# Chemistry Major, Chemical Physics Emphasis

See [www.chem.utah.edu](http://www.chem.utah.edu) for details or contact Professor Richard Ernst (ernst@chem.utah.edu; 801-581-8639)

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## Chemistry Core Courses (required of all majors):
- **CHEM 1210, 1220 General Chemistry I, II (4, 4)** both SF (or 1211/1221 honors versions)
- **CHEM 1215, 1225 General Chemistry Lab I, II (1, 1)** (or 1240/1241 honors versions)
- **CHEM 2310, 2320 Organic Chemistry I, II (4, 4)** (or 2311/2321 honors versions)
- **CHEM 2315, 2325 Organic Chemistry Lab I, II (2, 2)**
- **CHEM 3000 Quantitative Analysis (4) QI CW**
- **CHEM 3060 Quantum Chemistry and Spectroscopy (4) QI**
- **CHEM 3100 Inorganic Chemistry (5)**

## Math and Physics Core (required of all majors):
- **MATH 1210, 1220 Calculus I, II (4, 4)** or **MATH 1250 AP Calculus I (4)** all QR
- **MATH 2210 Calculus III (3)** or **MATH 1260 AP Calculus II (4)** both QR
- **PHYS 2210, 2220 Physics for Scientists and Engineers I, II (4, 4)** (or 3210/3220 honors versions)
- **PHYS 2215, 2225 Physics Laboratory for Scientists and Engineers I, II (1, 1)**

## D. Chemistry, Chemical Physics Emphasis

### Core courses, plus:
- **CHEM 3070 Thermodynamics and Chemical Kinetics (4) QI**
- **MATH 2250 Differential Equations and Linear Algebra (4)** (or 2270 and 2280)
- **MATH 3150 Partial Differential Equations for Engineers (2)**
- **MATH 3160 Complex Variables for Engineers (2)**
- **MATH Elective: 3 or more units selected from the following:**
  - **MATH 3070 Applied Statistics I (4)**
  - **MATH 4510 Intro. to Topology and Geometry (3)**
  - **MATH 3300 Lab in Computational Science (3)**
  - **MATH 4600 Math, in Physiology and Medicine (4)**
  - **MATH 4200 Intro. to Complex Variables (3)**
  - **MATH 5510 Intro. to Alg. and Geom. Topology I (3)**
  - **MATH 4500 Intro. to Applied Analysis (3)**

### Complete two of the following lab courses:
- **CHEM 3200 Advanced Radiochemistry with Lab I (3)**
- **CHEM 5700 Advanced Analytical Chemistry Lab (2) CW**
- **CHEM 5710 Advanced Organic Chemistry Lab (2)**
- **CHEM 5720 Advanced Physical Chemistry Lab (2)**
- **CHEM 5730 Advanced Inorganic Chemistry Lab (2)**
- **CHEM 5750 Advanced Chemical Biology Lab (2)**

### Six or more units selected from the following half-semester classes or research:
- **CHEM 7000 Introduction to Quantum Mechanics I (2)**
- **CHEM 7010 Introduction to Quantum Mechanics II (2)**
- **CHEM 7020 Introduction to Spectroscopy I (2)**
- **CHEM 7030 Introduction to Spectroscopy II (2)**
- **CHEM 7040 Statistical Thermodynamics (2)**
- **CHEM 7050 Classical Thermodynamics (2)**
- **CHEM 7070 Chemical Kinetics (2)**
- **CHEM 7080 Chemical Dynamics (2)**
- **CHEM 4800 or 4999 Undergraduate Research or Honors Thesis (max. 2 units counted total)**

## University Requirements: 122 Hours (at least 40 upper division), DV, IR, WRTG, GEN ED

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### Suggested Course Sequence

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<td>MATH 1220</td>
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