

General Chemistry

Fall 2019 Syllabus*

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Course Materials:

1. Text Book: Buthelezi, T.; Dingrando, L.; Hainen, N.; Wistrom, C.; Zike, D. Chemistry: Matter and Change. McGraw Hill: Glencoe Science. 2008.
ISBN: 978-0078746376 designated as [C:MC] herein.
2. A scientific calculator.
3. Safety glasses (can be the same as for Nerf Wars)
4. Pen/Pencil and Paper

Optional Course Materials:

1. Keller, R. W. Focus on Middle School Chemistry. 3rd ed. Gravitas Publications. 2019.
ISBN: 978-1941181706 designated as [FMSC] herein.

Purpose/Goals/Outcomes of the Course:

1. To gain a basic understanding of chemistry and how it is a part of our normal lives.
2. To learn how to solve challenging problems and apply your scientific knowledge.
3. To learn how to work cooperatively with others in addressing such problems.
4. To gain a working grasp of the following topics: measurement and significant figures, atomic theory, properties of matter, periodicity, chemical bonding, stoichiometry, and chemical reactions; namely Chapters 1-11 of our text [C:MC].
(or Chapters 1-5, 9 in [FMSC])

Course Description: This chemistry class will be dual level for both middle schoolers and high schoolers with different assignments given for each. It will cover topics such as the structure of atoms, the history and significance of the periodic table, chemical reactions, stoichiometry, dimensional analysis and a variety of equations and behaviors of the phases of matter.

Homework for each week will include assigned reading, selected homework problems (parent graded, answer key provided), and a brief lab report (teacher graded). Meetings will include a brief discussion, time to answer questions and lab experiments. Students do not need a lab notebook - the experiments will be explained verbally and via handouts.

There will be optional extension meetings in December and January, details TBD.

Please bring safety glasses (these can be the same as nerf wars). If this is a hardship for you please let us know and we can provide them for you, but we do need to know ahead of time.

We'll be rotating sciences every three years starting with chemistry (2019-2020) followed by physics (2020-2021) and biology (2021-2022). They will be offered at a dual level for middle and high school, with more work and more complex write ups assigned to older students. Earth science will be incorporated when appropriate. Our classes will seek to be worldview neutral so that parents can teach issues such as age of the earth and origins of life as they see fit.

Assigned Reading: Reading assignments from the textbooks are listed, starting AFTER each Thursday meeting day. So for example after Orientation on Thursday 9/12 the reading from [C:MC] is Chapter 1, ideally to be completed before our meeting on Thursday 9/19. Corresponding readings in [FMSC] are also listed for those using that text for approximately 6th-8th graders.

Suggested Homework Problems: Depending on level (and which text you choose) a list of suggested questions will be provided each week from the two textbooks used. Each week an answer key will be provided to parents to do their own evaluations of these problems with their student for these problems.

Lab Reports: Each week after 9/19, students should submit a lab report on the work they did. Each lab will come with a hand-out with data to be taken and room for calculations which should be handed in. Questions on this hand-out should also be answered. These will be graded and returned. More advanced students should also write up a one to two page typed lab report in complete sentences with the following sections and their contents.

Objectives: a sentence or two about the purpose of the lab in the student's own words

Procedure: a paragraph or two in third person passive about what was done in the lab

Results: a few sentences describing the data that was found and what it signifies

Discussion: a paragraph discussing if the results were expected, what they showed, and what possible sources of error could have effected these results.

Concluding Statement: a final sentence summarizing the most important finding(s).

Academic Honesty Statement: Doing your own work is paramount to one's education and plagiarism of any kind, from other students, other texts, or online, is strictly prohibited. While students may do experiments in groups to take their data and work together on calculations, they are expected to write up their lab reports each in their own individual words. For reference, in college, violations of academic honesty, be they cheating or plagiarism, can result in grades of zero on assignments and/or courses, or even consideration of expulsion from academic programs or the college itself.

Tentative* Course Timetable, Fall 2019, Thursdays, 9 AM

<u>Week of</u>	
9/12	Grace Collaborative Orientation No Chemistry Meeting Read Chapter 1 at home on “Introduction to Chemistry” (of Glencoe Science’s Chemistry: Matter and Change [C:MC]) Read Chapter 1 at home on “What is Chemistry” (of Focus on Middle School Chemistry [FMSC])
9/19	Introduction and Safety & Lab: Measurement and Conversions (Handout) Read Chapter 2 at home on “Analyzing Data” [C:MC] Or Read Chapter 7, sections 3&4 (7.3, 7.4) at home on “Plotting Data” [FMSC]
9/26	Lab: Launch Lab: How can you form layers of liquids? [C:MC, pg. 31] Read Chapter 3 at home on “Matter – Properties and Changes” [C:MC] Or Read Chapter 2 at home on “Technology in Chemistry” [FMSC]
10/3	Lab: Dating a Penny [C:MC, pg. 60] Read Chapter 4 at home on “The Structure of the Atom” [C:MC] Or Read Chapter 3 at home on “Matter” [FMSC]
10/10	Lab: Model Atomic Mass [C:MC, pg. 126] Read Chapter 5 at home on “Electrons in Atoms” [C:MC]
10/17	Lab: Line Spectra and the Speed of Light (Handout) Read Chapter 6 at home on “The Periodic Table and Periodic Law” [C:MC] Or reRead Chapter 3 at home on “Matter” [FMSC]
10/24	Lab: Periodic Trends (Handout) Read Chapter 7 at home on “Ionic Compounds and Metals” [C:MC] Or Read Chapter 9 at home on “Pure Substances and Mixtures” [FMSC]
10/31	Lab: Mass Percent of Carbon in Baking Soda OR Activity Series TBD (Handout) Read Chapter 8 at home on “Covalent Bonding” [C:MC] Start Chapter 9 at home on “Chemical Reactions” [C:MC] Or Read Chapter 4 at home on “Chemical Bonding” [FMSC]
11/7	Lab: Molecular Models (Handout) Finish Chapter 9 at home on “Chemical Reactions” [C:MC] Read Chapter 10 at home on “The Mole” [C:MC] Or Read Chapter 5 at home on “Chemical Reactions” [FMSC]
11/14	Lab: Price of an Aluminum Atom (Handout) Read Chapter 11 at home on “Stoichiometry” [C:MC] Or reRead Chapter 5 at home on “Chemical Reactions” [FMSC]
11/21	Lab: Determine the Mole Ratio [C:MC, pg. 390]

*Note: This syllabus is subject to change at the discretion of the instructor.