History of the Atom
   b. The Modern Atomic Theory - Quantum Mechanics Approach
   c. Electronic Configuration and Orbitals of Atoms
   d. Periodic Table and Periodicity
   e. Nomenclature of Inorganic Compounds

III. Chemical Bonding and Molecular Geometry
   a. Types of Chemical Bonding
   b. Periodic Table and Chemical Bonding
   c. Polyatomic Ions
   d. Octet rule, Exceptions to Octet Rule
   e. Lewis Structure
   f. VSEPR and Molecular Geometry
   g. Molecular Geometry and Polarity

IV. Stoichiometry
   a. Chemical Equations
   b. Types of Chemical Reactions
   c. Balancing Chemical Equations
   d. The Mole
   e. Stoichiometry and Limiting Reactants
   f. Determination of Molecular and Empirical Formulas
   g. Solution Calculations
   h. Concentrations of Solutions
   i. Solution Stoichiometry

V. Gases
   a. Description of Gas State
   b. Kinetic Molecular Theory
   c. Gas Laws
   d. Gas Stoichiometry

VI. Condensed States (Intermolecular Forces)
   a. Description of Liquid State
   b. Description of Solid State
   c. Intermolecular Forces
   d. The Phase Diagram
   e. Vapor Pressure
   f. Crystal Solid

VII. Thermochemistry
   a. Thermochemistry terminology
   b. The First Law of Thermodynamics
   c. Calorimetry
   d. Hess's Law

Colorado Northwestern Community College

Course Policies and Procedures

Expectations for satisfactory student performance

-Students are expected to be on time and attend all classes and laboratory sessions.
-Students are expected to read related text, and other assigned reading, prior to the class session in which it will be discussed.
-Students are expected to read laboratory exercises and be prepared to begin laboratory procedures upon entering the lab session.
-Students are expected to spend approximately 2 hours, for every hour spent in class, reviewing, reading, answering all chapter questions, and studying. This serves to keep the student up to date with the material and does not include time needed to "cram" for exams.

Attendance

-Attendance is required for performance in this course. Missing class for any reason is detrimental to a student's grade. Because of this, every three unexcused absences will result in a 5% decrease in the overall grade. Excused absences include athletic events, field trips, illness with doctors note (if you are not sick enough to go to the doctor, you are not sick enough to be excused from class), and family emergency (death etc.). To be excused the student must ensure the instructor is notified in writing and in advance.
-Laboratory exercises are essential "hands-on" experiences and cannot be made up. Absence from 3 or more laboratory sessions will result in a grade of **F** in the lab, and will result in failure of the class.

Course content and assessment

-Class will consist of lecture, demonstrations, movies, student presentations, and discussions. Although the text is generally followed, the student is responsible for all material covered in class and any related or assigned reading.

Homework

-Homework assignments will be given for each chapter. The assignments will be handed out in class and posted on the website.
-At the discretion of the instructor homework may be turned in one class day late for full credit. (For example if the assignment is due Mon, then you may turn it in any time up until Tue at 8:00 am for full credit) After that time, the assignment will be worth **ZERO** points, however, on request it will be graded so that you may see if you did the problems correctly.
-Not showing up, oversleeping, excused absences etc. does not negate the due date/time.

Laboratory

-Laboratory sessions will each consist of brief lecture, activities, and review questions. Students are graded on their preparation, performance, and participation.
-Lab assignments are due one lab session after the lab is finished.
-Labs handed in late will receive a 20% late penalty per day.
-Labs turned in after the graded lab is returned are worth **ZERO** points.

Exams

-Exam dates will be determined at least 1 week in advance.
-Missed tests can be made up for full credit only for excused absences and when the instructor is notified in advance and in writing. Missed exams must be made up the first day the student returns to class.
-Without prior arrangements, 25% will be deducted off your test grade per day late.
-Save your tests! There will be a two-part final exam, which will count as two tests. The chapter tests will help you prepare for your final.

Evaluation/Grading Criteria

-One final grade is given for the combined performance in class and laboratory. Your grade will be calculated as either:

60% Exams, 20% Homework, 20% Lab or
80% Exams, 20% Lab

-The grade given will be the better of the two grades determined above.

-Current Grade can be accessed at https://cncc.desire2learn.com/ (D2L)

-Grades are based on the standard scale:

Percent	Grade
90%	A
80%	B
70%	C
60%	D
59% or less	F

Topical Outline/Calendar/Schedule

Chapter	Chapter Name	Exams
1	Matter and Measurement and Problem Solving	Exam 1
2	Atoms and Elements	Exam 2
3	Molecules, Compounds and Chemical Equations	
4	Chemical Quantities and Aqueous Reactions	Exam 3
5	Gases	Exam 4
6	Thermochemistry	
7	The Quantum-Mechanical Model of the Atom	Exam 5
8	Periodic Properties of the Elements	
9	Chemical Bonding I: Lewis Structures	Exam 6
10	Chemical Bonding II: Molecular Shapes, Valence Bond Theory and Molecular Orbital Theory	
11	Liquids, Solids and Intermolecular Forces	

Standard College Policies

Attendance Policy

Students should explain the reasons for absence to their instructors. The student is responsible for making up work missed due to any absence, including those involving College-sponsored athletic, academic, or recreational trips. **Students will not be penalized for absences due to College-sponsored activities; however, instructors reserve the right to assign relevant, alternative work for missed class time due to such an activity.** Absences for extenuating circumstances or activities outside of a College-sponsored activity may be excused by the Dean of Instruction or the Vice-President of Instruction and Student Affairs with notification to the faculty.

Academic Integrity Policy

Colorado Northwestern Community College considers academic dishonesty, which includes cheating and plagiarism, to be an extremely serious offense, and will be dealt with by appropriate disciplinary action up to and including suspension. The word “cheating” refers to the acts of

giving, utilizing, or receiving un-permitted aid during examinations or in the preparation of reports or any other class work that the instructor will use as a basis for evaluation. The word "plagiarism" refers to the use of another person's work without giving proper credit to that person. When paraphrasing another person's work (i.e., borrowing but rewording that person's facts, opinions, or ideas), a student must give proper credit through the use of appropriate documentation. When copying verbatim another person's work (i.e., words, phrases, sentences, or entire passages), a student must credit that person through the use of quotation marks and appropriate documentation.

Anti-Discrimination Policy
Colorado Northwestern Community College prohibits all forms of discrimination and harassment including those that violate federal and state law, or the State Board for Community Colleges and Occupational Education Board Policies 3-120 and 4-120. The College does not discriminate on the basis of sex/gender, race, color, age, creed, national or ethnic origin, physical or mental disability, veteran status, pregnancy status, religion, genetic information, gender identity, or sexual orientation in its employment practices or educational programs and activities. Colorado Northwestern Community College will take appropriate steps to ensure that the lack of English language skills will not be a barrier to admission and participation in vocational education programs.

Americans with Disabilities Act
Any student, who believes he/she has a disability, as outlined in the Americans with Disabilities Act, and would like reasonable accommodations, should set up an appointment to discuss this with the ADA Coordinator on his/her respective campus. Faculty is not allowed to provide accommodations without proper notification from the ADA Coordinator.

Early Alert
All instructors participate in CNCC's Early Alert system. Every three weeks, your grades will be submitted to members of the Student Success Team. In addition, your instructor may speak to you directly about his/her concerns regarding a number of possible issues, including absence, late or missing submissions, poor or high performance on assessments, etc. The electronic Early Alert system is designed to supplement this communication and allow instructors to request additional early intervention for students from a CNCC advisor or specialist. The hope is to provide you the support you need to be successful and to share information about additional learning opportunities the college offers. Alerts can be sent throughout the semester, can be in response to positive or negative performance, and are designed to link you with support opportunities here at CNCC, such as tutoring services, honors programs, financial aid resources, etc. If you are contacted by a CNCC advisor, please speak with him/her and your instructor to find out more about the nature of the alert and the supports and services your instructor has recommended.

Statement Regarding Mandatory Reporting
Our College is committed to preserving a safe and welcoming educational environment for all students. As part of this effort, I have an obligation to report certain issues relating to the health and safety of campus community members. I must report to the appropriate College officials any allegation of discrimination or harassment. Sexual misconduct, which includes sexual harassment, non-consensual sexual contact, non-consensual sexual intercourse, and sexual exploitation, is considered a form of

discrimination. In addition to reporting all discrimination and harassment claims, I must report all allegations of dating violence or domestic violence, child abuse or neglect, and/or credible threats of harm to yourself or others. Such reports may trigger contact from a College official who will want to talk with you about the incident that you have shared. In almost all cases, it will be your decision whether you wish to speak with that individual.

If you would like more information, you may reach the Title IX Coordinator: 970-824-1102 or the EO Coordinator at 970-675-3335.

Reports to law enforcement can be made at 970-675-8467 in Rangely
or 970-824-1111 in Craig.

If you would like a confidential resource, in Rangely, please contact Counseling and Advocacy at 970-629-5729 or 670-629-0709. In Craig contact Advocates Crisis Support Services at 970-824-9709 or 970-827-2400.

Further information may be found on the College web site: Sexual misconduct title ix