



**KENNESAW STATE
UNIVERSITY**

COLLEGE OF SCIENCE AND MATHEMATICS
Department of Chemistry and Biochemistry

CHEM 1211 Syllabus

CHEM 1211 - Principles of Chemistry I

Spring 2022, January 10, 2022, to May 2, 2022

<https://registrar.kennesaw.edu/academic-calendars/spring-2022-academic-calendar.php>

MWF 11:15 am – 12:05 pm Marietta Campus Room AB203

Instructor Contact Information

Kim Kammerdiener (Kennesaw Campus),

Office hours Thursday 11:00 am -12:00 pm CL3042 or by appointment on either campus

- kxk2333@kennesaw.edu (WARNING: Do NOT SELECT the address that will “pop-up” first kxk2333@kennesaw.view.usg.edu); this email address will NOT work!

Course Description

First course in a two-semester sequence covering the fundamental principles and applications of chemistry designed for science majors. Topics to be covered include composition of matter, stoichiometry, periodic relations, and nomenclature.

CHEM 1211 satisfies one of Kennesaw State University's general education program requirements. It addresses the Natural Sciences general education learning outcome(s). The learning outcome states: Students apply the scientific method to analyze data related to natural phenomena found in everyday life. For more information about KSU's General Education program requirements and associated learning outcomes, please visit the KSU catalog for [University-Wide Degree Requirements](#).

Course Requirements/Credit Hours Concurrent requisite: MATH 1113 or 1190 or 2202/ 3-0-3

Course Resources

- The KSU Science and Math Academic Resources and Tutoring Center (SMART) is an open resource for all KSU students. Located in Library 433 in Kennesaw and Student Center 185 in Marietta, the center provides FREE tutoring in Mathematics, Chemistry, Physics, and Engineering on a first-come first-serve basis. See website for availability (<http://uc.kennesaw.edu/academicinitiatives/smart/index.php>).
- **D2L.kennesaw.edu – All course materials will be found on D2L.kennesaw.edu**
 - **Links to Smartwork5 will be from D2L.**
- How to register for Smartwork5 with D2L: Click on the link below:
 - https://www.youtube.com/watch?v=k7_s2nsMBqM&feature=youtu.be

Course Materials

To be successful in Chemistry, scientists use scientific calculators. Please find one of the following to use. Because we are online, you will need access to a computer and printer. Your computer must have a webcam and lockdown browser capabilities. Finally, you need access to the textbook and the Smartwork5 homework system. You can reach both through D2L. It is strongly recommended that you create a binder and print out the items suggested to be printed and place them in the binder. You should also have a workbook (bound composition book) where you can work problems throughout the semester.

1. Calculator: **Any one** of the following: The TI-30X is recommended.
 - a. **Casio:** All fx-115 and fx-991 models ("fx-115" or "fx-991" in its model name.)
 - b. **Texas Instruments:** All TI-30X and TI-36X models ("TI-30X" or "TI-36X" in its model name.)
2. Access to a modern computer/printer with broadband internet and **a webcam and lockdown browser capable**. The library can loan out laptops for in library use with a webcam and lockdown browser. This is in case of the University switching to online.
3. Textbook: Chemistry: An Atoms-Focused Approach, Third Edition, Thomas Gilbert, Stacey Bretz, Natalie Foster and Rein Kirss – <https://www.norton.com/books/9780393697353>
Textbook and Smartwork5 Homework System Access Choices (**Choose only one, a or b**)
 - a) **Access for both CHEM 1211 and CHEM 1212 for 720 days (2 years)**
(Choose only one, i, ii, iii, or iv)
 - i) **EBook With Smartwork5 978-0-393-69737-7, \$79.95 (highly suggested)**
 - ii) Looseleaf Book Plus Ebook with Smartwork5, 978-0-393-69740-7, \$94.50,
 - iii) Paperback Book Plus Ebook with Smartwork5, 978-0-393-69738-4, \$114.75,
 - iv) Hardcover Book Plus Ebook with Smartwork5, 978-0-393-69735-3, \$135.00
 - b) Access for ONLY CHEM 1211, no textbook,
this assumes you have a textbook from an alternate source
 - i) Standalone Smartwork5 (Homework Only) 978-0-393-44530-5 \$35

Course Requirements:

Grading: (There will be one dropped quiz and one dropped exam. NO MAKEUP EXAMS OR QUIZZES)

Smart Work Homework	10%
Quizzes (5)	20%
Section Exams (5)	50%
ACS Final	20%

- **A** 100.0% - 90.0%; **B** 89.9% - 80.0%; **C** 79.9% - 70.0%; **D** 69.9% - 60.0%; **F** < 60.0%

Your final grade in the course can be calculated as shown below, according to your weighted averages in each of the five categories:

$(\% \text{ Score for Online Homework}) \times (0.10) + (\% \text{ Score for Quizzes}) \times (0.20) + (\% \text{ Score for Unit Exams}) \times (0.50) + (\% \text{ Score on Final Exam}) \times (0.20) = \text{Final Score}$

- **Withdraw:**

March 15, 2022, at 11:45pm is the last day to withdraw without academic penalty. Students who officially withdraw from courses before the last day to withdraw without academic penalty will receive a grade of “W” and receive no credit. Students who officially withdraw after the last day to withdraw without academic penalty and before the last week of the semester or who have exceeded the maximum number of withdrawals will receive a grade of “WF,” which will be counted as an “F” in the calculation of their grade point average. If you are considering withdrawing from the course, please consult your instructor so that you may make the most informed decision.

ACS Final Exam – The American Chemical Society provides a nationwide exam for all freshmen chemistry classes. This exam will be administered in person during your assigned exam time. The exam will only be on the material listed in the course learning objectives below.

Homework – 10% of your homework grade is based on your completion of the Smartwork5 by Norton Homework Questions. While homework will be a completion grade, you must complete it to receive a grade. Partial completion will be prorated down for the grade. (Ex. If you complete 70% of the assignments (35/50) you will receive a 70 for the overall grade)

The Smartwork5 Homework consists of 50 assignments each with 5 questions. Each assignment is based on a separate subsection of the course. This means that there is an assignment for 1.7, 1.8, 2.1, 2.2, 2.3, etc. This homework will be repeatable, but the deadlines will be at each Section Exam Date.

Quizzes – short quizzes will be given weekly over material covered in previous classes. Keep up with your studying. There are no make-up quizzes so please make sure to come to every class.

Section Exams – section exams will be in person paper exams. There will not be any make-up exams so make sure to be present on exam day.

Course Learning Objectives (CLO)(Norton Textbook) and Chapter Questions

1. Convert between units in the metric system using prefixes (1.7, 1.8, excluding T)
2. Apply dimensional analysis with density. (equation provided in section 1.3, page 9)
 - i. CLO 1, 2 - Chapter 1, page 42, # 1.55, 1.56, 1.61– 1.72
3. Relate subatomic particles to the structure of atoms and ions. (2.1, 2.2)
4. Recognize and name elements and groups on the periodic table. (2.3)
 - i. CLO 3, 4 - Chapter 2, pages 77 - 79, #2.21 – 2.42
5. Evaluate the nature of the electromagnetic spectrum and its relationship to matter (3.1 – 3.3)
6. Describe the Bohr model, De Broglie Wavelengths and Quantum numbers (3.4-3.6)
7. Identify the shapes of atomic orbitals (3.7)
8. Determine electron configurations of ions and atoms and magnetic properties (3.8, 3.9) (magnetic properties need to be added)
9. Interpret periodic trends of radii size of atoms and ions (3.10)
10. Interpret periodic trends of ionization energy and electron affinities (3.11-3.12)
 - i. CLO 5 - 10 – Chapter 3, pages 134-142, #3.1 –3.38, 3.45- 3.116, 3.119 – 3.122.
11. Identify types of chemical bonds (4.1)

12. Determine electronegativity, and polarity between bonds (4.2)
13. Name compounds and write formulas including polyatomics, acids and bases (4.3)
14. Draw Lewis symbols and structures (4.4)
15. Determine resonance, apply formal charges, determine exceptions, bond order, where necessary for Lewis structures (4.5, 4.7, 4.8) (bond order needs to be added)
16. Evaluate bond energies and bond lengths (4.6)
 - i. CLO 11 - 16 – Chapter 4, pages 187 – 195, #4.1-4.8, 4.10-4.132, 4.143-4.172.
17. Apply VSEPR theory to molecular shape, polarity, and dipole moment (5.1 – 5.3)
18. Interpret the valence bond theory and hybridization of atomic orbitals (5.4-5.5)
 - i. CLO 17, 18 – Chapter 5, pages 243-247, #5.1-5.4, 5.11-5.78.
19. Identify intermolecular forces and apply them to physical changes (6.1-6.3)
 - i. CLO 19 – Chapter 6, pages 281-283, 6.1-6.4, 6.17-6.44
20. Calculate the molar mass of atoms, ions, and molecules. (2.4, 2.5)
21. Calculate using moles and Avogadro's Number (2.4, 2.5)
 - i. CLO 20, 21 – Chapter 2, pages 79-81, 2.43 – 2.82, 2.92, 2.99
22. Use significant figures in calculations (1.7)
 - i. CLO 22 – Chapter 1, pages 42-43, #1.57-1.60, 1.73, 1.74
23. Write and balance chemical reactions (7.1, 7.2)
24. Apply stoichiometry to reactions using solids and solutions (7.3)
25. Find the limiting and excess reagent, theoretical yield and percent yield (7.4)
26. Percent composition and empirical formulas (7.5)
27. Comparing empirical and molecular formulas (7.6)
28. Determine a formula of a compound through combustion analysis (7.7)
 - i. CLO 23-28 – Chapter 7, pages 324-333, #7.1 – 7.110
29. Convert between different units of solution concentrations and apply dilutions (8.1, 8.2)
30. Identify electrolytes, nonelectrolytes and weak electrolytes (8.3)
31. Write molecular, ionic and complete ionic reactions
 - a. for both weak and strong acids and bases (8.4)
 - b. for the application of solubility rules for precipitation reactions (8.6)
32. Recognize unsaturated, saturated and supersaturated solutions (8.6)
33. Apply stoichiometry and solution concentrations to titrations (8.5)
34. Assign oxidation numbers to atoms in compounds (8.7)
35. Identify and balance redox reactions in acid solutions (8.7)
 - i. CLO 29-35 – Chapter 8, pages 384-391, #8.1 – 8.110
36. Determine the type of radioactivity based on nuclear reactions (21.1)
 - i. CLO 36 – Chapter 21, pages 21.1-21.5, 21.11 and 21.12, 21.17-21.26

Course Calendar* (Add these dates for quizzes and exams to your calendar)

*Class dates for topics are tentative and may change without notice. However, any change in Exam dates will be announced and posted on D2L prior to the Exam date.

Quiz Dates – Jan 21, Feb 14, Mar 4, Mar 28, Apr 22.

Section Exam Dates – Feb 4, Feb 25, Mar 18, Apr 8, Apr 29

Final ACS Exam - Please check the final exam schedule at the KSU website

Course Schedule

Day of Week	Date	Week #	Textbook Sections	Section Exams
Monday	10-Jan	1	1.7	
Wednesday	12-Jan		1.8	
Friday	14-Jan		2.1-2.3	
Monday	17-Jan	2	Holiday	
Wednesday	19-Jan		3.1-3.3	
Friday	21-Jan		3.4-3.6	Quiz
Monday	24-Jan	3	3.4-3.6	
Wednesday	26-Jan		3.7-3.9	
Friday	28-Jan		3.7-3.9	
Monday	31-Jan	4	3.10-3.12	
Wednesday	2-Feb		Review	
Friday	4-Feb		EXAM	Exam 1
Monday	7-Feb	5	4.1-4.2	
Wednesday	9-Feb		4.2	
Friday	11-Feb		4.3	
Monday	14-Feb	6	4.4	Quiz
Wednesday	16-Feb		4.5	
Friday	18-Feb		4.6	
Monday	21-Feb	7	4.7-4.8	
Wednesday	23-Feb		Review	
Friday	25-Feb		EXAM	Exam 2
Monday	28-Feb	8	5.2-5.3	
Wednesday	2-Mar		5.4-5.5	
Friday	4-Mar		6.1-6.2	Quiz
Mon - Fri	11-Jul		Spring Break	
Monday	14-Mar	9	6.1-6.3	
Wednesday	16-Mar		Review	
Friday	18-Mar		EXAM	Exam 3
Monday	21-Mar	10	2.4-2.5	
Wednesday	23-Mar		7.1-7.2	
Friday	25-Mar		7.3	
Monday	28-Mar	11	7.4	Quiz
Wednesday	30-Mar		7.5	
Friday	1-Apr		7.6	
Monday	4-Apr	12	7.7	
Wednesday	6-Apr		Review	
Friday	8-Apr		EXAM	Exam 4
Monday	11-Apr	13	8.1-8.2	
Wednesday	13-Apr		8.3	
Friday	15-Apr		8.4	
Monday	18-Apr	14	8.5	
Wednesday	20-Apr		8.6	
Friday	22-Apr		8.7	Quiz
Monday	25-Apr	15	21.1	
Wednesday	27-Apr		Review	
Friday	29-Apr		EXAM	Exam 5
Monday	2-May		Review	

Course Policies

- **Attendance:**

Attendance to the on-line components is strongly encouraged and will be required in order to complete the homework, quizzes and exams. Students are solely responsible for managing their enrollment status in a class; nonattendance (not logging in) does not constitute a withdrawal.

- **Instructor Turn-Around Time on Student Submitted Materials/Assessment**

Instructors will return graded work within 1 week of the submission

- **Academic Integrity:**

Every KSU student is responsible for upholding the provisions of the Student Code of Conduct, as published in the Undergraduate and Graduate Catalogs. Section II of the Student Code of Conduct addresses the university's policy on academic honesty, including provisions regarding plagiarism and cheating, unauthorized access to university materials, misrepresentation/falsification of university records or academic work, malicious removal, retention, or destruction of library materials, malicious/intentional misuse of computer facilities and/or services, and misuse of student identification cards. Incidents of alleged academic misconduct will be handled through the established procedures of the Department of Student Conduct and Academic Integrity (SCAI), which includes either an "informal" resolution by a faculty member, resulting in a grade adjustment, or a formal hearing procedure, which may subject a student to the Code of Conduct's minimum one semester suspension requirement. See also <http://www.kennesaw.edu/scai/content/ksu-student-code-conduct>.

- **disAbility:**

Any student with a documented disability needing academic adjustments is requested to notify the instructor as early in the semester as possible. Verification from KSU disAbled Student Support Services is required: KH 1205 (470) 578-2666 (Kennesaw campus) or Building A 160G (470) 578-7361 (Marietta campus)). All discussions will remain confidential.

- **Student Athletes:**

Student athletes are required to contact their course instructor during the first week of class with their schedule of planned events that are away from campus.

- **Changes:**

The policies in this syllabus may change due to unforeseen circumstances. Any changes to the syllabus will be given in writing in-class and posted on the course website.

- **Course issues:**

Any issues in the course should first be presented to your course instructor. If the issue remains unresolved contact the course coordinator, Dr. Marina Koether (chem1211@kennesaw.edu).

- **Federal, BOR, and KSU Student Policies**

https://curriculum.kennesaw.edu/resources/federal_bor_ksu_student_policies.php

- **KSU Student Resources:**

https://curriculum.kennesaw.edu/resources/ksu_student_resources_for_course_syllabus.php