Ph.D. in Chemistry

Description

The Ph.D. degree is the terminal degree in chemistry and designed for those who intend to seek employment as a professional chemist in academia,industrial, or government research laboratories, or in other vocations where specialized knowledge in chemistry is desired or required.

Minimum Total Credit Hours: 54

Course Requirements

For the Ph.D. degree, 54 semester hours of graduate credit are required, which must include 3 hours of Chem 700, 18 hours of formal nonremedial lecture courses, 3 hours of seminar (Chem 750 and Chem 759), and 18 hours of dissertation (Chem 797). Credit for previous graduate-level course work may be applied toward these requirements at the discretion of the student's advisory committee and with approval by the department chair. A minimum grade of B is required in each course in the student's area of specialization. All M.S. and Ph.D. students must take one CORE COURSE from each of four of the five specialty areas. Core courses for each area are:

- Analytical Chemistry (Chem 512, 514, 519)
- Biochemistry (Chem 534, 771)
- Inorganic Chemistry (Chem 544, 701, 702)
- Organic Chemistry (Chem 527, 528)
- Physical Chemistry (Chem 531, 532, 536)

A cumulative average of not less than B is required in the core courses. A minimum grade of B is also required in each course in the student's area of specialization. These course and credit requirements are minimum requirements and may not be satisfied with remedial courses. Specific requirements for individual students in excess of the minimum may be imposed by the adviser and the student's advisory committee. Graduate Courses - Approval of the department is prerequisite to registration for all graduate chemistry courses. Generally, physical chemistry based on calculus is prerequisite to all 500-level courses except 545, 546, and 547 and the intermediate level courses 513, 524, and 535. Upon recommendation by the instructor and approval by the department chair, prerequisites for a course may be waived in individual cases. Graduate courses in medicinal chemistry are considered an integral part of the graduate program in chemistry.

Other Academic Requirements

Seminar Presentations: Each Ph.D. student must make three seminar presentations: an initial oral presentation, which may be either a research seminar or a literature seminar, to the assembled faculty and students of the department; an oral or poster presentation describing the student's research; and a final seminar based on the student's dissertation to the assembled faculty and students of the department. Seminars given at UM will be evaluated by the faculty in attendance. A poster given at a local event must be evaluated by at least three faculty in attendance, whereas a poster or talk given at a national or regional scientific meeting will be evaluated by the student’s adviser.

Comprehensive Examination Requirement: A series of cumulative examinations and a research proposal/dissertation prospectus constitutes the student’s comprehensive examination requirements for the Ph.D. degree. A Ph.D. student must pass the comprehensive exam requirement no later than the end of the third full year in the program.

Cumulative Examinations: A Ph.D. student must pass a minimum of four cumulative examinations. Some divisions may impose a higher number than four. Each division will offer at least one examination per semester, and the topic and method of the examination will be announced at least two weeks before the examination. The distribution of examinations among the various divisions will be decided by the student’s advisory committee. A student may receive credit for no more than two exams from any one professor.

Research Proposal/Dissertation Prospectus: An original research proposal of 10-15 pages is prepared in a professional format on the subject of the student’s dissertation research. The proposal should provide background information, preliminary results, work proposed to complete the dissertation, and original proposals for future directions beyond the dissertation project. It must reflect proper usage of the English language, especially grammar and spelling, and contain all relevant literature citations. The proposal is defended in an oral examination administered by the student’s advisory committee. A three- page overview of the research proposal, outlining the work to be completed for the dissertation, will be submitted to the Graduate School as the dissertation prospectus, following approval by the student’s advisory committee.

A dissertation, which must be a formal written account of the student's research, is required of all Ph.D. degree candidates. The dissertation is defended by the student in a final oral examination, which typically follows the student's final seminar. The student's advisory committee conducts the examination, which is not restricted to the content of the dissertation.