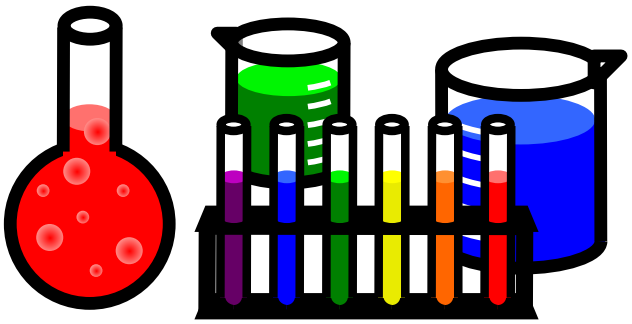
Rider Institute Online

Chemistry Fall 2025

Dr. Todd H. Rider, thor@riderinstitute.org

Website: riderinstitute.org



This online course (for students in upper elementary through high school) covers chemistry, chemical engineering, and materials science. No prior knowledge is required. Supplementary reading and simple home experiments are recommended (but not required) each week—see the next page for more information.

The course is conducted via Google Meet on Tuesdays 8:00-9:00 p.m. Eastern (5:00-6:00 p.m. Pacific).

You can pay for individual blocks of 8 weeks (see below) or $384 per household for the entire fall course (Parts I and II). To register, please pay in advance by credit card (riderinstitute.org/donate) or by check (made payable to "Rider Institute Inc." and mailed to: Todd Rider, 5 Green Needles Road, Littleton, MA 01460) and also send an email (thor@riderinstitute.org). Payments are nonrefundable.

Dr. Rider has over 35 years of experience in science education and research: riderinstitute.org/education riderinstitute.org/about

Chemistry Part I ($192 per household for 8 weeks)

Sept. 2	Matter and measurement
Sept. 9	Atoms, molecules, and ions
Sept. 16	Stoichiometry
Sept. 23	Chemical reactions
Sept. 30	Thermochemistry
Oct. 7	Electronic structure of atoms
Oct. 14	Element periodic properties
Oct. 21	Chemical bonding 1

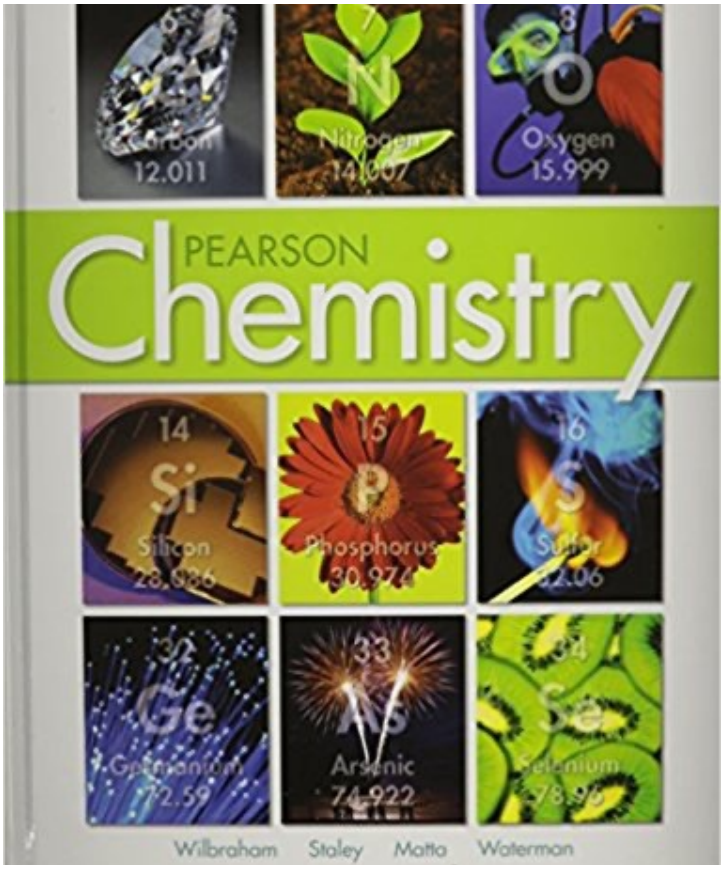
Chemistry Part II ($192 per household for 8 weeks)

Oct. 28	Chemical bonding 2
Nov. 4	Gases
Nov. 11	Liquids
Nov. 18	Solids
Nov. 25	Properties of solutions
Dec. 2	Chemical kinetics
Dec. 9	Chemical equilibrium
Dec. 16	Acids and bases

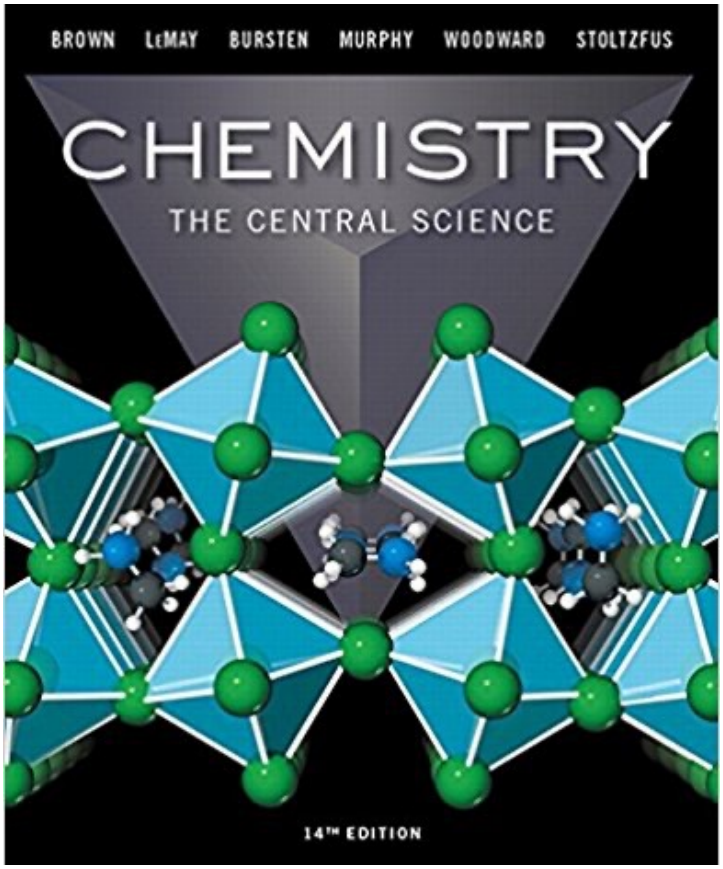
If there is enough interest, I will offer more chemistry during spring 2026, covering topics such as:

- Aqueous equilibria
- Environmental chemistry
- Chemical thermodynamics
- Electrochemistry
- Nuclear chemistry
- Inorganic chemistry 1
- Inorganic chemistry 2
- Inorganic chemistry 3
- Materials science 1
- Materials science 2
- Materials science 3
- Organic chemistry 1
- Organic chemistry 2
- Organic chemistry 3
- Biochemistry 1
- Biochemistry 2

It is recommended (though not required) that students buy a chemistry textbook for supplementary readings during each week. Students can use either Wilbraham's *Chemistry* or Brown & LeMay's *Chemistry: The Central Science*:



OR



For less advanced students
Pearson editions (2012 onward),
or
Prentice Hall editions (2008-2011),
or
Addison Wesley editions (2001-2007)

For more advanced students
15th ed. (2022), or
14th ed. (2017), or
13th ed. (2014), or
12th ed. (2012), or
11th ed. (2009), etc.

New textbooks are insanely expensive, but more affordable used copies are available from reputable dealers at amazon.com, abebooks.com, etc. You can also save money (without losing much scientific content) by buying an edition that is recent but not the very latest. Don't pay for online access codes (those are just an expensive gimmick) and don't rent a book (a good printed textbook that you can keep is an invaluable resource that can be useful in later courses). If you would like to prepare for the AP exam, you should also acquire a book of practice tests, such as *Princeton Review AP Chemistry*.

Each week I will suggest simple lab activities that students can do at home with adult supervision, using common household items or supplies from online dealers. The websites www.homesciencetools.com and www.thehomescientist.com sell science kits, and Thames & Kosmos science kits are also available from various dealers online. The parents or legal guardians of students assume all responsibility and liability for supervising any student lab activities and for ensuring that all applicable safety procedures and instructions are followed. The Rider Institute and Todd H. Rider assume no responsibility or liability for any lab activities.