



DISCIPLINE DESCRIPTION

CHEMISTRY

ACTIVE TEACHING DISCIPLINES

For administrative use only; please do *not* edit federal NCES information below.

| CIP Code | Title | Definition |
|----------|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 40.0501 | Chemistry, General. | A general program that focuses on the scientific study of the composition and behavior of matter, including its micro- and macro-structure, the processes of chemical change, and the theoretical description and laboratory simulation of these phenomena. |
| 40.0601 | Geology/Earth Science, General. | A program that focuses on the scientific study of the earth; the forces acting upon it; and the behavior of the solids, liquids and gases comprising it. Includes instruction in historical geology, geomorphology, and sedimentology, the chemistry of rocks and soils, stratigraphy, mineralogy, petrology, geostatistics, volcanology, glaciology, geophysical principles, and applications to research and industrial problems. |

Note: More information on the National Center for Education Statistics (NCES) Classification of Instructional Programs (CIP) taxonomy is available at <https://nces.ed.gov/ipeds/cipcode/>.

The qualifications described below represent commonly accepted good practices for teaching in the discipline(s) represented in the unit.¹

Section 1. General description of the unit, including academic programs and course offerings²

The Department of Chemistry offers undergraduate and graduate programs in chemistry and forensic science. The Bachelor of Science program in chemistry is accredited by the American Chemical Society Committee on Professional Training, and the Bachelor of Science program in forensic science is accredited by the Forensic Science Education Programs Accreditation Commission. Students are served by departmental members with expertise across the broad scope of the chemical sciences, including materials chemistry, nanotechnology, nonlinear optics, drug design and delivery, biochemistry, forensic science, chemistry education, and environmental chemistry. The department also benefits from close ties to the National Center for Forensic Science, the College of Optics and Photonics, the NanoScience Technology Center, and the Burnett School of Biomedical Sciences.

Section 2. Qualifying degree(s) for each discipline taught in the unit³

A terminal degree in the teaching discipline qualifies a faculty member to teach throughout the broad scope of the teaching discipline at the undergraduate and graduate levels.⁴

Chemistry

The doctoral degree (e.g., PhD) with a major in chemistry or any chemistry subdiscipline (e.g., analytical chemistry, inorganic chemistry, organic chemistry) represents the terminal degree in the discipline.

Geology/Earth Science

The doctoral degree (e.g., PhD) with a major in geology or any of the geological sciences (e.g., earth science, geochemistry, geophysics and seismology) represents the terminal degree in the discipline.

Section 3. Broadly related discipline(s) for each discipline taught in the unit

Specialization qualifies a faculty member to teach throughout the broad scope of the teaching discipline (typically five or more courses on distinct topics).

Faculty members with a degree at the appropriate level (master's for undergraduate, doctoral for graduate) in industrial chemistry or pharmaceuticals may be qualified to teach throughout the broad scope of the chemistry and forensic science disciplines.

Faculty members with a degree at the appropriate level (master's for undergraduate, doctoral for graduate) in biophysics with a demonstrated emphasis in biochemistry or a related area may be qualified to teach throughout the broad scope of the chemistry discipline.

Section 4. Selectively related discipline(s) for each discipline taught in the unit

Specialization qualifies a faculty member to teach a restricted set of courses in the teaching discipline (typically four or fewer courses on distinct topics).

Faculty members with a degree at the appropriate level (master's for undergraduate, doctoral for graduate) in the biological and physical sciences with a significant chemistry or biochemistry connection may be qualified to teach certain courses in chemistry or forensic science. On a case-by-case basis, applicable courses will be noted on the teaching certification submission in accordance with the faculty members' specific area of specialization.

Faculty members with a degree at the appropriate level (master's for undergraduate, doctoral for graduate) in genetics may be qualified to teach courses in biochemistry and forensic biochemistry.

Section 5. Justification for use of faculty members with "other" teaching qualifications and additional information⁵

Courses covering the presentation of scientific research in written and oral form may be taught by a faculty member with a degree at the appropriate level (master's for undergraduate, doctoral for graduate) in any of the physical sciences. Such courses include CHM 4914 (Undergraduate Directed Independent Research), CHM 4930 (Chemistry Seminar I), and CHM 6936 (Graduate Chemistry Seminar). The instructor's role in the undergraduate and graduate chemistry seminars includes scheduling the seminar, recording attendance, tracking student participation with advising faculty, coaching students on basic presentation skills, and assigning grades on the basis of faculty evaluations of student presentations. Students choose an adviser from among the chemistry faculty for the seminar and work with that adviser to understand the materials on which they will present. The faculty adviser also attends the seminar class when the student presents. At least five other faculty members from the department attend each seminar when a student presents, and they all fill out an evaluation form assessing the students' performance and mastery of the topic. The instructor of record uses the average from these evaluation forms to

assign a grade. The chemistry seminars are led by faculty members with discipline expertise in the physical sciences. The instructor of record's role for the seminars is to focus on organization and general presentation style, rather than scientific content.

The department's forensic science curriculum includes courses on forensic science in the courtroom for which the appropriate academic qualification is a JD or a master's degree in any of the biological or physical sciences plus appropriate professional courtroom experience with forensic evidence. Similarly, a graduate course on the forensic analysis of DNA data requires expertise in statistics and genetics; the appropriate qualification is a doctoral degree in statistics or genetics. Finally, certain practical forensic science courses are best taught by faculty members with a master's degree or higher in forensic science or a closely related field.

- 1.** The unit chair or director, in consultation with unit faculty members, is responsible for identifying and articulating commonly accepted good practices in each of the unit's teaching disciplines and for providing appropriate justification as needed. In the case of an emerging discipline for which common collegiate practice has not yet been established, a compelling case must be made, as necessary, to substantiate the claims presented.
- 2.** Please provide a general description of the unit's course and program offerings at the undergraduate and graduate levels (e.g., degree and certificate programs, minors, unit contributions to interdisciplinary core courses). This section may also be used to provide other pertinent information about the unit and the discipline(s) it represents (e.g., discipline accreditation, faculty research emphases).
- 3.** For each discipline taught in the unit, please list those degrees that are regarded by the respective disciplinary community as terminal degrees in the discipline and thus qualify a faculty member to teach throughout the broad scope of that discipline at the undergraduate and graduate levels. In most fields, a terminal degree is the commonly accepted highest degree in the given field of study. In such instances, the terminal degree is usually considered to be the academic (or research) doctorate (e.g., Doctor of Philosophy). However, some academic fields have, through custom, recognized terminal degrees that are not doctorates (e.g., Master of Fine Arts). Note that terminal degrees in other disciplines may also be appropriate for teaching in the discipline, but such credentials should be listed as broadly or selectively related degrees, as appropriate.
- 4.** A nonterminal master's degree in the teaching discipline qualifies a faculty member to teach throughout the broad scope of the teaching discipline at the undergraduate level but not at the graduate level.
- 5.** Please use this section to provide justification that helps to make the case for special circumstances that apply to the unit, including the use of faculty members qualified to teach by "other" means. Typically, the statements provided in this section should be of a general nature and should not address specific individuals. (Justification for specific individuals is typically handled separately during the teaching certification process.) Please cite appropriate authorities as needed to justify the unit's practices (e.g., discipline accreditation guidelines, governmental regulations).

When a faculty member cannot be qualified to teach on the basis of academic credentials (i.e., degrees, coursework) alone, qualifications other than academic credentials (or combined with academic credentials) that are appropriate for teaching particular courses may be taken into consideration. Such consideration of other teaching qualifications in conjunction with or in lieu of academic credentials must be made on a case-by-case basis. These cases should be exceptional, and the evidence provided of other demonstrated competencies and achievements must be compelling. They should also show significant evidence of professional progress as related to the faculty member's teaching assignment.