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| Course No.课程编号 | [Title 课程名称](http://www.chem.umn.edu/class/class_list_name.lasso) |
| [CHEM 1011/1015-001](http://www.chem.umn.edu/class/class.lasso?serial=2730) | Introductory Chemistry |
| [CHEM 1011/1015-009](http://www.chem.umn.edu/class/class.lasso?serial=2731) | Introductory Chemistry |
| [CHEM 1011/1015-017](http://www.chem.umn.edu/class/class.lasso?serial=2707) | Introductory Chemistry |
| [CHEM 1015-025](http://www.chem.umn.edu/class/class.lasso?serial=2726) | Introductory Chemistry |
| [CHEM 1021-001](http://www.chem.umn.edu/class/class.lasso?serial=2708) | Chemistry Principles I |
| [CHEM 1021-009](http://www.chem.umn.edu/class/class.lasso?serial=2698) | Chemistry Principles I |
| [CHEM 1021-017](http://www.chem.umn.edu/class/class.lasso?serial=2709) | Chemistry Principles I |
| [CHEM 1021-025](http://www.chem.umn.edu/class/class.lasso?serial=2717) | Chemistry Principles I |
| [CHEM 1022-001](http://www.chem.umn.edu/class/class.lasso?serial=2727) | Chemistry Principles II |
| [CHEM 1022-009](http://www.chem.umn.edu/class/class.lasso?serial=2693) | Chemistry Principles II |
| [CHEM 1031](http://www.chem.umn.edu/class/class.lasso?serial=2714) | Honors Chemistry I |
| [CHEM 1905-001](http://www.chem.umn.edu/class/class.lasso?serial=2696) | Freshman Seminar *How Do Chemists Study Biology?* |
| [CHEM 1905-002](http://www.chem.umn.edu/class/class.lasso?serial=2713) | Freshman Seminar *Recycle Your Way to Fortune and Fame* |
| [CHEM 1905-003](http://www.chem.umn.edu/class/class.lasso?serial=2716) | Freshman Seminar:  *Alchemy, Magic and Chemistry* |
| [CHEM 1910W-001](http://www.chem.umn.edu/class/class.lasso?serial=2694) | Freshman Seminar:  *Quantum Mechanics and Philosophy* |

CHEM 1011 - Introductory Chemistry: Lecture and Laboratory (PHYS SCI/L)   
(4.0 cr; Prereq-[high school chemistry or equiv], two yrs high school math, not passed chem placement exam; high school physics recommended; fall, spring, every year)   
Elementary organic chemistry. Matter/energy, atoms, compounds, solutions, chemical reactions, mole/chemical calculations, gases, liquids, solids, chemical bonding, atomic/molecular structure, acids, bases, equilibria. Physical/chemical properties of hydrocarbons and organic compounds containing halogens, nitrogen, or oxygen. Emphasizes problem solving.   
  
CHEM 1015 - Introductory Chemistry: Lecture   
(3.0 cr; =[01088]; Prereq-[High school chemistry or equiv], two yrs high school math, not passed chem placement exam; high school physics recommended; fall, spring, summer, every year)   
Broad survey of chemical concepts. Matter and energy, atoms, compounds, solutions, chemical reactions, mole and chemical calculations, gases, liquids, solids, chemical bonding, atomic and molecular structure, acids, bases, equilibria. Physical and chemical properties of hydrocarbons and organic compounds containing halogens, nitrogen, or oxygen. Problem solving emphasized.   
  
CHEM 1017 - Introductory Chemistry: Laboratory   
(1.0 cr; Prereq-1015, %; A-F only, fall, spring, every year)   
Same curricular content as lab component of 1011.   
  
CHEM 1021 - Chemical Principles I (ENVT, PHYS SCI/L)   
(4.0 cr; =[CHEM 1031H]; Prereq-Grade of at least C- in [1011 or 1015] or passing placement exam; intended for science or engineering majors; fall, spring, every year)   
Atomic theory, periodic properties of elements. Thermochemistry, reaction stoichiometry. Behavior of gases, liquids, and solids. Molecular/ionic structure/bonding. Organic chemistry and polymers. Energy sources, environmental issues related to energy use.   
  
CHEM 1022 - Chemical Principles II (ENVT, PHYS SCI/L)   
(4.0 cr; =[CHEM 1032H]; Prereq-Grade of at least C- in 1021 or equiv; fall, spring, every year)   
Chemical kinetics. Radioactive decay. Chemical equilibrium. Solutions. Acids/bases. Solubility. Second law of thermodynamics. Electrochemistry/corrosion. Descriptive chemistry of elements. Coordination chemistry. Biochemistry. Applications to environmental problems.   
  
CHEM 1031H - Honors Chemistry I (ENVT, PHYS SCI/L)   
(4.0 cr; =[CHEM 1021]; Prereq-IT honors student or @, permission from IT honors office]; A-F or Aud, fall, every year)   
Advanced introduction to atomic theory. Periodic properties of elements. Behavior of gases, liquids, and solids. Molecular/ionic structure, bonding. Aspects of organic chemistry, spectroscopy, and polymers. Energy sources, environmental issues. Mathematically demanding quantitative problems. Writing for scientific journals. Lecture, lab.   
  
CHEM 1032H - Honors Chemistry II (ENVT, PHYS SCI/L)   
(4.0 cr; =[CHEM 1022]; Prereq-[1301 or equiv], [IT honors student or consent of IT honors office]; A-F or Aud, spring, every year)   
Advanced introduction. Chemical kinetics/reaction mechanisms, chemical/physical equilibria, acids/bases, entropy/second law of thermodynamics, electrochemistry/corrosion; descriptive chemistry of the elements; coordination chemistry; biochemistry; applications of chemical principles to environmental problems. Lab emphasizes writing for scientific journals.   
  
CHEM 1905 - Freshman Seminar   
(1.0 - 3.0 cr [max 3.0 cr]; Prereq-freshman; A-F or Aud, fall, every year)   
Topics vary. See freshman seminar topics.   
  
CHEM 1910W - Freshman Seminar: Writing Intensive (WI)   
(1.0 - 3.0 cr [max 4.0 cr]; Prereq-freshman; A-F or Aud, fall, spring, every year)   
Topics vary. See freshman seminar topics.