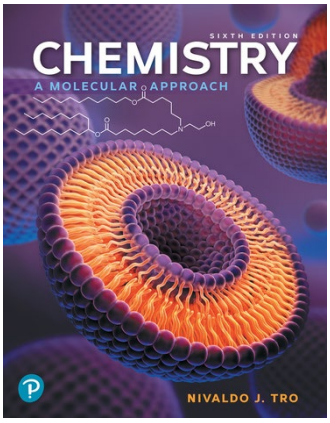
GENERAL CHEMISTRY – CHM 1045
COURSE SYLLABUS, FALL 2023

Course Information:

- CHM 1045 (84810), 3 lecture contact hours for 3 credit hours
- The pre-requisites for this course are CHM 1040 and MAC 1105
- The co-requisites for this course are CHM 1045L and MAC 1140
- The textbook and Mastering Chemistry access are **required** for the course
- The **required** text book is Chemistry: A Molecular Approach, 6th edition, by Nivaldo Tro. Publisher: Pearson, published 2022, © 2023.
- Some book options:
  - ISBN: 9780137831999 (eText with Mastering Access for 18 weeks) **OR**
  - ISBN: 9780137831968 (eText with Mastering access for 24 months) **OR**
  - ISBN: 9780138732057 (loose leaf pages with Mastering Access for 24 months)
- There is a picture of the book below. Make sure you do NOT get the AP edition.
- A non-programmable scientific calculator is necessary for any lab exams or online exams
- Topics covered include chemical calculations, inorganic nomenclature, chemical reactions, thermochemistry, gases, atomic structure, configurations, periodicity, oxidation-reduction, and chemical bonding, including MO and VSEPR theory.

Instructor Information / Other Contacts:



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- **Canvas message is BEST way to contact me.**
  Response time: one **business** day
- Student office hours: 10 hours per week
- Division Chair: Fledia Ellis, fellis@gulfcoast.edu, 850-872-3848
- Administrative Assistant: Kathy Bleday, kbleday@gulfcoast.edu, 850-872-3851
- Campus Safety contact: David Thomassee, dthomasee@gulfcoast.edu, 850-873-3582

Attendance:

- Regular class attendance and participation are **essential** to your success in this course. Attendance will be taken at the beginning of each class.
- If you are absent from class, you are responsible for collecting missed lecture notes from fellow students and then bring specific questions to your instructor during office hours.
- *You* are responsible for ALL missed material.
- Punctuality is important. Showing up late can be a disruption. If this happens regularly, you will be required to talk to the Division Chair of Natural Sciences.
- **Canvas:** Daily monitoring of the Course shell in Canvas, and your GCSC email account, is essential for obtaining course-related information. Course supplements, and important announcements for this course will be posted to Canvas. Failure to check this resource is ***NOT*** a valid excuse for not receiving information communicated via this pathway.

Course Description: Topics covered are chemical calculations, inorganic nomenclature, chemical reactions, thermochemistry, gases, atomic structure, configurations, periodicity, oxidation-reduction, and chemical bonding, including MO and VSEPR theory.

Course Goals: Students will be able to calculate the amount of product formed or reactant required. Students will be able to think critically allowing them to predict theoretical yield and use theoretical and actual yield to calculate all quantities in simple and complex reactions.

Lectures are traditional lecture style. A lot of time is spent using the white board. Lectures may consist of presentations, discussion, worked example problems, group activities, and individual assessments. They will occur in the designated classroom during the scheduled class time and will include periodic assessments that contribute to the final grade. Office hours will be in the office. Exams will be taken in-person on campus.

Withdrawal Procedure:

- Students may withdraw themselves only BEFORE the scheduled deadline as Published on the college academic calendar.
- Students that wish to withdraw must complete a withdrawal form and submit it to the Office of Enrollment Services.
- Your instructor will NOT initiate withdrawals.
- Withdrawals prior to the scheduled deadline will be recorded as a "W". After the deadline, a standard grade will be assigned.
- Your last day to withdraw is **October 20th.**

Participation:

- Regular course participation is essential to your success in this course. Participation will be monitored in class and through Canvas.
- The pandemic requires some flexibility and understanding from everyone. Please be considerate of what your fellow classmates may be dealing with at work and at home. Masking up can help keep everyone safe and minimize any exposures.
- This is a face to face course and attendance is required, however, should a situation arise where you have to quarantine or cannot come to class because you are sick, material will be provided for you to complete on your own. Do NOT abuse this. Missing class is the fastest way to feeling overwhelmed with Chemistry.

Academic integrity + miscellaneous:

- There is a ZERO TOLORENCE policy for cheating/plagiarizing in this course. Cheating or copying on homework problems, quizzes, exams, or lab reports can result in a zero on the given assignment and even a failing grade in the course.
- **Searching/using the internet for homework solutions IS CHEATING** and will be treated as such. Using online sources or solution manuals only hurts you in the long run. You will not learn the material correctly if you are looking at someone else's result instead of chewing on the problem yourself. This struggle will follow you in your future courses until you fail because you haven't developed the base you need.
- If you're acing the homework, but that is not reflected on your exam grades, then please feel free to set up a meeting with me so we can discuss your study habits and figure out how to improve your exam results.
- You will be required to sign an academic integrity policy to participate in this course.
- **To succeed in a 3-credit hour University-level course, you should expect to spend roughly 9 hours a week (outside of your regular class time) studying, taking notes, and doing the assignments.**

Tests:

Tests	Chapters
Unit 1	1, 2, 3
Unit 2	4
Unit 3	5.1-5.8, 6
Unit 4	7, 8, 9
Unit 5	5.9, 20.2, 10, 11
Final Exam	Cumulative

Homework:

- Homework may include online assignments, questions from the text, or questions given out during class.
- Online homework will be completed via Mastering Chemistry (required).
- Book homework must be handwritten and all work must be shown.
- Late homework will not be accepted (unless you have approval of the professor).
- Put your full name, clearly printed on the upper right side.
- Your homework should be **in order** and **clearly labeled.**
- **You will not get credit if you do not show your work. You will not get credit if your professor can not read your writing.**

Quizzes/pre-lecture book notes:

- Quizzes, worksheets, and random pre-lecture book note checks will be given throughout the semester.
- Pre-lecture book notes are notes that you have taken **(hand-written, NOT typed)** yourself from the book BEFORE the scheduled lecture. Pre-lecture book notes will **NEVER** be accepted late.
- Quizzes, worksheets, and pre-lecture book note checks will be announced on Canvas and can be seen in the course calendar.

Grading:

• **Regular semester exams** are worth **60%** of your total course grade. The lowest regular exam grade will be dropped. (The final exam is NOT a regular exam.)
• **Homework** is worth **9%** of the course grade.
• **Quizzes, and pre-lecture book note checks** are worth **9%** of the course grade.
• The **Final Exam** counts for **22%** of the course grade. (Equivalent of ~ 2 tests)

*Note: these percentages mean that if you get 100% on all the exams and the final, but you don't do any homework, quizzes, or book notes, the maximum you will get in the course is an 84%, i.e. it is impossible to get an "A" in this course if you don't do the work. Homework, quizzes, and book notes are worth 16% of your course grade (this is over a full letter grade).

Letter Grade	Overall Percent
A	≥90
B	89-80
C	79-70
D	69-60
F	<60

Student Accessibility Statement:

- Gulf Coast State College supports an inclusive learning environment for all students. If there are aspects of the instruction or design of this course that hinder your full participation, reasonable accommodations can be arranged. Prior to receiving accommodation, you must register with Student Accessibility Resources. Appropriate academic accommodations will be determined based on the documented needs of the student. For information regarding the registration process email sar@gulfcoast.edu or call 850-747-3243.

PaperCut

- The PaperCut print management client is installed in all computer labs. The PaperCut user web console is accessed through the MyGCSC portal. The logon is the first part of your student email address, everything before the @mygulfcoast.edu. Students will be required to add money to their PaperCut accounts before they are able to print. Money can be added to student print accounts by cash, credit, or debit card. Cash is accepted at PaperCut kiosks located in the Library. Credit and debit card payments, minimum $5.00, can be made through the "add credit" tab on the PaperCut user web console. Instructions for the use of PaperCut are located at https://www.gulfcoast.edu/administration-departments/information-technology-services/printing/

HB233

- In accordance with federal and state privacy laws, students may record class lectures for their own personal educational use, in connection with a complaint to the college, or as evidence in internal or external legal proceedings. Students may not publish or upload the recordings or any components thereof without the knowledge and written permission of the faculty member. Failure to obtain permission to publish could lead to the students' having to pay damages, attorney fees, and court costs. For more information about what can be recorded, please see the guidelines in the GCSC Student Handbook: https://www.gulfcoast.edu/current-students/student-handbooks/2020-2021-student-handbook.pdf.

Learning Objectives

- Chapter 1: Matter, Measurement, and Problem Solving
    - Apply the scientific approach (1.2)
    - Classify matter according to its composition (1.3)
    - Classify the properties and changes in matter as chemical or physical (1.4)
    - Compare the Fahrenheit, Celsius, and Kelvin temperature scales (1.6)
    - Express measurements using appropriate prefix multipliers (1.6)
    - Apply the density relationship to problems involving mass and volume (1.6)
    - Determine the number of significant figures in a measurement or reported number (1.7)
    - Determine the number of significant figures in the result of a given calculation (1.7)
    - Convert between units using dimensional analysis (1.8)
    - Solve problems involving equations (1.8)

- Chapter 2: Atoms and Elements
    - Apply the mass laws that are the basis of modern atomic theory (2.3)
    - Describe the experiments that led to the discovery of the electron and its charge (2.4)
    - Explain the structure of an atom (2.5)
    - Describe the properties of subatomic particles and interpret isotope symbols (2.6)
    - Relate the periodic law to the organization of the periodic table (2.7)
    - Predict the charge of ions (2.7)
    - Determine the atomic mass of atoms (2.8)
    - Apply the mole concept (2.9)

- Chapter 3: Molecules and Compounds
    - Analyze substances by bond type (covalent or ionic), compound type (molecular or ionic), and formula (chemical, molecular, and structural) (3.2, 3.3, 3.4)
    - Write formulas and names for ionic compounds (3.5)
    - Write formulas and names for hydrated ionic compounds (3.5)
    - Write formulas and names for molecular compounds (3.6)
    - Write formulas and names for acids and oxyacids (3.6)
    - Analyze the composition of compounds in terms of formula mass, mass percent, and moles (3.8 , 3.9)
    - Write chemical formulas from experimental data (3.10)
    - Write formulas and names for organic compounds (3.11)

- Chapter 4: Chemical Reactions and Quantities
    - Analyze substances by bond type (covalent or ionic), compound type (molecular or ionic), and formula (chemical, molecular, and structural) (3.2, 3.3, 3.4)
    - Write formulas and names for ionic compounds (3.5)
    - Write formulas and names for hydrated ionic compounds (3.5)
    - Write formulas and names for molecular compounds (3.6)
    - Write formulas and names for acids and oxyacids (3.6)
    - Analyze the composition of compounds in terms of formula mass, mass percent, and moles (3.8 , 3.9)
    - Write chemical formulas from experimental data (3.10)
    - Write formulas and names for organic compounds (3.11)

- Chapter 5: Introduction to Solutions and Aqueous
    - Analyze substances by bond type (covalent or ionic), compound type (molecular or ionic), and formula (chemical, molecular, and structural) (3.2, 3.3, 3.4)
    - Write formulas and names for ionic compounds (3.5)
    - Write formulas and names for hydrated ionic compounds (3.5)
    - Write formulas and names for molecular compounds (3.6)
    - Write formulas and names for acids and oxyacids (3.6)
    - Analyze the composition of compounds in terms of formula mass, mass percent, and moles (3.8 , 3.9)
    - Write chemical formulas from experimental data (3.10)
    - Write formulas and names for organic compounds (3.11)

- Chapter 6: Gases
    - Convert between units of pressure (6.2)
    - Calculate properties of gases using the simple gas laws (6.3)
    - Calculate properties of gases using the ideal gas law (6.4)
    - Analyze gas mixtures using Dalton's law of partial pressures (6.5)
    - Perform stoichiometric calculations involving gas reactions (6.6)
    - Calculate the root mean square velocity of a gas (6.8)
    - Calculate the effusion rate of a gas or the ratio of effusion rates of two different gases (6.9)
    - Calculate gas properties of real gases (6.10)

- Chapter 7: Thermochemistry
    - Analyze types of energy and convert between energy units (7.2)
    - Analyze changes in internal energy in terms of heat and work (7.3)
    - Determine heat from temperature changes (7.4)
    - Calculate quantities in thermal energy transfer (7.4)
    - Analyze processes involving pressure–volume work (7.4)
    - Analyze energy changes for combustion reactions inside a bomb calorimeter (7.5)
    - Predict endothermic and exothermic processes (7.6)
    - Perform stoichiometric calculations involving the enthalpy of reaction (7.6)
    - Analyze enthalpy changes for reactions in a coffee-cup calorimeter (7.7)
    - Analyze how changes in chemical reactions affect the enthalpy of reaction (7.8)
    - Determine the standard enthalpy change for a reaction using standard enthalpies of formation (7.9)
    - Analyze the effects of energy use on the environment (7.10)

- Chapter 8: The Quantum-Mechanical Model of the Atom
    - Analyze the wave properties and wave behaviors associated with light (8.2)
    - Analyze the particle properties and particle behaviors associated with light (8.2)
    - Analyze the wave properties of matter (8.4)
    - Describe orbitals using quantum numbers (8.5)
    - Calculate the energy change of an electron transition according to the Bohr model (8.5)

- Chapter 9: Periodic Properties of the Elements
    - Analyze the wave properties and wave behaviors associated with light (8.2)
    - Analyze the particle properties and particle behaviors associated with light (8.2)
    - Analyze the wave properties of matter (8.4)
    - Describe orbitals using quantum numbers (8.5)
    - Calculate the energy change of an electron transition according to the Bohr model (8.5)

- Chapter 10: Chemical Bonding I: The Lewis Model

    - Analyze the wave properties and wave behaviors associated with light (8.2)
    - Analyze the particle properties and particle behaviors associated with light (8.2)
    - Analyze the wave properties of matter (8.4)
    - Describe orbitals using quantum numbers (8.5)
    - Calculate the energy change of an electron transition according to the Bohr model (8.5)

- Chapter 11: Chemical Bonding II: Molecular Shapes, Valence Bond Theory, and Molecular Orbital Theory

    - Predict the basic shapes of molecules according to VSEPR theory (11.2)
    - Predict how lone pairs and electron groups affect molecular geometry (11.3, 11.4)
    - Predict the shape of larger molecules (11.4)
    - Predict the polarity of a molecular compound (11.5)
    - Determine the hybridization and bonding scheme of a molecule using valence bond theory (11.6, 11.7)
    - Predict properties of diatomic molecules using molecular orbital theory (11.8)

- Chapter 20: Electrochemistry

    - Balance acidic solution redox equations using the half-reaction method (20.2)
    - Balance basic solution redox equations using the half-reaction method (20.2)