Graduate Program Summary of Degree Audit for Chemistry

Chemistry MS course requirements (6 courses required)
- Core course: either Green Chemistry (CHEM 671) or Chemical Toxicology (CHEM 631)
- Additional graduate-level courses
  - At least 3 must be courses in Chemistry
  - It is recommended that the student take the core courses for the PhD track that aligns with the specialization of the student’s research
  - Up to 2 can be courses in other departments, with approval by the student’s research advisor and GPD

The Chemistry MS degree requires 33 to 36 credits. The reason for the range is that some graduate courses are 3 credits while most are 4 credits. At the minimum, the student must take 6 graduate courses, 8 credits in CHEM 699 (master’s thesis research), and 4 credits in a combination of CHEM 691/692 graduate seminar.

Chemistry PhD degrees all require 60 credits. A minimum of 6 graduate courses is required, which can total between 33 and 36 credits. The reason for the range is that some graduate courses are 3 credits while most are 4 credits. At least 20 credits must be accumulated in CHEM 899 (doctoral dissertation research). CHEM 899 is a variable credit (1-8 credits), repeatable course that is generally taken once coursework is completed or to fill out the remaining credits needed to maintain full-time status in a given semester, however there is a maximum of 50 credits permitted in this course. At least 6 credits must be accumulated in a combination of CHEM 691/692 (graduate seminar I and II), which is a repeatable course. Once the student has completed the minimum credits and has achieved doctoral candidacy, the student may be on program fee as an active student.

Chemistry PhD-Green Chemistry track (6 courses required)
- Core courses (must take both):
  - Green Chemistry (CHEM 671)
  - Chemical Toxicology (CHEM 631)
- Additional graduate-level courses
  - At least 2 must be courses in Chemistry
  - Up to 2 can be courses in other departments, with approval by the student’s dissertation committee

Chemistry PhD-Biological Chemistry track (6 courses required)
- Core course (take at least 1): either Green Chemistry (CHEM 671) or Chemical Toxicology (CHEM 631)
- Biological chemistry track core courses (take at least 2):
  - Medicinal Chemistry (CHEM 658)
  - Physical Biochemistry (CHEM 680L)
  - Medical Biochemistry (CHEM 681)
- Additional graduate-level courses
  - At least 1 must be courses in Chemistry
  - Up to 2 can be courses in other departments, with approval by the student’s dissertation committee

Chemistry PhD-Chemistry Education Research track (6 courses required)
- Core course (take at least 1): either Green Chemistry (CHEM 671) or Chemical Toxicology (CHEM 631)
• Chemistry education research track core course: Chemistry and Biochemistry Education Research (CHEM 641)
• Additional Chemistry education research track core courses (take at least 2, one per category):
  o Quantitative methods: Applied Statistics (ENVS CI 611) or Biological Data Analysis (BIOL 607) or equivalent (with approval by advisor and course instructor/GPD of program)
  o Qualitative methods: Research Methods in Higher Education-Qualitative Analysis (HIGHED 752) or Qualitative Methods in Clinical Psychology (PSYCLN 775) or Qualitative Methods and Field Research (SOCIOL 609L) or equivalent (with approval by advisor and course instructor/GPD of program)
  o Cognition: Knowledge Acquisition (PSYDBS 762) or Cognitive Neuroscience (PSYDBS 620)
• Additional graduate-level courses (2 courses required)
  o Any 600-level courses in Chemistry

Chemistry PhD-Organic Chemistry track (6 courses required)
• Core course (take at least 1): either Green Chemistry (CHEM 671) or Chemical Toxicology (CHEM 631)
• Organic chemistry track core courses (take at least 2):
  o Organic Synthesis & Mechanisms (CHEM 621)
  o Physical Organic Chemistry (CHEM 622)
  o Medicinal Chemistry (CHEM 658)
  o Topics in Organic Chemistry (CHEM 689)
• Additional graduate-level courses
  o At least 1 must be courses in Chemistry
  o Up to 2 can be courses in other departments, with approval by the student’s dissertation committee

Chemistry PhD-Inorganic Chemistry track (6 courses required)
• Core course (take at least 1): either Green Chemistry (CHEM 671) or Chemical Toxicology (CHEM 631)
• Inorganic chemistry track core courses (take at least 2):
  o Organometallic Catalysis (CHEM 611)
  o Physical Inorganic Chemistry (CHEM 612)
  o Topics in Inorganic Chemistry (CHEM 690)
• Additional graduate-level courses
  o At least 1 must be courses in Chemistry
  o Up to 2 can be courses in other departments, with approval by the student’s dissertation committee

Chemistry PhD-Physical/Analytical Chemistry track (6 courses required)
• Core course (take at least 1): either Green Chemistry (CHEM 671) or Chemical Toxicology (CHEM 631)
• Physical/analytical chemistry track core courses (take at least 2):
  o Thermodynamics & Kinetics (CHEM 601)
  o Quantum Mechanics & Spectroscopy (CHEM 602)
  o Analytical Instrumentation (CHEM 661)
  o Topics in Physical/Analytical Chemistry (CHEM 688)
• Additional graduate-level courses
  o At least 1 must be courses in Chemistry
Up to 2 can be courses in other departments, with approval by the student’s dissertation committee.

There is a set of typical elective courses in other departments, but these are not restrictive:

- Applied Statistics (ENVSCI 611)
- Chemistry of Natural Waters (ENVSCI 640)
- Environmental Biogeochemistry (ENVSCI 710)
- Isotope Geochemistry (ENVSCI 715)
- Protein Chemistry & Enzymology (BIOL 678 or 679)
- Biomedical Tracers (BIOL 685)
- Electronic Instrumentation II: Digital (PHYSIC 601)
- Electromagnetic Theory (PHYSIC 612)
- Solid State Physics (PHYSIC 615)
- Quantum Mechanics: Scattering and Many-body Physics (PHYSIC 623)
- Advanced Laser Optics (PHYSIC 632)