Term Information

Effective Term	Autumn 2019

General Information

Course Bulletin Listing/Subject Area	Chemistry
Fiscal Unit/Academic Org	Chemistry - D0628
College/Academic Group	Arts and Sciences
Level/Career	Undergraduate
Course Number/Catalog	1205
Course Title	Foundations of General Chemistry
Transcript Abbreviation	FoundationGenChem
Course Description	Chemistry 1205 is a preparatory course for underprepared students previously enrolled in Chemistry 1210/1610. Chemistry 1205 will prepare students to continue on and complete Chemistry 1210/1610 in a subsequent semester. The textbook for Chem 1205 will be the same textbook used in Chem 1210/1610.
Semester Credit Hours/Units	Fixed: 2

Offering Information

Length Of Course	14 Week, 12 Week, 8 Week, 7 Week, 6 Week, 4 Week
Flexibly Scheduled Course	Never
Does any section of this course have a distance education component?	No
Grading Basis	Letter Grade
Repeatable	No
Course Components	Lecture
Grade Roster Component	Lecture
Credit Available by Exam	No
Admission Condition Course	No
Off Campus	Never
Campus of Offering	Columbus

Prerequisites and Exclusions

Prerequisites/Corequisites	Failed or withdrew from Chem 1210 or 1610, or Math 1075 or Math placement N
Exclusions	
Electronically Enforced	No

Cross-Listings

Cross-Listings

Subject/CIP Code

Subject/CIP Code	40.0501
Subsidy Level	Developmental Course
Intended Rank	Freshman, Sophomore, Junior, Senior

Requirement/Elective Designation

The course is an elective (for this or other units) or is a service course for other units

Course Details

Course goals or learning objectives/outcomes

- Upon completion students will be able to demonstrate knowledge of introductory chemistry concepts. Additionally students will identify and practice problem solving, studying for learning, metacognition, and develop their self-concept as a learner.

Content Topic List

- Introductory chemistry material including: measurements in chemistry, the atom and molecules, chemistry reactions, solution chemistry, and energy of chemical reactions.
- Problem solving strategies including using algebra equations, solving word problems, record keeping practices.
- Study skills for learning including time management, intense study sessions, class resources, and peer assisted learning.
- Metacognition including what it is, when and how to use it, what to do with information obtained.
- Self-concept as a learner including growth mindset, and self-confidence

Sought Concurrence

No

Attachments

- Chemistry 1205 Proposed Syllabus rev1-28-19.docx: Course Syllabus 1205

  (Syllabus. Owner: Ramirez,Ana G)

- Chemistry 1205 Foundations of General Chemistry Rationale.docx: Rationale and Purpose

  (Other Supporting Documentation. Owner: Ramirez,Ana G)

Comments

Workflow Information

Status	User(s)	Date/Time	Step
Submitted	Ramirez,Ana G	01/31/2019 02:56 PM	Submitted for Approval
Approved	Gustafson,Terry Lee	01/31/2019 03:33 PM	Unit Approval
Approved	Haddad,Deborah Moore	01/31/2019 04:11 PM	College Approval
Pending Approval	Nolen,Dawn Vankeerbergen,Bernadette Chantal Oldroyd,Shelby Quinn Hanlin,Deborah Kay Jenkins,Mary Ellen Bigler	01/31/2019 04:11 PM	ASCCAO Approval

THE OHIO STATE UNIVERSITY

CHEMISTRY 1205
Foundations of General Chemistry
Proposed Syllabus

7 weeks 1015 McPherson Lab (Max 112 students) Most tables in groups of 5
2 credit hours 215 minutes per week – example 55 min 4x week, 72 min 3x week

Instructor: **Email:**
Office: **Office Hours:**

Textbook: Chemistry, The Central Science (14th Ed.) eText, Brown, LeMay, Bursten, Murphy, Woodward, & Stoltzfus [e-text and/or printed version]

Online Homework: MasteringChemistry in Carmen **Calculator:** TI-30XIIs or TI-30Xa only

Course Description: This course will cover general chemistry foundations for students that (1) have identified as struggling in general chemistry 1 and/or (2) could use additional preparation prior to taking general chemistry. Students successfully completing this course will continue on to chemistry 1210 with tools and habits conducive for doing well in this course.

Prerequisite: Fail general chemistry 1210 exam one (chapters 1-3) if previously enrolled in Chemistry 1210. Or a grade of C- or above in MATH1075 (or credit for MATH 104 or 148, or math placement level N)

Course Goals and Learning Objectives: At the conclusion of this class students will be able to…

1. Demonstrate knowledge of introductory chemistry.
2. Identify and perform problem solving strategies.
3. Determine practices for studying for learning.
4. Recognize and practice metacognition.
5. Identify their own self-concept as it relates to learning.

Student Responsibility: Each student receives the syllabus on Carmen. It is your responsibility to read this material and be familiar with the course content, procedures, and grading. You are also responsible for announcements made in class, as well as monitoring Carmen and your OSU email for any communications concerning course procedures. If you are absent from class, you are expected to obtain notes, announcements, etc. from another student.

Carmen (Canvas) | carmen.osu.edu: Carmen is the Learning Management System (LMS) used at Ohio State. It utilizes an LMS engine called Canvas. Log in to Carmen on your device to access your course materials, complete assignments, view your grades, and track your progress throughout the semester. A free Canvas app is available to download for both Android and iOS, making it easy to log in to your course from anywhere.

Communication: Your instructor(s) will be communicating important information to you throughout the term via the Announcements & Inbox tools in Canvas and Mastering Chemistry calendar for assignments. You should verify that your notification settings are set up appropriately so that you can receive all course information in a timely manner.

Required Texts & Other Material: A textbook is essential for success in this course. Your instructor will be teaching from Chemistry, The Central Science, 14th edition eText by Brown, LeMay, Bursten, Murphy, Woodward, & Stoltzfus. The text should include access to MasteringChemistry, the integrated online homework system required in this course. If your used text does not, you are responsible for purchasing accompanying access.

ONLY the Lecturer of the course may modify due dates and assignment details in this syllabus. Teaching assistants are not authorized to alter any syllabus information or policies.

Course Information & Policies

Title IV Attendance Requirements: Federal policy requires that attendance for all university students be verified during the first week of classes. ***In order to verify participation in General Chemistry, all students must complete the Academic Misconduct and Syllabus Quiz on the course Carmen page by 11:59PM on DATE.*** This quiz may be taken online from any location (does not need to be completed while physically present for class). Concerns with this policy may be directed to genchem@osu.edu instead of your instructor/TA.

Disability Services: The University strives to make all learning experiences as accessible as possible. If you anticipate or experience academic barriers based on your disability (including mental health, chronic or temporary medical conditions), reasonable accommodations can be established. Students should first register with Student Life Disability Services, then meet with the Foundation of General Chemistry instructor who will assist you in establishing your accommodations in the course. **Contact SLDS** Email: slds@osu.edu Phone: 614-292-3307 Address: 098 Baker Hall Website: slds.osu.edu

Commitment to Diversity: The Department of Chemistry and Biochemistry promotes a welcoming and inclusive environment for all students and staff, regardless of race, gender, ethnicity, national origin, disability or sexual orientation. There is no tolerance for hateful speech or actions. All violations of this policy should be reported to the OSU Bias Assessment and Response Team (BART, studentaffairs.osu.edu/bias). The Department encourages diversity at all levels, particularly among the next generation of scientists. Students are encouraged to participate in organizations that provide support specifically for science and engineering students who are African-American, Asian, disabled, Hispanic, LGBTQ or women. These organizations are listed on the Colleges of Arts and Sciences (artsandsciences.osu.edu/stem-organizations) and Engineering (engineering.osu.edu/studentorgs) websites.

Standards of Academic and Scientific Integrity: In addition to the University policy on academic misconduct (studentlife.osu.edu/csc) the Department of Chemistry and Biochemistry, as a part of the greater academic and scientific communities, takes the integrity of both student work and scientific data very seriously. More information about the specifics of academic misconduct as they pertain to general chemistry are included on the last page of this syllabus, and in the required Academic Misconduct Quiz on Carmen.

Grading

Your performance in the course will be evaluated based on the components below. Any concerns about your grades or performance should be addressed with your instructor promptly. Sixty days after grades are posted, your grade in Carmen is considered final and all other records are destroyed. Mandatory assignments (such as the Academic Misconduct Quiz and Syllabus Quiz) do not contribute to your course grade, but **students who do not complete these assignments will be given a failing grade (E) in the course**. Individual assignments within the following categories will be scaled to contribute toward the established percentage of your total course grade:

Assignment Group	%
Syllabus Quiz	--
Academic Misconduct Quiz	--
Class Participation	10%
Carmen Assignments	20%
Online Homework	15%
Quizzes	15%
Exams	20%
Final Cumulative	20%

Academic Misconduct (COAM) Quiz and Syllabus Quiz: The mandatory Academic Misconduct Quiz and Syllabus Quiz on Carmen must be completed by **DATE at 11:59pm**. Unless you receive 100% on each quiz, ***you will not receive a passing grade in this course*** (instead, an E will be submitted as your final grade). You may take the quizzes as many times as you need to receive the requisite score.

Attendance: CHEM 1205 is a seven week course that consists of (# of lecture and time) per week. Attendance for each meeting is imperative and expected. A portion of your grade is based upon attendance and participation.

Carmen Graded Assignments: You will be completing graded assignments and graded discussions through Carmen. It will be your responsibility to check the Carmen calendar regularly and be aware of all due dates. Late assignments are penalized at 25% penalty per day. No late assignment will be accepted after 72 hours past the due date. Due the nature of discussions, no late discussion posts will be accepted for a grade.

Online Homework (Mastering Chemistry, accessed through Carmen): Your course will be utilizing MasteringChemistry, an online tutorial platform that accompanies your textbook. It will be your responsibility to check the Mastering Chemistry calendar regularly and be aware of all due dates.

To register, go through your Carmen course and do one of the following: 1) select any Pearson link from any module OR 2) select MyLab & Mastering in the Course Navigation, then select any course link on the Pearson page. You can purchase access by credit card during registration or redeem an access code if purchased from the campus bookstore. Temporary access to Mastering is available for 14 days before needing to pay. DO NOT attempt to register for your course through the MasteringChemistry website - you must register through Carmen.

Quizzes and Exams: Quizzes and exams are a scheduled part of this course and attendance is required. These are given in class as shown in the table below.

Quiz/Exam	Date
Quiz 1	
Exam 1	
Quiz 2	
Quiz 3	

Exam 2	
Quiz 4	
Quiz 5	
Final	Finals week

BuckID cards will be collected at all exams. Midterm exam booklets will be collected after the testing period has concluded. Final exams will not be returned in any capacity.

Alternate/Make-Up Exams: If a student misses an exam or quiz due to emergency circumstances, they may request to take an alternate or make-up quiz/exam by contacting the instructor. The student must submit documentation to their instructor detailing the conflict as soon as possible. Non excused absences will not receive a make-up quiz or exam

Notes on Course Letter Grade Assignment: To ensure consistent grading among parallel sections of the same course, as well as from one semester to the next, grades in all 1000-level chemistry courses are assigned by your instructor in consultation with the Vice Chair for Undergraduate Studies.

CHEM 1205 Course Content

Chemistry material

Chapter 1 Units, Dimensional analysis, Uncertainty and Sig Figs
Chapter 2 The atom, Atomic weight, Molecules & formula, Ionic compounds
Chapter 3 Reaction equations, balancing, Formula weights, Avogadro, Stoich. calcs, limiting reactants
Chapter 4 Solutions, Acid/base, Redox, Concentration & stoichiometry
Chapter 5 Enthalpies of formation, bonds, and reactions, Hess's Law
Lab Items (Rework lab 1, 2, or 3 pre/post/report for success)

Pillars for successful learning in Chemistry

I. Problem Solving – Learn and use effective problem solving strategies
- Basic algebra, solving for x
- Solving word problems (how to read, identifying the question and the type of response expected, organizing given information, identifying correct formula(s) to use, solving math problems, thinking about the answer)
- Good record keeping, homework notebook strategies
- When and how to seek additional help

II. Studying for learning – Identify and utilize studying skills for learning
- Time management
- Planning and completing intense study sessions
- How to use all class resources
  - How to use the text book
  - Utilizing lecture (What to do before, during, and after. How to watch lecture video)
  - Using Mastering chemistry (How to do homework problems)
  - How to utilize practice exams (and how to take an exam)
  - Finding additional practice needed (what to do, where to find extra problems)

- Forming and maintaining a study group

III. Metacognition – Be proficient in assessing own knowledge
- When and how to self-assess
- How to interpret self-assessment data (Identifying gaps in knowledge)
- Remediating from self-assessment (Using resources to fill in gaps, tweaking learning plan)
- Working toward mastery and tracking progress

IV. Self-Concept – Belief in one's ability to learn new things
- Self confidence
- Growth mindset
- Interact with peers that have been successful, and instructors

Course Schedule

Lecture will be held each day that class is in session according to the University Academic Calendar. This course will cover the following topics according to the schedule below.

	Course topics	Assessment
Week 1 Oct. 14 -18	The self-concept Math for chemistry Beginning problem solving Chapt. 1 Units, Dimensional analysis	Quiz 1
Week 2 Oct12 - 25	Advanced problem solving Studying for learning intro Chapt. 1 Uncertainty & Sig Figs Chapt. 2 The atom, Atomic weight Molecules & formula	Exam 1
Week 3 Oct 28 – Nov 1	Metacognition intro Studying for learning in practice Chapt. 2 Ionic compounds Chapt. 3 Reaction equations, balancing Lab practices for class success	Quiz 2
Week 4 Nov 4 - 8	Metacognition in practice Studying for learning in practice Chapt. 3 Formula weights, Avogadro, Stoich. calcs, limiting reactants Chapt 4. Solutions	Quiz 3
Week 5 Nov 12 – 15 Veteran's Day	Metacognition in practice The self-concept revisited Chapt 4. Acid/base, Redox, Concentration	Exam 2
Week 6 Nov. 18 -22	Studying for learning reflection Chapt. 4 Solution stoichiometry	Quiz 4

	Chapt. 5 Enthalpies of formation, bonds	
Week 7 Nov 25 –Dec4 Thanksgiving Holiday	Planning for Chem 1210 Chapt. 5 Reaction enthalpy, Hess's Law	Quiz 5
Finals Week	--	Final Exam

STANDARDS OF ACADEMIC CONDUCT

Violations of academic standards in General Chemistry will be referred to the University Committee of Academic Misconduct (COAM) as required by Faculty Rules. It is the responsibility of COAM to investigate all reported cases of student academic misconduct; illustrated by, but not limited to, cases of plagiarism and any dishonest practices in connection with examinations, quizzes, and graded assignments. Instructors shall report all instances of alleged academic misconduct to the committee (Faculty Rule 3335-5-487). For additional information see the Code of Student Conduct: studentlife.osu.edu/csc

Student Responsibilities: *Any graded material submitted in General Chemistry must represent your own work.* This includes exams, quizzes, homework, and laboratory assignments, which are to be an individual effort. Unauthorized group efforts by students, use of another student's course materials, or assistance from individuals who already have taken the course, could place you in jeopardy of violation of the standards for General Chemistry. In some courses, group work is acceptable on certain activities (as explicitly stated by your instructor). In these cases, it is important that you know and understand where authorized collaboration (working in a group) ends and collusion (working together in an unauthorized manner) begins. Identical answers indicate copying or unacceptable group efforts - always answer questions in your own unique words. It is important that you consult with your instructor for clarification on whether or not collaboration is appropriate on an activity.

You should not assist others in violating academic standards. Students supplying materials for others to "look at" may be charged with academic misconduct. Never allow another student access to your pre-laboratory exercises, lab reports, or other assignments – even after completion of the course. "I didn't know they were going to copy my work" is not an acceptable excuse.

Exams & Quizzes: Examinations are a crucial part of General Chemistry courses, and the integrity of these assessments is taken very seriously. During exams and quizzes, staff will monitor for violations of academic integrity. Video recordings or photos may be taken by department staff during exams or quizzes. Any violation, or appearance of a violation, on exams and quizzes will be immediately reported to COAM with a recommended **minimum** penalty a failing grade for the course. Below is a non-exhaustive list of examples of Academic Misconduct on exams and quizzes:

- Viewing or copying others' answers, use of crib material (e.g. a "cheat sheet"), or use of stored constants and formulas in calculators on quizzes, activities, midterm examinations, or the final exam. This kind of behavior is regarded as a severe violation of academic standards, no matter how small the action.
- The use of any calculators other than those approved on the course syllabus constitutes academic misconduct. The staff will inspect calculators used on exams and quizzes; unauthorized calculators will be confiscated.
- During exams, students are seated with their lab section to facilitate proctoring of the exam. Desks and aisle ways should be cleared of all unauthorized materials, including cell phones or other internet-enabled devices, which should be completely silenced and placed out of sight.
- Students should take care to preventatively avoid appearances of academic misconduct during testing. Best practices for avoiding the appearance of academic misconduct include focusing on one's own exam, making efforts to conceal one's own answer sheet and written work on exam pages both during

and after the exam, not allowing one's own eyes to "wander the room," avoiding writing answers in the margins to be seen by other students, clearly ceasing working when time is called, and not speaking with other students at any point during the exam, including when in line to turn in the exam. It is the students' responsibility to inform the instructor ahead of time of any medical conditions that may result in the exhibition of these behaviors, so that appropriate arrangements can be made.

- Unauthorized removal of any exam materials from the exam room will be treated as Academic Misconduct.

Chemistry 1205 Foundations of General Chemistry

Rationale:

The Department of Chemistry & Biochemistry is proposing a new undergraduate course titled Foundations in General Chemistry (Chem 1205). This course will be a 2 credit-hour seven-week class for students that have been unsuccessful in the General Chemistry 1210/1610 class. The objective of this course is to strengthen students' fundamental understanding of chemistry content for them to continue and to successfully complete General Chemistry 1210/1610 in a subsequent semester. You will find information below detailing 1) The need for such a course, 2) The content of the proposed class, and 3) the logistical considerations.

Foundations in General Chemistry will fill a need in the undergraduate chemistry program that is not currently met; as a class designed for underprepared students. The General Chemistry 1210/1610 and 1220/1620 courses are required for a number of science and engineering majors. This course sequence serves around 4000 students per semester. In the autumn semester of 2017 there were 270 students that completed Chemistry 1210/1610 with a grade of a D+, D, E, or EN. This was about 10% of the overall Chemistry 1210/1610 population for that semester. Additionally there were over 200 students that dropped or withdrew from the course before the end of the semester. With this large population of students it is no surprise that there are a group of students underprepared for this class.

Students finding themselves in this position currently have only two options: try again in a later semester or change their major to no longer include general chemistry. The other 1000-level chemistry courses are not good preparatory chemistry options. Chemistry 1100 is a fully online 3 credit hour Chemistry and Society class. This course is a general education class and the content is geared towards students that are not science majors. Chemistry 1110 is a 5 credit hour lab and lecture course that incorporates material from each of General, Organic and Bio- chemistry. The strong emphasis on organic and biochemistry in additional to the general chemistry does not make this course a remedial alternative for students looking to prepare for Chemistry 1210/1610.

This new Foundations course will focus on the chemistry content covered early in Chemistry 1210/1610 with specific emphasis on the following topics: measurements in chemistry, the atom and molecules, chemistry reactions, solution chemistry, and energy of chemical reactions. While students are reintroduce to general chemistry principles, they will concurrently be taught metacognition skills that will help develop problem-solving skill for chemistry. Students will be trained to utilize math and problem solving, how to study for learning, use of metacognition, and evaluate their self-concept as a learner. Instructional methods will be constructed using evidence based practices to promote active learning. Students will engage within the class space and with instructors and peers. Regular quizzes and exams will be conducted for both the student and instructor to track progress.

The Chemistry 1205 class will meet 215 minutes per week (Either three-72 minute classes or four-55 minute classes). Students will use the same textbook and online homework system that they have already purchased and were using for Chemistry 1210/1610. There will be no

laboratory component. Students will be graded on a combination of their academic performance on quizzes and exams as well as their participation within class and on homework.

The students that finish chemistry 1210/1610 with a D+ or lower are typically not strong students. Their potential success in chemistry 1210/1610 can be extrapolated from their performance on the first general chemistry midterm exam. In the autumn semester of 2017 there were 131 students that scored a 40% or lower on midterm 1. Of these students all but one had one of the following outcomes: the dropped the course, they received a D+ or lower grade in the course. We can use midterm 1 results as a marker to inform students of their likelihood to do poorly in this class and present the Foundations of General Chemistry course as an alternative. Students in this situation will have an option to drop the 5 credit-hour Chemistry 1210/1610 class and pick up this 2 credit-hour foundations class for the second seven weeks of the semester.

Course objectives

At the conclusion of this class students will be able to…

1. Demonstrate knowledge of introductory chemistry.
2. Identify and perform problem solving strategies.
3. Determine practices for studying for learning.
4. Recognize and practice metacognition.
5. Identify their own self-concept as it relates to learning.

Relationship to Chem 1210/1610

Chemistry 1205 is a preparatory course for underprepared students previously enrolled in Chemistry 1210/1610. Chemistry 1205 will prepare students to continue on and complete Chemistry 1210/1610 in a subsequent semester. The textbook for Chem 1205 will be the same textbook used in Chem 1210/1610.