Graduate Student Handbook
Department of Chemistry
University of Utah
2019 - 2020
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INTRODUCTION
The Chemistry Department graduate curriculum for students entering during the 2019-2020 academic year is presented in the following pages. A summary of the requirements for a graduate degree in Chemistry with a typical timeline is presented on the next page.

The general requirements for all students studying for the Ph.D. degree are:
- successful completion of a series of courses in the first year,
- presentation of a departmental seminar in the second year,
- passing a qualifying exam in the second year,
- writing and defending a research proposal in the third year,
- writing and defending a dissertation based on a fundamental research problem.

Each requirement is presented in detail in later sections of this handbook. The requirements for the M.S. degree are set forth in Section 15.

In addition to reading the information presented here, all graduate students are encouraged to examine the regulations concerning graduate study at the University of Utah Graduate School website http://gradschool.utah.edu/current-students/

1. REGISTRATION AND TUITION BENEFIT REQUIREMENTS
A. Students who are present on campus and making use of University facilities (lab or office space, libraries, faculty time) must be enrolled at all times for a minimum of 3 credit hours in chemistry courses. The appropriate course for those engaged only in research is “Thesis Research”, CHEM 7970; or for those only writing a thesis, “Faculty Consultation”, CHEM 7980. (PLEASE NOTE: For those with special certification needs, e.g., to prevent the beginning of undergraduate loan payments, it may be necessary to register for more than 3 hours per semester).

B. Tuition Benefits will be provided for graduate students in good standing according to departmental and university rules. The number of semesters for which a student will receive tuition benefits is determined by the student’s previous degree and the graduate degree currently being pursued, as described at the website http://gradschool.utah.edu/tbp/

1. Students in the Ph.D. program who entered with a B.S. or B.A. degree will receive five years (10 semesters) of tuition benefit support.

2. Students in the Ph.D. program who also received a Master’s degree at the University of Utah are limited to five years of tuition benefit support (2 years for the Master’s + 3 additional years for the Ph.D.).

3. Students entering the Ph.D. program with a Master’s degree from another university are eligible for four years (8 semesters) of tuition benefit support.

Students in the M.S. program are limited to 2 years (4 semesters) of tuition benefits. Students who have been supported as teaching assistants for four or more fall/spring semesters may qualify for additional semesters of tuition benefits.
# Timeline for Ph.D. Student Requirements:

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Due Dates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Completion or Coursework</td>
<td>End of Spring semester of the 1st year</td>
</tr>
<tr>
<td>Advancement to Category I</td>
<td>Following satisfactory completion of coursework</td>
</tr>
<tr>
<td>Selection of Research Advisor</td>
<td>Advised by Dec. 15th of the 1st year; Required by March 15th of the 1st year.</td>
</tr>
<tr>
<td>Supervisory Committee Selection</td>
<td>September 1st of the 2nd year</td>
</tr>
<tr>
<td>Research Ethics and Safety</td>
<td>Must be taken before admission to Ph.D. candidacy.</td>
</tr>
<tr>
<td>Departmental Seminar</td>
<td>By November 15th of 2nd year</td>
</tr>
<tr>
<td>Pre-Oral Written Report</td>
<td>Must be submitted to the Graduate Coordinator and Thesis Committee on or before March 1st of the 2nd year.</td>
</tr>
<tr>
<td>Pre-Oral Examination</td>
<td>Must be completed two weeks after submitting the Written Report or by May 1st of the 2nd year, whichever is sooner.</td>
</tr>
<tr>
<td>Research Proposal Abstracts</td>
<td>Abstracts for the Written Research Proposal must be submitted to the Thesis Committee on or before December 15th of the 3rd year.</td>
</tr>
<tr>
<td>Written Research Proposal</td>
<td>Must be submitted to the Graduate Coordinator and Thesis Committee on or before March 1st of the 3rd year.</td>
</tr>
<tr>
<td>Defense of the Research Proposal</td>
<td>Must be completed two weeks after submitting the Written Report or by May 1st of the 3rd year, whichever is sooner.</td>
</tr>
<tr>
<td>Admission to Ph.D. Candidacy</td>
<td>When all of the requirements listed above are met.</td>
</tr>
<tr>
<td>Written Ph.D. Thesis</td>
<td>The Thesis should be submitted to the Ph.D. committee at least 14 days before the Final Ph.D. Oral Defense.</td>
</tr>
<tr>
<td>Final Ph.D. Oral Defense</td>
<td>The Final Oral Defense should take place at least 14 days after submission of the written Thesis.</td>
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</table>

**IMPORTANT NOTE:** Failure to meet these deadlines leads to the revocation of a student’s “Good Standing” status, until the pertinent requirements are met. If “Good Standing” status is not maintained, the department may revoke financial support, the tuition benefit may be revoked, and the student may be subject to dismissal from the program.
B. Tuition Benefit (continued):

Students must be fully matriculated, receive a TA or RA stipend, maintain at least a 3.00 GPA, and be registered for the appropriate number of credit hours of graduate coursework in order to receive a tuition benefit for the academic year. All students receiving a tuition waiver must sign the online tuition benefit agreement each semester that a waiver is received. This list will be available on CIS (University Campus System website) at the beginning of each semester. Please see the Graduate School Tuition Benefit Guidelines at http://gradschool.utah.edu/tbp/tuition-benefit-program-guidelines/ for a detailed list of criteria for receiving a tuition benefit.

Students should register for 12 credit hours for the fall and spring semesters their first year in residence. For subsequent years, students should enroll for 11 credit hours for the fall and spring semesters. All research assistant students that qualify based on the previous fall & spring semesters should enroll for 3 credit hours during the summer semester. The tuition benefit expires after 5 years in residence for students entering with a B.S or B.A., 3 years for those entering with a M.S. degree from the University of Utah, and 4 years from another institution.

C. Students must apply for Utah State Residency following completion of 40 credit hours of graduate study in order to continue to receive a tuition benefit (see Section 16).

D. Students who do not meet the "good standing" requirement of the Department and the University's as specified above, or who fail to register and sign the tuition benefit, will be required to pay their tuition bill. Also, students who leave the department in the middle of a semester may be retroactively required to pay tuition for the semester in which they leave, if the stipend they have accrued during the semester falls below the minimum required for receipt of a tuition benefit.

Of particular relevance to incoming graduate students is the policy of the University that maintenance of a 3.00 GPA is required for graduate studies towards a Ph.D. degree. Thus, a student who fails to maintain a 3.00 GPA in their first semester of classes is no longer in good standing, and is not guaranteed financial support or a tuition benefit for the second semester. After two semesters, a student with a GPA below 3.00 will not qualify for guaranteed financial support will not receive a tuition benefit, and may be subject to dismissal from the program.

2. HEALTH INSURANCE AND PARENTAL LEAVE

Heath Insurance
For the protection of its students, the Chemistry Department requires all graduate students to have health insurance. The University of Utah Graduate School has worked out a plan of coverage with United Healthcare Insurance Company to provide coverage for up to $500,000 of expenses. See the website www.uhcSR.com/utah to view the policy brochure for the 2018-2019 academic year. The department (or the research advisor, through research grants) will pay for $500,000 worth of coverage for all graduate students. If the student wishes to have health insurance for a spouse and/or children, the student can supplement the premiums paid by the department to purchase the additional coverage.

Students are not obligated to accept coverage through United Healthcare. If a student prefers a different insurance policy, the department will reimburse the student for the cost of insurance, up to the cost of the United Healthcare policy.

At the beginning of every semester, all graduate students are required to sign a declaration that
they are either accepting the United Healthcare coverage, or arranging coverage through a different company. The department uses the resulting list to make sure that all students desiring coverage through United Healthcare are indeed covered. **If a student fails to sign this declaration at the beginning of each semester, the department accepts no responsibility should a claim need to be filed.**

**Graduate Student Parental Leave Policy**

Parental leave is available to any full time graduate student in good standing who will serve as the principle caregiver of her or his own newborn child or a partner's newborn child or of a newly adopted child (under six years of age, or a child with special needs under the age of eighteen) during the time for which leave is sought. If both parents/partners are graduate students in the Department of Chemistry, only one is eligible for parental leave.

An eligible graduate student is guaranteed parental leave no more than twice. Any subsequent requests for leave in conjunction with additional instances of birth or adoption will be subject to the approval of the Chair of the Department of Chemistry.

This policy does not apply to birth parents who do not anticipate becoming the legal parent of the child following birth. In such cases, a birth mother may be covered by sick leave and FMLA Policies.

Exceptions to these and other eligibility criteria below must be approved by the Chair of the Graduate Education Committee and the Chair of the Department of Chemistry.

Graduate students interested in applying for parental leave of absence should complete the Parental Leave application form and submit it to the Graduate payroll Coordinator no fewer than three months prior to the expected arrival of the child. The person requesting leave is also required to notify her or his research advisor either prior to or as soon as the application is submitted.

Upon approval of a parental leave of absence request, the eligible graduate student will be granted a paid parental leave of absence for a maximum of 12 weeks, starting on the date requested. Graduate students will receive their normal stipend during the duration of the leave. The graduate student will be released from professional duties during the period of parental leave. A graduate student who is granted parental leave will not be expected to maintain scholarly productivity during their leave.

No extension to this leave will be granted. If additional time is required due to medical or other reasons a non-paid FMLA leave and/or a leave of absence from the graduate program can be requested through the Graduate School.

Students who experience a medical condition associated with their pregnancy and need accommodations recommended by their medical provider should contact the University's Title IX Coordinator, who will work with the student, cognizant faculty, and administration to determine what accommodations are reasonable and effective.
3. COURSE REQUIREMENTS

Before admission to the Ph.D. degree track, graduate students are required to complete a series of graduate courses. This first-year sequence is designed to give students a strong, fundamental background for advanced graduate work in their primary research area and to assist the faculty in evaluating new graduate students. The courses provide exposure to material in a student's area of interest while maintaining necessary breadth in other basic areas of chemistry.

Up to four courses (eight credit hours) may be waived on the basis of satisfactory prior completion of comparable courses elsewhere. Occasionally, credit may be established by examination. In either case, the student should discuss this option with the professor in charge of the course in question, who will then make a recommendation to the Graduate Education Committee.

Until the course requirement is met and a research advisor is selected, students must register for a minimum of six credit hours per half-semester term. At least eight courses must be completed (including waived courses) the first academic year. Only the Graduate Education Committee has the authority to make exceptions to this rule. A course may be dropped or changed to Audit only by permission of the Graduate Education Committee.

Course Selection

Upon beginning the program, each student selects a primary research area that he/she wishes to emphasize in coursework during the first year. One of the six areas of chemistry (analytical, biological, inorganic, materials, organic, or physical chemistry) may be chosen as the primary area of study.

Students in analytical, biological, inorganic, organic, or physical chemistry must complete eight half-semester courses in the first year with the following distribution:

- Four courses in your primary research area.
- Two breadth courses from other areas of chemistry.
- Two elective courses.

Materials students must complete eight half-semester courses in the first year following the instructions found in the list of Core Courses (see below).

The combination of the 8 required courses are referred to as the core course requirements.

Students may substitute courses from other science or engineering departments (e.g., physics, computer science, biochemistry, materials science) for either the breadth or elective courses upon approval from his/her advisor and the Chair of the Graduate Education Committee. The student should petition in writing to take courses from other departments, explaining how the course will benefit his/her research program. The written petition and signed letter from the research advisor should be submitted to the Graduate Education Committee Program Coordinator. Only those students who have selected a research advisor may elect to take courses from outside of the Chemistry Department.
During the student's first semester in residence and until he/she has selected a research advisor, course selections must be approved, in writing, by a member of the Graduate Education Committee prior to registration. Once a student has chosen a research advisor, the student makes course selections in consultation with his/her advisor. Financial support will not be provided for students who fail to have their course selection approved as described above.

4. FIRST YEAR PROGRESS REVIEW:

The Graduate Education Committee will review the progress of each student every semester. After two semesters in the program (excluding summer semesters), the performance of the student in the core courses will be evaluated by the Graduate Education Committee, and a recommendation will be made to the full faculty. A student will ordinarily be recommended for Category I if the set of 8 core courses have been completed with grades of “B” or better. If the eight core courses have not yet been completed, with grades of “B” or better, a recommendation will be made to the full faculty that the student be placed in Category IIa, IIb, or III. The final decision as to how the student will be categorized rests with the full faculty.

- **Category I** -- Accepted into the Ph.D. degree track.
- **Category II** -- Accepted into the M.S. degree track.
  - a. (Category IIa) Certain courses must be satisfactorily completed in order to be reconsidered for acceptance into Category I.
  - b. (Category IIb) Accepted for the M.S. degree track only.
- **Category III** -- Dismissed. Not acceptable as a candidate for a graduate degree in the Department of Chemistry.

Upon placing a student in Category IIa, the Chemistry Department faculty will normally recommend courses that must be completed satisfactorily or other action that must be taken in order to be reconsidered for acceptance into the Ph.D. degree track.

A student placed in Category IIb may petition to be reconsidered for the Ph.D. degree track after the completion of a thesis M.S. degree. The decision of the faculty as to whether an M.S. student shall be permitted to pursue a Ph.D. degree will then be based both upon the extent to which the student has demonstrated ability in research, and the degree to which the academic course requirements for the Ph.D. have been mastered. If the student wishes to be reconsidered for the Ph.D. track, the M.S. thesis defense will also be attended by two additional faculty members, who are chosen to supplement the three M.S. committee members in such a way that the proper composition for a Ph.D. committee is achieved. These additional members will participate in a private comprehensive examination after the public portion of the thesis defense. On the basis of the comprehensive exam, the committee will make a recommendation to the full faculty regarding the student’s continuation toward the Ph.D. degree. If the faculty votes to place the student into Category I, this comprehensive exam will serve as the qualifying exam (preliminary oral exam). Successful defense of the M.S. thesis will not necessarily constitute passing the preliminary oral examination for the Ph.D. degree, since a higher level of performance is expected for the preliminary oral exam.
5. CORE CHEMISTRY COURSES
Courses offered in the current year are found at [https://www.utah.edu/students/catalog.php](https://www.utah.edu/students/catalog.php)

**ANALYTICAL CHEMISTRY**
- CHEM 6810 Nanoscience
- CHEM 7700 Transport and Chemical Analysis
- CHEM 7710 Advanced Analytical and Chemical Measurement
- CHEM 7720 Separations
- CHEM 7730 Electrochemistry
- CHEM 7790 Lab on a Chip

**BIOLOGICAL CHEMISTRY**
- CHEM 6740 Bioanalytical Chemistry
- CHEM 7150 Bioinorganic Chemistry
- CHEM 7450 Biophysical Chemistry
- CHEM 7460 Protein Chemistry

**INORGANIC CHEMISTRY**
- CHEM 7100 Principles of Inorganic Chemistry
- CHEM 7110 Inorganic Mechanisms
- CHEM 7120 Physical Inorganic Chemistry
- CHEM 7130 Solid State Chemistry

**ORGANIC CHEMISTRY**
- CHEM 7200 Contemporary Organic Synthesis I
- CHEM 7240 Physical Organic Chemistry I
- CHEM 7250 Physical Organic Chemistry II

**PHYSICAL CHEMISTRY**
- CHEM 7000 Introduction to Quantum Mechanics I
- CHEM 7020 Introduction to Spectroscopy I
- CHEM 7030 Introduction to Spectroscopy II
- CHEM 7040 Statistical Thermodynamics
- CHEM 7050 Classical Thermodynamics

**MATERIALS CHEMISTRY**
Materials students are required to take at least two of the following Materials courses:
- CHEM 6810 Nanoscience
- CHEM 7130 Solid State Chemistry
- CHEM 7290 Organic Chemistry of Materials
- CHEM 7300 Polymers: Chemistry
- CHEM 7590 Materials for Energy Applications
- CHEM 7640 Materials for Energy

Materials students are required to take at least four of the courses from the track of their choice:

**Inorganic Materials**
- CHEM 7100 Principles of Inorganic Chemistry
- CHEM 7120 Physical Inorganic Chemistry
- CHEM 7130 Solid State Chemistry
- CHEM 7200 Contemporary Organic Synth I
- CHEM 7240 Physical Organic I
- CHEM 7270 Organic Spectroscopy I

**Organic, Biological and Hybrid Materials**
- CHEM 7240 Physical Organic I
- CHEM 7450 Biophysical Chemistry
- CHEM 7460 Protein Chemistry
- CHEM 7470 Nucleic Acid Chemistry
- PHCEU 7230 Nanomedicine
- MSE 6480 Polymer Science
Physical Properties and Analytical Methods for Materials

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 6740</td>
<td>Bioanalytical Chemistry</td>
<td>CHEM 7700</td>
<td>Transport &amp; Chemical Analysis</td>
</tr>
<tr>
<td>CHEM 7000</td>
<td>Introduction to Quantum Mechanics I</td>
<td>CHEM 7730</td>
<td>Electrochemistry</td>
</tr>
<tr>
<td>CHEM 7010</td>
<td>Introduction to Quantum Mechanics II</td>
<td>CHEM 7720</td>
<td>Separations</td>
</tr>
<tr>
<td>CHEM 7040</td>
<td>Statistical Thermodynamics</td>
<td>CHEM 7750</td>
<td>Information Processing</td>
</tr>
<tr>
<td>CHEM 7050</td>
<td>Classical Thermodynamics</td>
<td>CHEM 7770</td>
<td>Analytical Spectr &amp; Optics</td>
</tr>
<tr>
<td>CHEM 7520</td>
<td>Computational Chemistry Lab</td>
<td>CHEM 7780</td>
<td>Surface Chemistry</td>
</tr>
<tr>
<td>CHEM 7530</td>
<td>Molecular Simulations</td>
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</tbody>
</table>

The remaining two courses are electives that can be chosen from the list of courses above under any primary research area.

Note1: The introductory course, CHEM 6510 (Advanced Biological Chemistry), is not acceptable as a core course for students interested in Biological Chemistry. It may be used as an elective or breadth course for students in other primary research areas, provided they have not previously taken a biochemistry course.

Note2: It is the experience of the Physical Chemistry faculty that in addition to the eight core courses, most physical chemistry students need to take two additional half-semester courses in physical chemistry to be well-prepared as physical chemists. Therefore, we strongly encourage students who identify themselves as physical chemists to take a total of 10 graduate courses in their first year, with the two additional courses selected from the physical offerings. If you have selected an advisor, you should seek his/her advice when selecting your courses; otherwise, your selection should be approved by the Physical Chemistry member of the Graduate Education Committee.

6. OTHER COURSEWORK

A. Safety and Ethics Courses:
   All students are required to take a course in Laboratory Safety (CHEM 5510) and Research Ethics (CHEM 5570). These courses are mandatory for all students and cannot be waived. Prior to being admitted to Ph.D. candidacy, all graduate students must enroll in and successfully complete each of these courses.
   a. CHEM 5510, “Introduction to Laboratory Safety”, (1 credit hour). This course in laboratory chemical safety is required for all entering chemistry graduate students. Topics to be covered include laboratory emergencies, chemical hazards, lab inspections and compliance, managing and working with chemicals, waste handling, case studies of university accidents, laboratory equipment, biosafety, radiation, and animals, and microfabrication and nanomaterials.
   b. CHEM 5570, “The Ethical Pursuit of Scientific Research”, (1 credit hour). This course will discuss contemporary topics in scientific ethics and is required of all graduate students. The class will lead to a better understanding of what responsible scholarship means for researchers in chemistry.

B. First-year students are required to attend three mandatory laboratory rotations during the Fall semester and designed to aid in the selection of an advisor for dissertation research.

C. Occasionally, students may need to learn the material that is taught in an undergraduate course (such as a Computational Science programming course). Students in this position are encouraged to ask the instructor of the appropriate course to take a directed reading class from them, at the 5000-level, for one credit hour and then sit in on and complete the assignments and exams for the undergraduate course. The student will then obtain a grade in the directed reading course, which qualifies for a tuition benefit. To make this a legitimate graduate course, the advisor (not the instructor of the course) should give the student a project that is to be completed during the semester. The advisor then reports the grade to the instructor of the directed reading course, who then submits the final grade.
7. SEMINARS AND COLLOQUIA

A. Seminars
The department offers seminar series in the areas of Analytical/Physical, Biological, Inorganic, Materials and Organic Chemistry. Speakers are students, faculty, and outside visitors. Students are expected to attend all seminars in their primary research area and are encouraged to attend others as well.

B. Colloquia
The Department also offers a Colloquium series by invited speakers on topics of general chemical interest. These provide an important view of what is currently going on in chemistry and an opportunity to hear distinguished speakers from all over the country and abroad. All students are expected to attend. These Colloquia are preceded by a brief social period in which refreshments are served.

8. SELECTION OF A RESEARCH ADVISOR

The selection of a research advisor is one of the most significant decisions that students will make in graduate school. Students should realize that the choice of a research advisor will greatly influence the next three to five years of their lives and, in all likelihood, the rest of their careers. Therefore, the decision should be made after careful consideration of many factors.

The Department has three activities to help students with this decision described below.

1) Orientation week poster sessions: During the orientation week, the Department will host poster sessions by faculty members. Each student will be expected to attend all poster sessions and interact with all faculty in each session. The poster presentations should provide students with sufficient introduction to the Department and the various research programs. Obtain a signature of each faculty member using the corresponding form.

2) Laboratory rotations: Students will carry out 3 mandatory laboratory rotations. These rotations are an opportunity to experience the culture of the lab, interact with faculty, students, and postdocs. Each lab is encouraged to tailor the student experience to provide the rotating students a sense of the research being carried out. The rotations will take place in September (Rotation 1), October (Rotation 2), and November (Rotation 3). The choice of the first rotation will be made after the end of the orientation week. Indicate three possible choices on the corresponding form and submit the form on the first day of classes. Approximately 1-2 weeks prior to the end of the first and second rotations, students will be asked again for their choice of three labs for the next rotation. The GEC will make the laboratory assignments based on the student choices and after consultation with faculty on availability of slots.

3) Faculty interviews: To ensure that a thorough and thoughtful deliberation of potential research advisors is undertaken, in addition to the rotations, a meaningful interview with at least four faculty members is required in the fall. Such contacts are especially useful when the student later chooses their supervisory committee (see Section 9). Obtain the signatures of these faculty on the corresponding form and submit the form.

The following steps are required to select a research advisor:

After carefully considering all your interactions and interests, (1) rank order your top three choices
for an advisor, (2) discuss the possibility of joining your first choice laboratory with its advisor, (3) use the corresponding form to list your choices and return the form to the Academic Program Coordinator for approval by the Director of Graduate Studies. Final laboratory assignments will be made by the Department after consultation with faculty.

Ideally, students will identify and join a research lab by the end of the Fall semester and be assigned to a lab by December 15. In rare cases where a suitable match is not identified, a fourth rotation will be possible in the Spring. We anticipate that a final decision will be made by March 15. Students who are unable to find an advisor may be subject to dismissal from the program.

9. SUPERVISORY COMMITTEE

A student placed in Category I is required to assemble a Supervisory Committee in consultation with their research advisor. The Ph.D. Supervisory Committee consists of the research advisor, two faculty members from the student's primary research area, one faculty member from outside the student's primary research area, and one faculty member from outside the Department. For the purposes of assigning committees, faculty affiliations by research area are listed in Table 2 on the next page.

The student should fill out the Supervisory Committee selection form, listing up to five faculty members in their primary research area and three faculty members from outside the primary research area in order of preference. You must also provide a 1-2 sentence justification for each faculty member listed, explaining why they should be included on your supervisory committee. This form should be turned in to the GEC no later than September 1st at the beginning of the 2nd year. The GEC will make the final selection of committee members. Under unusual circumstances, an exception allowing more than one outside Department member on the committee may be made. Such a request must be approved by the research advisor and submitted in writing to the Program Coordinator of the GEC.

For the purpose of assigning faculty to supervisory committees, faculty members are considered as belonging to the following research:

<table>
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<tr>
<th>Analytical</th>
<th>Biological</th>
<th>Inorganic</th>
<th>Materials</th>
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11. QUALIFYING EXAMINATIONS FOR PH.D. CANDIDACY

A qualifying examination is required by the Graduate School of all students prior to admission to Ph.D. candidacy. This examination consists of two parts, a written examination and an oral examination.

A. Written Examination
The written examination requirement is satisfied by admission to Category I.

B. Oral Examination (Pre-Oral)
The Pre-Oral Qualifying Exam is devoted to an examination of the graduate student's progress in research, together with an examination of the student's general knowledge of chemistry, particularly in his/her primary research field.

i. Scheduling of the Pre-Oral Exam
The Preliminary Oral Examination (Pre-oral) requirement must be fulfilled by May 1st of the 2nd year for students entering in the Fall semester.

No later than March 1st of the 2nd year, the student will contact all members of the Supervisory Committee to schedule a specific date for the examination, and inform the Academic Program Coordinator in the Graduate Education Office. The student should also ask one of the chemistry faculty on the Supervisory Committee to serve as temporary chair for the Pre-Oral Exam, as the research advisor is not present during the Exam. The GEC Program Coordinator should be informed of the Pre-Oral chair’s name one week before the Pre-Oral in order to prepare your file.

Students who fail to schedule and take this exam on time will no longer be considered to be in good standing by the Department. Specifically, they will be ineligible for financial support by the Department, including tuition waivers or any kind of full or part-time teaching appointment. Students may also be subject to dismissal from the program.

ii. Preparation for the Pre-Oral Exam
The student must prepare a written summary which should include the following:

Cover sheet: (1 page, not included in total page count)
Title: (55 characters or less) Provide a concise descriptive title of your research.
Name: Your full name, the name of your Research Advisor, and the names of each member of your Advisory Committee
Date, Time, and Place of the Pre-Oral.

Introduction: (1-2 pages)
Begin your document with an introduction to your research in which you discuss the main goal(s) of your research, making sure to place the work within the context of previous studies. Include a discussion of the relevance of the research. You should end the introduction with a brief summary of the expected outcome(s) of the research.

Background: (2-3 pages)
Describe the relevant background information that is related to your research. This section must connect your research to previous work. When writing this section, assume that the reader is
familiar with the field, but not an expert.
The Background section must include the following:
An introduction to the problem that you are investigating.
A description of the previous methods or approaches used to address this or related scientific problems.
The new approach, direction or innovative nature of your research which distinguishes it from previous work.

- **Research Summary (3-4 pages):**
  - Describe your current research progress to date. *The inclusion of extensive experimental or theoretical data is not a requirement for the Pre-Oral, nor is the prior publication of a research article. Preliminary data, observations, and calculations are sufficient.*
  - The Research Summary must include the following:
    - A brief description of the procedures used for the collection, analysis, and interpretation of your data.
    - A discussion and interpretation of the results to date.
    - A discussion of your results within the context of previous studies.

- **Future Research (1-2 page):**
  - Summarize your future research plans.
  - Include a summary of the expected results.
  - Address the significance of the expected results.
  - Discuss the expected time required to achieve your future goals.

- **References (not included in total page count):**
  - References must include: complete author list, title, journal name, volume, inclusive page numbers, and year.
  - The format must be compatible with that used in a major journal in your research area (for example, ACS style (+ title), as used in the Journal of the American Chemical Society, or APS style (+ title), as used in the Journal of Chemical Physics).

- When writing the proposal, you must strictly adhere to the following guidelines. The written document can be a maximum of 10 pages in length including figures but excluding references. All figures must be embedded in the document and of the appropriate size. For consistency’s sake, your summary should be single-spaced and must be written in one of five fonts (Arial, Times New Roman, Helvetica, Palatino, or Georgia) using 11 point or larger type. The margins must be 1” on all sides. **Written summaries that do not conform to the above specifications will not be accepted.**

- The Committee chair must approve any modifications in this format. This summary must be delivered to the GEC Program Coordinator in the Graduate Office and the members of the Supervisory Committee on or before April 15th of the 2nd year in the program (or at least two weeks prior to the scheduled date of the exam). **Failure to submit the written summary in a timely manner will result in immediate cancelation of the oral examination. A reduction in the two week timeline is allowed with written permission from the advisor and approval by all members of the Supervisory Committee.**
iii. Format of the Pre-Oral Exam

The student should prepare an oral presentation of the material described in the written summary. The talk should span approximately 30 minutes, and should encompass in a clear, concise, and logical fashion: (a) an introduction to the proposed research with necessary background, (b) a description of research progress to date, and (c) a proposed plan of future research. Research progress is broadly defined, and includes preliminary results, experiments attempted (successful or failed), instruments constructed, etc. The student is expected to demonstrate an ability to discuss her/his research in a comprehensive and knowledgeable manner, with a sound understanding of the scientific methods and equipment that are used in carrying out this research. The oral exam should not exceed 2 hours in length.

iv. Evaluation of the Pre-Oral Exam

The Supervisory Committee's task is to determine whether the candidate (1) is making adequate progress on the chosen research problem, (2) is sufficiently acquainted with the relevant literature, (3) is capable of exercising critical scientific judgment, and (4) is likely to produce an acceptable Ph.D. dissertation.

The Committee, after offering whatever comments, suggestions, and criticisms are deemed appropriate, will take one of the following actions:

a) Pass
The student's progress and aptitude have been determined to be sufficient; the Committee recommends that this student be admitted to Ph.D. candidacy.

b) Conditional Pass
The student's progress and aptitude are largely satisfactory. However, the Committee has found that certain deficiencies must first be addressed prior to admission to Ph.D. candidacy. The Committee recommends that the student do further work. Such work may include (a) additional coursework to remedy a weak background, or (b) a rewrite of the manuscript portion of the Pre-Oral examination. The student is not required to retake the oral exam.

c) Not Pass
The student's progress and/or aptitude is/are fair but not satisfactory for admission to Ph.D. candidacy. The Committee recommends the student do further work and repeat the exam a final time. The procedures will be the same as the first meeting. The action taken at this second (and final) meeting will be to (i) pass the student with respect to his/her research progress and aptitude, or to (ii) fail the student, thereby terminating the student's eligibility for the doctoral program. This second exam must be completed prior to a date determined by the examination committee, and will ordinarily be within 9 months of the first.

d) Fail
The student has not demonstrated satisfactory research progress or research aptitude and cannot be recommended for admission to Ph.D. candidacy.

C. Overall Evaluation of the Qualifying Examination
The entire faculty will evaluate the results of the qualifying examination with respect to admission
to Ph.D. candidacy. A grade of "Pass" on both exams normally results in a recommendation for admission to candidacy, but the opinion of a student's research advisor on his/her apparent ability to do Ph.D. research is also taken into consideration. Students earning "Fail" on either exam are not eligible for Ph.D. candidacy, and will be reclassified in Category IIb. In addition, students are not eligible for placement in Ph.D. candidacy until the Research Ethics course has been taken (credit/noncredit), the seminar has been successfully presented, and the Research Proposal has been successfully defended before the committee.

12. RESEARCH PROPOSAL

GUIDELINES FOR THE RESEARCH PROPOSAL

OVERVIEW

To be a successful Ph.D level chemist you must be able to formulate, communicate, and defend original research ideas. Thus, as part of your education we provide you with an opportunity to develop these skills by requiring that you generate and develop an original Research Proposal. Research ideas and the resulting proposals generally fall into one of two categories: “hypothesis-driven” or “goal-oriented”. It should be noted that many very successful proposals contain aspects of both categories.

The Research Proposal is a written document that describes an original research plan. While you are encouraged to discuss all aspects of the proposal with colleagues and professors, you are solely responsible for developing and defending the ideas contained within your proposal. The use of other people’s ideas without citation, regardless of whether they are published or not, is plagiarism and will result in disciplinary action up to and including dismissal from the program.

When writing your Proposal, it is essential that you organize your ideas and express them clearly using correct spelling, terminology, grammar, straightforward sentence construction, and properly developed paragraphs. Writing guides are available from the American Chemical Society, ACS Style Guide: A Manual for Authors and Editors (2nd ed., Janet Dodd, Washington, DC: American Chemical Society, 1997). The writing guide by Strunk and White (now available on the web at http://www.bartleby.com/141/) is a good general reference. It is important to remember that even the most creative ideas will be discounted if a proposal is poorly written.

ABSTRACTS (due date December 15th of the 3rd year)

In preparation for your Research Proposal defense, students are required to submit two original research Proposal Abstracts to their Thesis Committee on or before December 15th of the 3rd year in the program. The Thesis Committee will evaluate the two proposals and notify the

1. Research that is directed by a hypothesis regarding the outcome or expected results from a scientific problem.
2. Research that is focused on attaining a particular goal. Included within this definition is the development or application of new methods or techniques to address a scientific problem.
3. For the University of Utah student code of conduct see: http://www.regulations.utah.edu/academics/6-400.html
4. Falling out of “good standing” will make you ineligible for financial support from the Chemistry Department. This will include losing your tuition benefit or being ineligible for any kind of full or part-time teaching appointment. It may also result in dismissal from the program.
student as to which proposal to expand into a full written Research Proposal. If the Thesis Committee finds that the proposals are not satisfactory, the student will have time to resubmit revised proposal abstracts. You may be asked to submit two new Proposal Abstracts in the event that your committee finds your abstracts to be unacceptable.

Please note that for you to remain in good standing in the Ph.D. program your Proposal Abstracts must be submitted to your Thesis Committee and the Chemistry Graduate Coordinator by December 15th of your 3rd year. This deadline is independent of the date of your scheduled proposal defense.

**Research Proposal Abstract Format (1 page each):**

- **Title (55 characters or less):** Provide a concise descriptive title for your proposal.
- **Full Name**
- **Specific Aims or Goals:**
  - Begin your abstract with a very brief introduction to the research topic. This is expected to include a description of the problem that you are trying to solve or the hypothesis that you are interested in testing along with a summary of the methods that you are going to use to solve the problem.
  - **Specific Aims:** (1 sentence each) Specific Aims are your research goals. It is best if you limit your proposal to 2-3 specific aims. Each specific aim should be stated in a single sentence and should be designed to directly test your hypothesis or to achieve your overall goal.
  - End this page with a summary of both the expected outcome and the significance of the proposed studies. *This section must include a brief description of what is significant and innovative about your proposed research (you should note that successful proposals do not necessarily need to have a high degree of innovation but should be of high significance).*
- **Key references**

**THE PROPOSAL (due by March 1st of the 3rd year)**

*Note that for you to remain in good standing in the Ph.D. program your proposal is due to your Thesis Committee and the Chemistry Graduate Coordinator no later than March 1st of your third year. This deadline is independent of the date of your scheduled proposal defense. If you plan on defending your proposal earlier then the dates specified above, you must submit your proposal to your Thesis Committee and the Chemistry Graduate Coordinator at least two weeks prior to the scheduled defense date.*

**Guidelines**

When writing the proposal, you must strictly adhere to the following guidelines. The written document can be a maximum of 10 pages in length including figures but excluding references and Cover Page (vide infra). All figures must be embedded in the document and of the appropriate size. For consistency’s sake, all proposals should be single-spaced and must be written in one of five fonts (Arial, Times New Roman, Helvetica, Palatino, or Georgia) using 11 point or larger type. The margins must be 1” on all sides. *Proposals that do not conform to the above specifications will not be accepted.*

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4. Falling out of “good standing” will make you ineligible for financial support from the Chemistry Department. This will include losing your tuition waiver or being ineligible for any kind of full or part-time teaching appointment. It may also result in dismissal from the program.
PROPOSAL OUTLINE:

- **Cover sheet (1 page, not included in total page count):**
  - **Title:** (55 characters or less) Provide a concise descriptive title for your proposal.
  - **Name:** Your full name, the name of your Research Advisor, and the names of each member of your Advisory Committee
  - **Date, Time, and Place** of the proposal defense (if established).

- **Specific Aims or Goals (1 page):**
  - Begin your document with a very brief introduction to the research topic. This is expected to include a description of the problem that you are trying to solve or the hypothesis that you are interested in testing along with a summary of the methods that you are going to use to solve the problem.
  - **Specific Aims:** (1 sentence each) Specific Aims are your research goals. It is best if you limit your proposal to 2-3 specific aims. Each specific aim should be stated in a single sentence and should be designed to directly test your hypothesis or to achieve your overall goal.
  - End this page with a summary of both the expected outcome and the significance of the proposed studies. *This section must include a brief description of what is significant and innovative about your proposed research (you should note that successful proposals do not necessarily need to have a high degree of innovation but should be of high significance).*

- **Background (ca. 3 pages):**
  - Describe the relevant background information that is related to your hypothesis or goal. This section must connect your proposed research to previous work. When writing this section, assume that the reader is familiar with the field, but not an expert.
  - The *Background* section must include the following:
    - An introduction to the problem that you plan to investigate.
    - A description of the previous methods or approaches used to address this or related scientific problems.
    - Precedent for speculative or risky experiments.

- **Research Plan (ca. 4 pages):**
  - Describe the design of your research program by giving a brief plan that lists the procedures and steps that you will use to accomplish each Specific Aim of the project.
  - The *Research Plan* must include the following:
    - A description of all procedures that will be used for the collection, analysis, and interpretation of data.
    - A description of the procedures and methods that you will use and/or develop to accomplish your goals and their advantages. To do this you will need to compare your procedures and methods to those previously used, discussing the similarities and differences.
    - A time-line for the proposed experiments. You should be practical in terms of how much work you propose. The goals of the proposal must be achievable by you (either as a postdoc or graduate student) within a 2-3 year timeframe.
A description of any hazardous procedures or materials and the precautions that will be exercised.

**Potential Problems and Their Solutions (ca. 1 page):**
- List anticipated difficulties and limitations of the procedures and/or methods you propose. In cases where the difficulties are likely to be a hindrance to achieving your goals, alternative approaches must be given.

**Summary and Conclusions (ca. 1 page):**
- Summarize your research plan.
- Include a summary of the expected results.
- Address the significance of the expected results.

**References (not included in total page count):**
- References must include: complete author list, title, journal name, volume, inclusive page numbers, and year.
- The format must be compatible with that used in a major journal in your research area (for example, ACS style (+ title), as used in the Journal of the American Chemical Society, or APS style (+ title), as used in the Journal of Chemical Physics).

**Formulating and Testing a Hypothesis and Achieving a Goal:**

Your hypothesis or goal should advance the current understanding of the state of the art in your chosen area and it must provide important information about the problem in which you are interested. You must demonstrate a sound framework for fulfilling these requirements by providing informed and logical arguments in the Background section of the proposal.

**Hypothesis-Driven Proposal:**

For proposals that are “hypothesis-driven”, you should formulate a hypothesis that you believe is the most likely answer to the question. In order to identify the most likely answer you must identify and weigh a number of possible answers to your question. Evaluation of the relative quality of the answers requires sophisticated interpretation of previous work, evaluation of the relative weights of current conflicting observations, extension by analogy to other systems, and a good deal of intuition. The synthesis of these components into a logical argument must also be convincingly and concisely presented in the Background section.

Undoubtedly, in formulating your hypothesis you will need to make certain assumptions about your problem. It is essential that you recognize these assumptions. A valuable exercise is to rank your assumptions based on how critical they are to your hypothesis and to list, in two columns, arguments that support and contest your interpretation. Spend time acquiring information about the most important assumptions and always be extremely critical. Quite frequently, entire scientific disciplines encounter roadblocks due to collective acceptance of improper assumptions. For example, until the 1950’s proteins were thought to be the carrier of genetic information, not DNA. The entire field of genetics had assumed that DNA, a simple polymer of only four central building blocks, could never encode the genetic diversity necessary to produce complex organisms. Recognition of DNA as the transmitter of genetic information was hailed as a scientific breakthrough and is central to the entire field of genetics and molecular biology. Major advances (“scientific breakthroughs”) often occur when someone successfully challenges a universally believed assumption that turns out to be invalid.

**Goal-Oriented Proposal:**
Examples of goal-oriented proposals include, but are not limited to, the synthesis of a molecule of some biological relevance, the design of a new material, the development of an analytical method, and the development of a new catalyst system. As with hypothesis-driven proposals, goal-oriented proposals must be focused on solving a problem or problems. It is imperative that you avoid the pitfall of identifying a method or a goal without having a particular problem to solve. Equally important is that your approach or method has at least one advantage over other approaches or methods to the same problem. To ensure that you meet this requirement you will need to identify and evaluate as many possible solutions to your problem as possible and then to critically compare your approach with all of the others. So that the reader of your proposal can follow your line of thought, you must present a convincing argument for your particular approach in the Background section of the proposal.

Specific Aims

Successfully defending your research plan requires a solid set of goals. As stated above, these goals are your specific aims. While it is possible to formulate many aims to test a hypothesis, to answer a question, or to develop a method the most successful proposals are generally focused on the very “best” aims. The “best” aims target the most important aspect of the problem in which you are interested. Keep in mind that the reader of your proposal may have a different opinion as to the “best” aims to pursue. It is your job to convince the reader that your approach is, at the very least, reasonable.

Specific aims should be presented in order of decreasing importance. Earlier aims should be more extensively developed than later aims in the Research Plan section. By extensively describing early aims, the reader develops trust in your abilities and requires less information to believe your arguments and abilities in the later aims. Likewise, if the early aims are poorly described or developed, the reader will have less patience to read about subsequent aims.

EDITING AND PROOFREADING

A superior proposal is a tightly edited document. Very few individuals can write a suitable proposal without going through numerous revisions to sharpen the organization, remove redundant words or phrases, clear up ambiguities, and correct misspelled words and grammatical errors. Do not assume that you belong to that privileged group! Good editing is a time-consuming and difficult job. You are advised to seek outside help from your peers at all stages (early and late) of the writing and editing process.

COMMON MISTAKES

You can avoid having to revise, retake, or fail your oral defense if you avoid the following common mistakes:

- No Significance or Goals that are Too Narrow: “This work will be of little or no real interest or significance.”
- Too Broad or Unrealistic Goals: “I will cure cancer.”
- Fishing Expedition: “I will perform lots of experiments and see what they produce.”
- Technique in Search of a Problem: “I have a great experimental method but I don’t know what to do with it.”
TALK TO YOUR COMMITTEE

Communicate with your Thesis Committee in advance of your proposal defense if there is concern about the scientific approach, style, or expected level of oral presentation and written detail.

PROPOSAL DEFENSE

You will defend your proposal in front of your Thesis Committee. It is imperative that you be the expert in the room on the topic of your proposal! You should prepare a short (20-25 minute) overview that focuses on the most significant parts of your proposal. Limit the introduction and background slides and focus your presentation on your hypothesis, your method(s), and your plan. Keep in mind that the time limit for the examination is 1 hour and that your Committee may repeatedly interrupt you. To receive a passing grade for the defense of your proposal you are expected to be able to either immediately answer or to be able to logically work through the majority of your Committee’s questions.

13. Ph.D. FINAL ORAL EXAMINATION

This examination will cover the thesis research of the candidate. The first part of the exam is open to the public and is normally a seminar presentation of about 50 minutes in length, after which the student’s Ph.D. Supervisory Committee will carry out further questioning. A pass/fail vote by the Committee will follow. The examination version of the thesis must be in the hands of the Ph.D. Supervisory Committee at least 14 days before the examination.

14. TIMELY COMPLETION OF THE Ph.D. DEGREE

It is expected that each student should be able to complete all of the requirements for the Ph.D. degree in four to five years. In order to encourage the timely completion of the degree, students who have not defended their dissertations within 4.5 years are required to meet with their Ph.D. Supervisory Committees at least once each year. The first of these meetings must take place no later than the beginning of the 5th year in residence. This meeting may be brief and informal. The purpose will be to bring the Committee up to date on the research progress made and to formulate a timetable for completing the remaining goals, including an estimated date for the thesis defense. This plan must be approved by the Committee and then forwarded to the Academic Program Coordinator in the Graduate Office for inclusion in the student’s permanent file.

15. MASTER OF SCIENCE DEGREE

The student should consult the University of Utah Graduate School website (http://gradschool.utah.edu/current-students/graduation-overview-for-masters-candidates/) for details. For either the coursework or thesis M.S. degrees, Category I or II placement on the basis of course performance is required. An M.S. Supervisory Committee composed of three Chemistry faculty is then chosen. The Graduate Education Committee must approve the committee.

A minimum of 30 semester credit hours is required for the M.S. Degree (thesis and coursework) in Chemistry. At least 12 hours of these will be required graduate chemistry courses, satisfactory
completion of which will fulfill the Graduate School Comprehensive Examination requirement.

A. Coursework Master’s Degree
For the coursework M.S. Degree, at least 10 hours of research credits (CHEM 6900) and 20 credit hours of coursework in graduate level chemistry courses or graduate courses in a closely allied field of study (subject to approval by the student’s supervisory committee) are required.

The final examination for the coursework M.S. is a written exam in the student’s area of emphasis that will be administered by the faculty. Alternatively, and upon mutual agreement between the student and faculty advisor, students may elect to write a report on his/her research, and present the report to his/her committee for approval.

B. Thesis Master’s Degree
For a thesis M.S. Degree, at least 10 hours of research credits (CHEM 6970) and 20 credit hours of coursework in graduate level chemistry courses or graduate courses in a closely allied field of study, subject to approval by the student’s supervisory committee, are required.

In order to obtain a Thesis Master’s Degree, students must write a master’s thesis and then successfully defend the contents of the thesis in an oral examination proctored by the students Supervisory Committee. The written thesis must be submitted to the members of the Supervisory Committee at least 14 days before the oral examination. The final oral examination covers the thesis research of the candidate. The first part of the exam is open to the public and is normally a brief presentation of the thesis research after which the student's Supervisory Committee will carry out further questioning. A pass/fail vote by the Committee will follow.

16. SAFETY AND WELLNESS

Your safety is our top priority. In an emergency, dial 911 or seek a nearby emergency phone (throughout campus). Report any crimes or suspicious people to 801-585-COPS; this number will get you to a dispatch officer at the University of Utah Department of Public Safety (DPS; dps.utah.edu). If at any time, you would like to be escorted by a security officer to or from areas on campus, DPS will help — just give a call.

The University of Utah seeks to provide a safe and healthy experience for students, employees, and others who make use of campus facilities. In support of this goal, the University has established confidential resources and support services to assist students who may have been affected by harassment, abusive relationships, or sexual misconduct. A detailed listing of University Resources for campus safety can be found at https://registrar.utah.edu/handbook/campussafety.php

Your well-being is key to your personal safety. If you are in crisis, call 801-587-3000; help is close. The university has additional excellent resources to promote emotional and physical wellness, including the Counseling Center (https://counselingcenter.utah.edu), the Wellness Center (https://wellness.utah.edu), and the Women’s Resource Center (https://womenscenter.utah.edu). Counselors and advocates in these centers can help guide you to other resources to address a range of issues, including substance abuse and addiction.
17. BECOMING A LEGAL RESIDENT OF UTAH

In order to continue to qualify for the tuition benefit program, all domestic and non-resident alien graduate students who are not Utah residents are required to submit evidence to the Graduate School that they have made a good faith effort to apply for and obtain Utah residency after their second year (40 credit hours) of graduate study. However, if residency is denied, their tuition benefit status will not be affected. International students are not affected by this requirement because they cannot qualify for resident status.

A residency application will be sent to all domestic and non-resident alien students at the end of the second year in residence by the Academic Program Coordinator in the Graduate Office. There are no non-resident fees required of those who attend the University during summer semester. In addition, students registered for only CHEM 7970 (Thesis Research) are charged at the in-state tuition rate. Students are encouraged to review the residency requirements at https://gradschool.utah.edu/tbp/tuition-benefit-program-guidelines/#residency-and-meritorious-status.

18. OUTSIDE EMPLOYMENT POLICY FOR GRADUATE STUDENTS

It is the policy of the faculty of the Department of Chemistry to encourage graduate students to devote their full attention to the completion of the Ph.D. (or M.S.) in chemistry. By accepting a TA/RA stipend or fellowship, a student agrees not to work at a second job, either within or outside of the Department, without prior consent from his/her advisor and the Chair of the Graduate Education Committee. Students who pursue additional employment without notifying their advisor and the Chair of the Graduate Education Committee are not considered to be in good standing, which may result in immediate discontinuation of their TA/RA stipend or fellowship.

19. GUARANTEE OF FINANCIAL SUPPORT FOR STUDENTS IN GOOD ACADEMIC STANDING

Under current Department of Chemistry guidelines, any graduate student admitted under regular status who is in good academic standing is guaranteed financial support for two years (4 semesters of tuition benefit) as an M.S. candidate (thesis M.S. only), and for 5 years (10 semesters of tuition benefit) as a Ph.D. candidate (see section 1). This policy was implemented to support students who were making normal progress towards a degree, and to assure that the Department of Chemistry will support students even if (for example) their advisor's research support is unexpectedly cut off. Please be aware that the only departmental source of financial support to graduate students is in the form of Teaching Assistant positions. Thus, the guarantee of financial support presupposes that a student can function satisfactorily as a Teaching Assistant, and has had an acceptable level of achievement as a T.A. A student is ineligible for a T.A. and guarantee of financial support if that student is not qualified to teach. Reasons for ineligibility include but are not limited to: poor evaluations from students or faculty supervisor, failure to obey safety regulations, or inability to communicate effectively in English.

20. TERMINATION OF A GRADUATE STUDENT/FACULTY ADVISOR RESEARCH RELATIONSHIP

The following guidelines have been jointly approved by the Faculty and the Graduate Student Advisory Committee of the Department of Chemistry for the rare occasions when it becomes necessary to terminate a graduate student/faculty advisor research relationship.
Either the graduate student or the faculty advisor may terminate a student/advisor research relationship because of dissatisfaction. It is important that both parties respect the needs of the other. The following guidelines are designed to help accomplish this.

If a faculty advisor is dissatisfied with the research effort of a student, the advisor should make every effort at an early stage of the dissatisfaction to communicate in writing to the student the concerns he/she may have about the deficiencies in their research performance. If the deficiencies persist, the faculty advisor may place the student on probation by identifying to the student in writing the unsatisfactory aspects of the student's research performance and the measures needed to bring their research activities to an acceptable level. Students are allowed a reasonable time (at least 30 calendar days) to correct the deficiencies during the probationary period. A copy of the letter outlining the deficiencies in their research should also be sent to the chair of the Graduate Education Committee and the Graduate Program Coordinator. If the deficiencies are corrected in the probationary period, the faculty advisor should notify the student in writing that he/she is no longer on probation. A copy of the letter is also to be sent to the chair of the Graduate Education Committee and the Graduate Program Coordinator.

If the deficiencies persist at the end of the formal probationary period, it is the prerogative of the research advisor to terminate the student/advisor research relationship. The procedure should be:

a. To notify the student in writing, giving reasons for the dismissal, indicating a formal termination date at least 15 days after the date of the letter. A copy of the letter should be sent to the chair of the Graduate Education Committee and the Graduate Program Coordinator.

b. If the student is being paid as an R.A., the student should be kept on the payroll for 15 days after the date of the notification letter to allow time to establish a new research director relationship, unless a new research director puts the student on a payroll before the end of the 15 days.

c. If the student is being paid as a T.A., the department will continue the current T.A. support until the end of the termination semester, contingent, of course, on the T.A. duties being carried out as required.

It is the student's obligation to turn over all data and notebooks arranged in a manner that will allow the research director to continue the work. If these materials are not turned over by the termination date, any pay from a new research advisor or the department may be held in escrow until the above obligation is met.

A student who wants to leave a research group should give the faculty advisor 30 days written notice outlining the reasons for leaving the group. During the 30 days, any research should be brought to a point where it could be easily passed on to a new person. All notebooks and data should be returned to the research advisor before the student is put on another faculty member's payroll or the student leaves the program. Students should be aware that it is impossible to make T.A. appointments in mid-semester and should plan accordingly.

A student who changes research groups is obligated to complete a change of advisor form available from the Academic Program Coordinator in the Graduate Office. At this time, the student should also reconstitute the student's supervisory committee if necessary, e.g. if they have switched primary research areas. If the student has already completed the pre-oral
examination, the student must prepare a brief (2-5 page) summary outlining the new thesis project within five months of joining the new research group. Based on this preliminary information, the committee may decide to call for a brief oral presentation of the new project by the student. An oral presentation would be considered normal for a student that switches primary research areas or makes a substantial change in their research direction. Failure to obtain written approval from the supervisory committee within six months of switching advisors will result in loss of good standing for the student and may result in dismissal from the program.

21. DISMISSAL

In the unusual case that a student fails to make satisfactory progress toward the timely completion of a graduate degree, the faculty may consider dismissal of the student from the program. Students should be given timely and regular written feedback regarding the academic deficiencies that lead to a decision for dismissal. The student’s rights and responsibilities in the case of dismissal are set forth in Policy 6-400, Section IV of the Regulations Library.

22. CHECK-OUT PROCEDURES

Upon completion of study here and before leaving the University of Utah campus, the student is responsible for turning in all keys issued in their name. As stated on the key request (signed at the time the keys were issued): "I will return this key when my need or employment terminates." The keys must be returned to the Main Office (2020 HEB), not to the research advisor. The student should also return the "Contact Information" form to the Graduate Program Coordinator in the Graduate Office to provide information such as forwarding address and future affiliation.

23. UNIVERSITY OF UTAH HONOR CODE

Academic dishonesty in all its forms is proscribed including, but without being limited to, cheating on tests, plagiarism, and collusion.

1. Cheating on tests includes but is not limited to:
   a. copying from another student's test paper;
   b. using materials during a test not authorized by the person giving the test;
   c. collaborating with any other person during a test without authority;
   d. knowingly obtaining, using, buying, selling, transporting, or soliciting in whole or in part the contents of an unadministered test;
   e. bribing any other person to obtain an unadministered test or information about an unadministered test;
   f. substituting for another student or permitting any other person to substitute for oneself, to take a test;
   g. altering a returned examination for subsequent re-evaluation and regrading;
   h. failure to return an examination that the instructor has required to be returned;
   i. removal of an examination from the classroom or office that the instructor has required not to be removed.

2. "Plagiarism" means the appropriation of any other person's work and the unacknowledged incorporation of that work in one's own work offered for credit. "Plagiarism" also includes the republication of your own work without citing the location where your work was originally published.
3. "Collusion" means the unauthorized collaboration with any other person in preparing work offered for credit.

**National Academy of Sciences Definition of Misconduct in Science**

Misconduct in science is defined as fabrication, falsification, or plagiarism, in proposing, performing, or reporting research. Misconduct in science does not include errors in the recording, selection, or analysis of data; differences in opinions involving the interpretation of data; or misconduct unrelated to the research process.

Academic dishonesty and/or misconduct will not be tolerated. Students that are found to be academically dishonest or to have carried out scientific misconduct will be subject to disciplinary action up to and including dismissal from the program. Actions for academic misconduct shall follow the process set forth in Policy 6-400, Section V of the regulations Library.
# Appendix - Graduate Courses in Chemistry

*Please visit [http://www.utah.edu/students/catalog.php](http://www.utah.edu/students/catalog.php) to determine which courses are offered during the current year.*

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
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<td>CHEM 6810</td>
<td>Nanoscience</td>
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<tr>
<td>CHEM 6510</td>
<td>Advanced Biological Chemistry</td>
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<td>Bioanalytical Chemistry</td>
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<td>CHEM 7000</td>
<td>Introduction to Quantum Mechanics I</td>
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<td>CHEM 7010</td>
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<td>Introduction to Spectroscopy I</td>
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<td>Introduction to Spectroscopy II</td>
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<td>Classical Thermodynamics</td>
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<td>Chemical Kinetics</td>
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<tr>
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<td>Chemical Dynamics</td>
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<td>CHEM 7100</td>
<td>Principles of Inorganic Chemistry</td>
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<td>Inorganic Mechanisms</td>
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