The Ph.D. Program

in

Chemistry and Biochemistry

at

The University of Oklahoma

2015/2016 Academic Year

Internal Implementation as approved by the Faculty April 8, 2015
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preface</td>
<td>5</td>
</tr>
<tr>
<td>I. Advising</td>
<td>5</td>
</tr>
<tr>
<td>II. Proficiency Instruments</td>
<td>5</td>
</tr>
<tr>
<td>III. English Language Requirements</td>
<td>7</td>
</tr>
<tr>
<td>IV. Course Requirements</td>
<td>7</td>
</tr>
<tr>
<td>V. Research</td>
<td>9</td>
</tr>
<tr>
<td>VI. The Advisory Committee</td>
<td>11</td>
</tr>
</tbody>
</table>

A. Before Arriving in August                                             | 6    |
B. Initial Advising by the Departmental Graduate Committee in August    | 6    |
C. Advising by the Instructors of Record                                 | 6    |
D. Optional Advising by the Departmental Graduate Committee in September| 6    |

III. English Language Requirements                                      | 7    |

IV. Course Requirements                                                 | 7    |
A. Course Nomenclature                                                  | 7    |
B. Departmental Requirements                                            | 7    |
C. Lecture Course Requirements                                           | 8    |
D. Transfer Credits                                                      | 8    |
E. Research Hours                                                        | 9    |
F. Total Number of Hours                                                 | 9    |
G. Petitions                                                            | 9    |
H. Selecting/Changing a Disciplinary Program of Study                   | 9    |

V. Research                                                             | 9    |
A. Choice of Laboratory Rotation Supervisor                              | 9    |
B. Choice of Major Research Advisor                                     | 10   |
C. Expectations                                                         | 10   |
D. Changes in the Major Professor and/or Disciplinary Program of Study  | 11   |

VI. The Advisory Committee                                              | 11   |
D. Inorganic ................................................................. 26
E. Organic ................................................................. 27
F. Physical Chemistry .................................................. 28
G. Structural Biology ...................................................... 29

XIV. Oversight of Disciplinary Programs ........................................ 30

XV. Course Scheduling .......................................................... 31
PREFACE

The Ph.D. degree is awarded for excellence in research and scholarship, not merely because a required program of courses has been completed or a given time has been spent in its pursuit. It signifies the acquisition of a thorough and comprehensive understanding of a research area as well as the attainment of a high level of professional independence and competence. The Graduate College of The University of Oklahoma normally grants a Ph.D. degree only to an individual who does not already hold the Ph.D. or a similar degree.

A student should normally expect to spend approximately five years beyond the bachelor's degree in the pursuit of the Ph.D. During this period of time, the student must: (1) successfully complete the appropriate coursework, (2) successfully complete the General Examination, and (3) submit and successfully defend the results of the original research that will be presented as a dissertation.

The purpose of this document is to describe the requirements for a student to be awarded the Ph.D. in the Department of Chemistry and Biochemistry. Individual topics will be discussed here in the approximate order that students will encounter them. Thus, the initial requirements will apply to every student, while later requirements will differ for the Disciplinary Programs of Study within the Department.

It should be noted that the student must also completely and independently satisfy the requirements prescribed by the Graduate College at The University of Oklahoma. These requirements are given in the Graduate College Bulletin, which can be obtained from the Graduate College.

I. ADVISING

The Graduate Committee will advise first-semester graduate students in August before classes begin. Prior to advising, the instructors of Introductory (5XYZ, Y = 0-2) courses will administer Proficiency Examinations (or other instruments) to assess whether the student is prepared for the Introductory courses they are interested in taking. In addition to administering and grading the Proficiency Examinations, if it is established that the student is not adequately prepared for a course and he/she still wishes to enroll in the course, the instructors will advise the Graduate Committee with respect to remedial preparation that would be required to ready the student for the course.

At the end of the first semester, once a Major Professor is assigned and the student has selected a Graduate Disciplinary Program of Study, the Major Professor and the Representative of the Disciplinary Program of Study will advise the student regarding the coursework that should be enroll in during the second semester.

At the end of the second semester, his/her Advisory Committee will advise the student regarding research progress, coursework in the third semester, and his/her Individual Development Plan (IDP).

Thereafter, graduate students will be advised/evaluated annually by his/her Advisory Committee regarding research and his/her IDP at the end of the Spring semester.

II. PROFICIENCY INSTRUMENTS

Students will make two important decisions regarding their curriculum during the first semester. In September, about five weeks into the semester, the students will decide which two (or three) Introductory (5XYZ, Y = 0-2) courses to enroll in, one of which should eventually be the focus of his/her studies. In December, the student will choose a Disciplinary Program of Study. So that the student may make informed decisions, he/she will be advised in several ways: 1) through an initial packet of information that will be sent to the student upon the department’s receipt of their acceptance into our program (which will include the syllabi of Introductory (5XYZ, Y = 0-2) courses that will be offered in the first semester and descriptions of the Proficiency Instruments), 2) through Proficiency Instruments
that will be typically administered upon arrival to the Department and before the semester begins, 3) through a face-to-face meeting with the Graduate Committee after the results of the Proficiency Instruments are known (at which the student will inform the Graduate Committee which two-three Introductory (5XYZ, Y = 0-2) courses the student is interested in taking), 4) by the Instructor of Record for the Introductory courses (who will advise the student during the first five weeks of the semester regarding possible remedial instruction to prepare for the Introductory (5XYZ, Y = 0-2) courses), 5) (optionally) by the Graduate Committee at the end of five weeks (should any issues pertaining to coursework need to be resolved), and 6) by the Major Advisor and Representative(s) of the Discipline in December (at the time the student choses a discipline of study). Which Introductory (5XYZ, Y = 0-2) courses a student will enroll in is entirely up to the student; the opinions of the Departmental Graduate Committee and the Instructor(s) of record are entirely advisory, as are the results of the Proficiency Instruments. However, it behooves students to make use of all of the available resources to make informed decisions in a timely fashion (for example to make good use during the first five weeks of the semester to study subjects that they are interested in, but for which they do not have a strong background).

A. Before Arriving in August. Students are advised to examine the available Introductory (5XYZ, Y = 0-2) courses, keeping in mind that one of the areas will likely be a focus of study and two more of the five areas will eventually required to satisfy the Department’s breadth requirement. Particular attention should be placed on the description of the Proficiency Instrument as the individual’s background may require self-instruction (such as revisiting an undergraduate textbook) in order to demonstrate readiness to take the graduate course. Students are encouraged to contact the Instructor of Record should they have any questions about courses they may be interested in.

B. Proficiency Instrument and initial advising by the Departmental Graduate Committee. The Proficiency Instruments, which will be typically administered the week before the beginning of the first semester, may comprise of an examination or other methods of assessing the student’s readiness for the first-semester coursework. The nature of the Proficiency Instruments are described in the syllabi of the Introductory (5XYZ, Y = 0-2) courses. The purpose of the Proficiency Instruments is to establish the proficiency level of new students with respect to the Introductory (5XYZ, Y = 0-2) courses that are offered that semester (typically Analytical Chemistry, Biochemistry, Inorganic Chemistry, Organic Chemistry, and Physical Chemistry). Note that proficiency (at the undergraduate level) of the entire subject may not be required to succeed in the corresponding graduate course. Because the results of these Proficiency Instruments will provide the basis upon which the Departmental Graduate Committee will advise the student with regard to initial graduate coursework, the Proficiency Instruments should specifically assess the new student’s potential to succeed in the Introductory (5XYZ, Y = 0-2) courses that are offered that semester. Students are only required to complete the Proficiency Instruments in the areas in which they are interested in taking introductory coursework in his/her first semester (typically two-three classes). It is important that the student recognizes the importance of these examinations and therefore prepares for them, so that the Graduate Committee has an accurate assessment of the strength of the student's background in various areas and hence can advise the student properly.

C. Advising by the Instructors of Record. In the event that a student does not exhibit proficiency in a Proficiency Instrument and he/she still wished to enroll in the course, the Instructor of Record of the corresponding Introductory (5XYZ, Y = 0-2) course will advise the student what can be done during the first five weeks of the semester to prepare for the course.

D. Optional Advising by Graduate Committee in September. If a student has not demonstrated proficiency in at least two core areas of Introductory (5XYZ, Y = 0-2) coursework by the end of the fifth week of the semester, he/she should meet with the Graduate Committee for further advice.
III. ENGLISH LANGUAGE REQUIREMENTS

A. According to the Graduate College Bulletin, any graduate student for whom English is not the native language must be certified as proficient in English before s/he may assume teaching duties that require contact with students. The English Assessment Program administers certification tests in oral and written English.

B. All students for whom English is not the native language are required by the Department of Chemistry and Biochemistry to demonstrate a suitable level of English proficiency. This means that a student must reach the minimum level of “Certified to Support” in the English tests administered by the English Assessment Program of the university. Fulfilling this “Certified to Support” requirement is a prerequisite to the General Examination that should be satisfied by the end of the first semester. The "Certified to Instruct" level is required to qualify for regular teaching assistant duties.

IV. COURSE REQUIREMENTS

A. Course Nomenclature

Graduate courses that are part of Disciplinary Programs of Study in the Department of Chemistry and Biochemistry are denoted as CHEM G5XYZ, where X is the Disciplinary Program of Study, Y is the sequence number within that Disciplinary Program of Study (for Y = 0-9), and Z is the number of credit hours as follows:

X = 0 Departmental Requirements  
  1 Analytical  
  2 Biochemistry  
  3 Inorganic  
  4 Organic  
  5 Physical  
  6 Chemical Education  
  7 Structural Biology  
  8 Unused at present  
  9 Interdisciplinary or custom program of study

Y = 0-2 Introductory Instruction (no graduate prerequisite)  
  3-5 Advanced Instruction (regularly-offered course(s), beyond the introduction, for majors)  
  6-7 Special Topics or Electives (one-time or irregularly offered courses)  
  8 Practicum  
  9 Seminar

Z = 0-4 Credit Hours (modules)

Within this numbering scheme, Graduate College-reserved course numbers are:

CHEM G5960 Directed Readings  
  G5970 Reserved by the Graduate College  
CHEM G5980 Research for the Masters Thesis  
CHEM G5990 Independent Studies  
CHEM G6980 Research for the Doctoral Dissertation

B. Departmental Requirements

Every graduate student in their first semester are required to complete the S/U-graded
Fundamentals Seminar (CHEM 5011), two credits of letter-graded Laboratory Rotations (CHEM 5080), and two letter-graded two-credit Introductory courses (CHEM 5XY0, Y = 0-2). With the permission of the Departmental Graduate Committee, well-prepared students may enroll in a third 5XY0 course (Y = 0-2) or through a petition process enroll immediately in advanced coursework. Graduate students in their second semester are required to complete the letter-graded Fundamentals Seminar (CHEM 5021). All graduate students must enroll and participate in the Departmental Colloquium (CHEM 5090) throughout the entire period of graduate study (excluding summers). In the first semester, graduate students are required to attend ten (10) seminars while enrolled in CHEM 5090. These seminars can be any combination of General Examination, Final Examination, CHEM 5X9Z (X ≠ 0 Program seminars), departmental, Karcher/Barton seminars, research group meetings or literature club discussions. All graduate students are required to attend all of the Karcher/Barton seminars.

Entering graduate students who show no Physical Chemistry on their transcript must take and pass a one credit hour Physical Chemistry course offered at the beginning of the fall term. Entering graduate students who have not taken one year of Organic Chemistry must take and pass one of CHEM 3053, CHEM 3153, and/or an Organic Chemistry proficiency exam. Undergraduate courses cannot be used to satisfy either the 16-hour requirements described above or the 90-hour total required for the doctoral degree.

C. Lecture Course Requirements

Every student must complete a minimum of sixteen (16) credit hours in letter-graded courses at the CHEM 5XYZ level (X = 1-9 and Y = 0-8). The coursework requirements for each of the Disciplinary Programs of Study are given in section XI. Not all of the coursework may be taken in one discipline (X = 1-7). At least four credit hours of graded coursework must be outside a major discipline (i.e., courses must be taken with at least two different X’s). If more than three credit hours of lecture coursework are to be taken outside the Department of Chemistry and Biochemistry, prior approval must be given by both the student’s Advisory Committee (see below) and the Departmental Graduate Committee. A minimum grade average of 3.0 (on a 4.0 scale) must be achieved for all approved coursework (X = 1-9 and Y = 0-8), with not more than four credit hours with a letter grade below B allowed. Failure to meet these requirements will result in the student being discontinued from the graduate program in Chemistry and Biochemistry.

D. Transfer Credit

Graduate lecture course credits obtained in other institutions may be transferred to fulfill some of the above requirements or the 90-hour total requirement (see Section F below). As a first step, the student should consult the regulations in the Graduate College Catalog that govern the acceptability of a course for transfer. To receive credit for each such course, the student should submit a written petition first to the faculty of the appropriate Program(s) of Study [X = 1-9; i.e., the one which reflects the nature of the course(s) being transferred], then to the Departmental Curriculum Committee, and finally to the Ph.D. Advisory Committee (see below). This should be done prior to the first Advisory Conference meeting (see Section V.A.). The faculty of the Disciplinary Program of Study and/or Advisory Committee also typically examines the textbook(s) and copies of exams taken by the student in the course in question in order to evaluate which OU course is equivalent to the course being transferred. If acceptable, each of these committees will in turn so signify by placing a written and signed memo to that effect in the student's file in the Departmental office. Whenever possible, the corresponding University of Oklahoma course numbers should be clearly identified. The Advisory Committee and the Graduate Committee will recommend accepting course equivalency to replace some of the 16 required credits of graded lecture courses or to count the transferred credit against the 90 credit hours for graduation. The
course(s) to be transferred should be incorporated into the Report of the Advisory Conference for final approval by the Graduate Dean.

E. Research Hours
Once enrolled in CHEM 6980 (Research for the Doctoral Dissertation), continuous enrollment (at least 2 hours per semester) is required. Also, a maximum of 9 hours of CHEM 5990 (Independent Studies) can be applied towards the 90-hour total (next section).

F. Total Number of Hours
A minimum of 90 total graduate-level, post-baccalaureate credit hours is required for the Ph.D. degree.

G. Petitions
A student with special circumstances may petition to receive an exception to any Ph. D. degree requirement(s) itemized in this document. Such a petition, submitted in writing, must be successively approved by the student's Ph.D. Advisory Committee (if appointed), the Graduate Committee of the Department, and, if appropriate, the Graduate College. The petition must clearly specify the exception requested, with detailed justification, and the modified requirement that will substitute for the original (e.g., different timetables or courses).

H. Selecting/Changing a Disciplinary Program of Study
Upon completing the Introductory (5XYZ, Y = 0-2) courses in the first semester and upon approval of the Major Research Advisor, students will schedule a meeting with the Major Research Advisor and the Representative of the Disciplinary Program of Study to outline the coursework in the second semester. The meeting is typically held during finals week of the first semester.

In the event a student wishes to change their Disciplinary Program of Study, in consultation with the Major Research Advisor and the Representative of the new Disciplinary Program of Study, the student will propose a plan to complete their coursework by the end of the fourth semester.

V. RESEARCH
The demonstrated ability to perform original independent research is the single most important aspect of a graduate education in Chemistry and Biochemistry. This includes designing and conducting studies, evaluating the data collected/obtained, considering previously published work, and formulating and presenting valid conclusions. The Dissertation (see X below) represents the essential demonstration of this ability.

A. Choice of Laboratory Rotation Supervisor
To ensure that new students are fully informed about the research opportunities available in the Department, all graduate students entering in the fall semester are required to attend a series of short talks at the beginning of the semester in which each faculty member describes research projects that are under investigation in his/her lab. Attendance at these brief talks is mandatory, and attendance will be taken. In addition to the talks, a list of available laboratory rotation projects will be distributed. Students are encouraged to speak with prospective Laboratory Rotation Supervisors before submitting a prioritized list of selected projects to the Graduate Committee. The Graduate Committee will forward a recommendation to the Department Chair who will approve placement of each graduate student in two different rotation laboratories.
B. Choice of Major Research Advisor

Graduate students in our doctoral program should make an appointment with at least three prospective Major Research Advisors to discuss in more detail the nature of their research and the specific dissertation projects that are available. The faculty who are willing to serve as Major Research Advisors may or may not have participated in the Laboratory Rotations. Students are encouraged to have these individual meetings as soon as possible, since they must be completed well before the end of the first semester in Graduate School. At the conclusion of each meeting, the student should obtain the professor’s signature on the form shown in Appendix A (updated annually to reflect current list of faculty). After obtaining a minimum of three signatures, the student must indicate his/her selected Disciplinary Program of Study and three preferences for a Major Research Advisor. It should be noted that the selected professors do not have to be formally affiliated with the chosen Disciplinary Program of Study or one of their Laboratory Rotation Supervisors. The list will be reviewed by the Graduate Committee, which will forward its recommendation to the Department Chair. Subject to the consent of the faculty member, the Department Chair (in consultations with Committee A) will make the assignment of the student to a Major Research Advisor (or co-Advisors) who will also serve as Chair (or co-Chairs) of that student’s Graduate Advisory Committee. Major Research co-Advisors may be named when the desired Disciplinary Program of Study draws heavily on the expertise and guidance of more than one advisor. This process must be completed by the end of the first semester of enrollment. Until this process is finished, a student is not formally registered with a research advisor. Students entering in the spring semester are required to follow the procedures given above except those pertaining to the faculty talks.

C. Expectations

The Ph. D. degree in Chemistry and Biochemistry is a research-based degree. Entering graduate student begin research work in their first semester while participating in two Laboratory Rotations (CHEM 5080). Intensive activity in the laboratory, including evaluating the relevant scientific literature, will provide a much more realistic context for the lectures and seminars in which the student will participate.

Research productivity is not measured by the total number of hours spent in the lab and/or studying of science, but by the demonstrable (i.e., publishable, or worthy of inclusion in a Dissertation) research accomplishments. This somewhat subtle distinction is sometimes overlooked or forgotten, and students may suddenly become aware that considerable time has gone by with little or no demonstrable progress. Consequently, it is important to recognize from the beginning that the amount of time spent in graduate school is dictated primarily by the student and by how disciplined his/her work habits are. It should also be noted that the time between semesters does not constitute vacation time, but rather an opportunity to make progress in research without the competing time demands of coursework and teaching responsibilities.

The progress in each graduate student’s Disciplinary Program of Study is evaluated during each year of his or her enrollment in the graduate program in Chemistry and Biochemistry, including the first year. Such documentation will be incorporated into the Annual Progress Report (see section VII below) that is submitted each year in April.

Graduate students are expected to complete their doctoral degree requirements and dissertation by the end of their fifth year. It is recognized, however, that because of the intrinsic unpredictable nature of research, additional time may be required. The Department does not guarantee teaching assistant support after the first year, as research students are expected to be supported on faculty research grants or individual fellowships beginning their first summer.
D. Changes in the Major Professor and/or Disciplinary Program of Study

A student may change his or her Disciplinary Program of Study and/or Major Research Advisor(s). This would normally occur when the student's major research or career interests have changed. First, if the student seeks to change his/her Major Research Advisor(s), s/he must petition the departmental Graduate Committee and/or the Department Chair. Subject to the consent of the newly requested Research Advisor(s), the Department Chair, in consultation with Committee A, will make a change in the assignment of the Major Research Advisor(s).

If the student seeks to change his/her Disciplinary Program of Study, a plan for meeting the candidacy requirements of the new Disciplinary Program of Study must be approved by the student’s Advisory Committee and the Departmental Graduate Committee. Documents noting the change and its final approval by the Department Chair, in consultation with Committee A, must be filed with the Graduate Program Assistant in the Department office. All of these steps must be completed before the change is considered official. The Report of the Advisory Conference, if on file in the Graduate College, must also be amended using the appropriate form.

VI. THE ADVISORY COMMITTEE

The Advisory Committee consists of at least five graduate faculty members, including at least one member from outside the department. The members are normally selected by the student in consultation with his/her Major Research Advisor(s) who also serve as the Chair (or co-Chairs) of the student’s Advisory Committee. There are four primary functions of this committee:

A. The Advisory Conference

Within the second semester of enrollment the student must arrange a meeting with his/her Advisory Committee to plan his/her graduate program. Note that by this time the student must have selected his/her Major Research Advisor(s) (Section V) and a Disciplinary Program of Study, both typically at the end of the first semester. Prior to attending this meeting, the student will receive instruction from the Graduate Program Assistant that will explain the correct procedure for obtaining and completing the required paperwork. Note that the Graduate College is currently changing the forms and moving towards an on-line reporting system. Accordingly, students should pay close attention to the current procedures. Before meeting with his/her Advisory Committee, graduate students should obtain the required on-line forms from the Graduate College’s website, currently:

http://www.ou.edu/content/dam/gradweb/documents/Forms_and_packets/Doctoral/AdvisoryConferenceReport2014.doc

The forms should be fill it out in consultation with his/her Major Research Advisor(s) and a draft distribute to each member of the Advisory Committee during the Advisory Conference. Following the meeting, the forms, amended as necessary, must be signed (physically or electronically) by all the members of the Advisory Committee and by the department Graduate Liaison. Any subsequent amendments of this report, including a change of committee member(s), require the completion of additional forms, which are also available from the Graduate College’s website, currently:

www.ou.edu/content/gradweb/academic_programs/doctoral_degree/norman.html

In addition to the forms that are required by the Graduate College, in consultation with his/her Advisory Committee, the student is required to develop an Individual Development Plan (IDP) by his/her second semester.
B. Individual Development Plans

With the assistance of his/her Advisory Committee and the faculty of the chosen Disciplinary Program of Study, an Individual Development Plan should be developed for each graduate student by the end of the second semester. The IDP should at a minimum consist of an up-to-date curriculum. The IDP should be revisited each year during the annual evaluation, and updated upon consulting the Advisory Committee and the faculty who are responsible for the Disciplinary Program of Study. In addition to the curriculum, it is highly recommended that every graduate student complete the AAAS on-line IDP forms that are found at:

http://myidp.sciencecareers.org

The AAAS IDP forms should be included in the student’s records on file with the Department’s Graduate Program Assistant and updated annually by the student in advance of the Annual Conference. The Advisory Committee is encouraged to discuss with the student whether their training as a graduate student is preparing him/her for the next step in the career. If not, a plan should be proposed to address those needs.

C. Preliminary and General Examination

The Advisory Committee will supervise the student's Preliminary and General Examination (Section IX, X).

D. Yearly Evaluation of Student Progress

Each year during the student's graduate career, the Advisory Committee will be responsible for evaluating the progress of the student and recommending appropriate courses of action based upon this progress (Section VI).

E. Preparation and Defense of the Dissertation

Although the Major Research Advisor(s) will be most closely involved in this process, the entire Advisory Committee is responsible for supervising the preparation and conducting the defense of the Ph.D. Dissertation (Section XI).

VII. YEARLY EVALUATION OF GRADUATE STUDENTS

The performance of all graduate students will be reviewed annually to ensure that appropriate progress toward the degree is being achieved. The evaluation will initially be performed by the Advisory Committee at an annual meeting, arranged by the student and held prior to the end of the spring semester. The student will supply all the members with a research and general progress report one week prior to his/her advisory meeting. Based upon this material, the Major Research Advisor(s), on behalf of the Advisory Committee, will prepare a written evaluation to be signed by all committee members. If warranted by discussions during the advisory meetings, a modified evaluation will be written by the Major Research Advisor(s) and subsequently signed by all committee members. These documents must then be filed with the Graduate Program Assistant in the Department’s main office to allow consideration by the Graduate Committee for continued enrollment in the Graduate Program and financial support (if applicable). In addition to evaluating the performance of the graduate student, the annual meeting is an opportune time to review, and if necessary, update the student’s IDP. Based on these documents and any other pertinent information, the Departmental Graduate Committee will evaluate the progress of each student. The results of the evaluation will then be given to each student in writing. The Graduate Committee would normally classify the student's progress in one of the following
categories:
1. The student's progress is satisfactory, and the student should continue with the Ph.D. program.
2. The student's progress is marginal, and specific courses of action will be required to gain satisfactory standing.
3. The student's performance is such that they will be removed from the Ph.D. program.
4. The student's progress is such that they will be required to obtain an M.S. degree as a prerequisite to applying for re-entry into the Ph.D. program.
5. The student's progress is inadequate, and they will not be allowed to continue in the graduate program in the Department of Chemistry and Biochemistry.

VIII. ACADEMIC MISCONDUCT

The Student Code specifies the responsibilities and conduct of students at OU, and it is the responsibility of each student to be familiar with the definitions, policies, and procedures concerning academic misconduct. The Student Code document is available from the Office of the Vice President for Student Affairs (http://www.ou.edu/studentcode/OUStudentCode.pdf). The definition of academic misconduct is as follows:

Academic misconduct includes (a) cheating (using unauthorized materials, information, or study aids in any academic exercise), plagiarism, falsification of records, unauthorized possession of examinations, intimidation, and any and all other actions that may improperly affect the evaluation of a student's academic performance or achievement; (b) assisting others in any such act; and (c) attempts to engage in such acts.

Of particular note for chemists and biochemists in training is the issue of citation, and it is important that Chemistry and Biochemistry students understand, before they write their research proposition and dissertation, that any facts, conclusions, or ideas that are extracted from another paper or source must be properly referenced back to their source. In addition, verbatim usage of another author's text—even when it is from within the same research group—must be placed in quotes with proper citation. Failure to do so constitutes plagiarism. Simply combining extensive quotes from existing sources without providing original organization and argumentation also constitutes plagiarism. Proper professional ethics demands proper citation in all papers and presentations.

IX. PRELIMINARY EXAM

1. Purpose of Preliminary Exam: The Preliminary Exam is not another General Exam but is meant to assess the student's readiness for the General Exam. It will also aid the student in preparing for the General Exam. The examination will be based on the presentation and analysis of a research paper in the area of the student’s research project. The student’s Advisory Committee will examine each student on two primary areas:

   a. The student’s competence on knowledge of the science in and relevant to the paper (i.e. the general area of their research project).

   b. The student’s potential to succeed in the General Exam in the areas of critical thinking and oral communication.

2. Topic Selection, Scheduling and Committee composition: An oral examination will be conducted by faculty of the student’s Advisory Committee (see 2c below) no later than the
end of the third semester from the time he/she entered the program.

a. The student and his/her Major Research Advisor(s) will choose two or more papers from which the Advisory Committee will select one on which the student will be examined.

b. The papers must be submitted to the Advisory Committee no later than the 6th week of the semester (Fall and Spring only). The Advisory Committee will notify the student of their choice within one week.

c. At least three members of the Advisory Committee must be present for the exam to proceed. These members must include the student's Major Research Advisor(s) and two other Chemistry and Biochemistry faculty.

d. Students are encouraged to submit their papers to their Advisory Committee and schedule their Preliminary Exams early in the semester.

3. Preliminary Exam Format: The exam will comprise of a short (~20 minutes) oral presentation on the paper that summarizes and analyzes key results and identifies its importance to the field, followed by addressing questions posed by the faculty related to, but not limited to, the paper (see #4 below). For scheduling purposes the student should allow at least two (2) hours for the oral presentation and subsequent question/answer period.

4. Preparation for Preliminary Exam: Students should prepare by reading and understanding the paper they present. They should also read relevant papers that are cited in their primary paper (e.g., reviews, important preliminary communications, important papers by competitors, etc.). Students should demonstrate knowledge and a critical understanding of fundamental chemical principles, concepts and methods. The oral presentation should be prepared in the manner of a scientific talk (e.g., PowerPoint, Keynote, etc.). Students should understand and be able to explain all experimental details in the paper (i.e., spectroscopic techniques, synthetic methods, etc.).

5. There will be three possible outcomes of the exam:

a. Pass; advance to the General Exam.

b. Deferred; the student was found deficient in one or more aspect of the exam and will address the deficiency according to a plan of action determined by the Advisory Committee.

c. Fail; the student will leave the Ph.D. program. The student may continue in the Master’s program.

If the Advisory Committee vote on the outcome of the exam is tied (Pass/Deferred or Deferred/Fail), the result of the exam shall be a “Deferred” decision.

X. GENERAL EXAMINATION

The purpose of the general examination is to determine the competence of the student in the following areas:
Knowledge of the fundamental concepts and of the current status of understanding in one of the Disciplinary Programs of Study in Chemistry and Biochemistry;
Ability to conduct independent, original research;
Ability to learn independently, i.e., to effectively teach oneself;
Ability to think independently, i.e., critically apply acquired knowledge to new chemical and biochemical problems.

The student's Advisory Committee is responsible for administering the General Examination. The research proposition is common to the General Examination in each Disciplinary Program of Study and offers the Advisory Committee the opportunity to evaluate the student's ability to design an original cogent, creative, and organized research project. Thus, the student must effectively present a scientific rationale in both a written and an oral format. As a consequence, the ability to communicate in unambiguous English is a necessary, but not sufficient, requirement for receiving a passing grade. A secondary objective is to acquaint the student with the appropriate procedures required to apply for federal grant funds or to justify a proposed industrial project. Thus, the written portion of the research proposition must follow the guidelines for a proposal to either the National Institutes of Health (NIH) or the National Science Foundation (NSF).

The semester following completion of the Preliminary Exam the student will submit proposal topic(s) in the form of abstracts to each of the faculty members of his/her Advisory Committee. The abstract(s) should define the objectives, state the significance/importance of the proposed study, briefly outline the plan for solving the problem, and cite key reference. If the topic(s) are not satisfactory to the members of the Advisory Committee, the student will be given a second and final opportunity to submit new/revised topic(s). Following the meeting at which the proposal topic is chosen, the student must within six weeks complete a research proposal following the guidelines for either the U.S. National Institutes of Health (NIH) or the U.S. National Science Foundation (NSF) and arrange a date, time and place to conduct an oral defense of the proposal such that all members of the Advisory Committee can attend. The student must obtain an Application for General Examination form from the Graduate College prior to the oral defense of the Research Proposition. This form must be signed by all members of the Advisory Committee and by the Departmental Graduate Liaison, and then it must be filed in the Graduate College (with a copy filed in the Department Office) at least two weeks before the oral defense is to be held. The Advisory Committee Chair should bring a copy of the Report of General Examination, obtained from the Graduate College, to the oral defense. The Advisory Committee Chair will return this Report, filled out and signed, to the Graduate Dean within 72 hours following the oral defense with a copy being sent to the Department Office. According to Graduate College regulations, students who fail their initial General Examination may, with the approval of the Advisory Committee, request a second opportunity to fulfill this requirement the following term. Students requesting a second examination must complete that examination within the first four weeks of the following term.

XI. Ph.D. DISSERTATION

Following completion of the General Examination, the student normally concentrates upon original research that will make a contribution to existing knowledge, and, in the process, demonstrates both a mastery of the research methods and tools of the appropriate field and also the ability to address a significant problem and arrive at a successful conclusion. In consultation with the Major Research Professor, this process culminates in the writing of the Ph.D. Dissertation. Instructions for the format of the Dissertation are obtained from the Graduate College. Following preliminary acceptance by the Major Research Professor and at least two weeks before the Dissertation and Final Oral Defense, a
reading copy must be submitted, along with a 350-word abstract, to the Advisory Committee members and the Graduate College. At that time, the student also arranges a date, time, and place for the Dissertation Defense and the Final Oral exam so that all members of the Advisory Committee can attend. The Final Oral Examination will require the candidate to demonstrate the expected depth of critical knowledge of the subject area through a presentation of major portions of the dissertation research in a public seminar followed by questioning by the Advisory Committee and the public. For the Dissertation Defense aspect, the candidate must answer questions that pertain to the key aims and advances of the work described, the methodology used in the work, the critical analysis of the supported conclusions and the structure and organization of the dissertation itself. The Report of the Final Oral Examination, obtained from the Graduate College and brought to the exam by the student, must be completed and returned to the Graduate Dean within 72 hours following the completion of this process. Deadlines for these requirements, which are coupled to the date of graduation, are given in the current class schedule for each semester and summer session. The successful student must deposit one (1) unbound final copy to the Graduate College, and submit the thesis electronically on the SHAREOK website as instructed in the Graduate College Bulletin according to the deadlines of the Graduate College.

In addition to the above, the student must be enrolled in at least two graduate credit hours at OU in the semester that the dissertation is defended. Also, the student must complete the following by the specified deadlines to graduate at the desired time:

1. Pay graduating fee in Bursar's Office (the deadlines are specified in the University Class Schedule).
2. Obtain from the Graduate College a dissertation topic card and a Survey of Earned Doctorate form. Each of these, appropriately filled out, along with the signed library card obtained when the three final copies of the Dissertation are given to the Library, should be filed in the Graduate College as soon as possible following the Final Oral Examination.

XII. DISCIPLINARY PROGRAM REQUIREMENTS

The required coursework for Graduate Programs in the Department of Chemistry and Biochemistry is listed for each discipline. For each Disciplinary Program of Study a minimum of 16 credit hours of graded courses including at least four credit hours of breadth courses is required.

A. ANALYTICAL PROGRAM

1. Course Requirements. In addition to the general requirements of Section IIIB, three core courses (CHEM 5100, 5110 and 5120 for a minimum total of 6 credit hours) and special topics courses (CHEM 5160 and/or 5170) are required for a minimum total of 10 credit hours of CHEM 51Y0 coursework. In addition, at least two breadth courses CHEM 5XY0 (X ≠ 0 or 1 and Y = 0-8) for a minimum total of 4 credit hours are required. A minimum total of 16 credit hours of CHEM 5XY0 (X ≠ 0 and Y = 0-8) are required. Within these parameters, the Advisory Committee for each student will determine the exact distribution of these courses.

2. Seminar Requirement. Enrollment and attendance in CHEM 5391 is mandatory each semester following completion of CHEM 5302. In the first year, the student will present a ~45-minute seminar on an assigned topic. A 1-2 page abstract with references should be distributed to all division members one week before the seminar.

In the second year the student must present a seminar on a topic of their choice. The topic must
be approved by the faculty member in charge. The student will thoroughly review the literature, prepare a 5-15 page typewritten report including appropriate references, and present a seminar on the subject. The written report should be distributed to all members of the division and of the student's Ph. D. Advisory Committee at least one week before the seminar. In both the written report and the seminar, the student must demonstrate the ability to identify the significant problems and results within the area.

In the beginning of the third year, the student will present a seminar based on their research project. The seminar should include the background material, results, and plans for future studies. An extended abstract, 5-10 pages in length, with appropriate references should be prepared and distributed to all members of the division at least one week before the seminar.

For the fourth year and beyond, the student must present a seminar on their research or on a faculty-approved topic, typically related to the student’s research project. A 1-3 page abstract with references should be distributed one week before the seminar.

3. Preliminary Examination. See section VIII.

4. General Examination. See section IX.

B. BIOCHEMISTRY PROGRAM

1. Course Requirements. In addition to the general requirements of Section IIIB, three core courses (CHEM 5200, 5210, and 5240 for a minimum of 6 credit hours), approved special topics courses (CHEM 52YO, Y = 6-7 for a minimum of 6 credit hours), and courses to satisfy the breadth requirement (CHEM 5XY0, X ≠ 0 or 2 and Y = 0-8 for a minimum of 4 credit hours) for a minimum total of 16 credit hours of CHEM 5XY0 (X ≠ 0 and Y = 0-8). For special topics courses, 4 of the 6 credit hours are required to be in biochemistry or a related field. Within these parameters, the Advisory Committee for each student will determine the exact distribution of these courses.

2. Seminar Requirement. Continuous enrollment and satisfactory participation in CHEM 5291 during every regular semester following the first semester.

3. Preliminary Examination. See section VIII.

4. General Examination. Students are expected to schedule the oral defense of the research proposition in their fourth regular semester (fifth for those entering in the spring). In the research proposal, the student will identify one (or more) important, highly focused specific aim(s) or issue(s) in a field, and then present a background literature survey, followed by an exposition of the approaches and techniques that could be used to provide an experimental resolution of the issue(s). The written portion of the research proposition must follow the guidelines for a proposal to either the National Institutes of Health (NIH) or the National Science Foundation (NSF). The successful final written proposal will contain sufficient detail (such as the appropriate controls, justifications for data interpretation, consideration of two or more alternative outcomes of critical experiments, and the subsequent direction of research to be followed for each possible outcome) to demonstrate that the student has chosen the most appropriate experimental design and technique to solve the problem. In the oral defense, the student will present, justify, and defend his/her proposed experiments. Thus, this examination will evaluate the student’s creativity and scientific knowledge, as well as the student’s ability to communicate those ideas and pertinent facts both orally and in written form.
(a) Choice of Topic
The topic of the research proposition must originate with the student. The student is encouraged to choose a topic that he or she finds interesting and that will broaden his or her biochemical background. However, the topic may require techniques that the student is using in the laboratory. If this occurs, the student should be aware that the closer his or her topic and experimental approaches are to those of the student’s actual research, the greater will be the faculty’s expectation of his or her mastery of those techniques and experimental design. A student’s Major Advisor may not participate in the written and oral portions of the General Exam if the Ph.D. Advisory Committee determines that the topic is closely related to the student’s research. In such cases, the student must petition to the Graduate College to temporarily replace his or her Major Professor on the Ph.D. Advisory Committee for the written and oral defense of the proposal.

When choosing a topic, the student is encouraged to seek advice from his/her Major Professor and/or Ph.D. Advisory Committee members concerning suitability of a particular topic or about using a particular technique to examine an issue. However, the research idea(s) must originate with the student.

(b) Topic Submission, Topic Approval
A two-page (maximum) outline of the problem(s), its importance, and the proposed experimental approaches to solve the problem must be submitted to all members of the student’s Ph.D. Advisory Committee during the first week of the semester in which the General Exam is to be taken. If the topic is not satisfactory to the members of the Advisory Committee, the student will be given one opportunity to submit new/revised topic(s).

(c) Written Research Proposal Submission and Approval
A student may consult with faculty and other students concerning any/all aspects of his/her research proposal. However, two items must be emphasized. First, that the proposal is to be one's own ideas and work. The student is responsible for the final product and its defense. Second, while faculty may be consulted for minor guidance/advice, no faculty member is required to consult with the student. Once the proposal topic is approved, the student must prepare and submit copies of the developed proposal in an NSF or NIH format, to each member of the Advisory Committee.

Rough Draft. A rough draft of the complete written proposal must be submitted to the Advisory Committee members approximately mid-way through the semester. This is a valuable opportunity to receive constructive feedback on the draft proposal and make appropriate revisions prior to submitting the final copy.

Final Copy. The final written proposal, which constitutes the written portion of the General Examination, must be submitted to the Advisory Committee at least two weeks in advance of the scheduled oral defense date.

(d) Oral Defense of the Proposal
Following the initial approval of the written proposal by the Advisory Committee, the student must arrange a date, time and place to conduct an oral defense of the proposal such that all members of the Advisory Committee can attend. The student must obtain an Application for General Examination from the Graduate College prior to the oral defense of the Research Proposition. This form must be signed by all members of the Advisory Committee and by the Departmental Graduate Liaison, and then it must be filed in the Graduate College (with a copy filed in the Department Office) at least two weeks before the oral defense is to be held. The Advisory Committee Chair should bring a copy of the Report of General Examination form, obtained from the Graduate College, to the oral defense. The Advisory Committee Chair will return this Report, filled out and signed, to the Graduate Dean within 72 hours following the oral defense with a copy being sent to the Department Office. According to Graduate College regulations, students who fail their initial General Examination may request a second opportunity to fulfill this requirement. Students requesting a second examination must complete that
examination within eight weeks of the academic calendar (twelve summer and two winter break weeks not counting against this deadline).

C. CHEMICAL EDUCATION PROGRAM

The academic program for the degree with a specialization in Chemical Education consists of coursework in chemistry, science education, and history of science. In research, the student would have requirements in both chemistry and chemical education. Thus, the student would become a member of one of the department's divisions in addition to chemical education.

1. Course Requirements

   a. Chemistry: Twenty-one hours of graduate level course work in chemistry. The specific course requirements will be the same as that required for one of the divisions in Chemistry and Biochemistry. There will also be a minimum of nine-hour research requirement in Chemistry.

   b. Science Education, Statistics and History of Science: There will be a twelve-hour requirement in science education (EDSC 5513, 5523, 5543 and 3 hours of science education in research methods; EDSC 5532, 5533, or readings concentrating on research methods and curriculum development techniques used in science education), a six-hour requirement in psychological statistics (EIPT 5023 and 6023, or PSY 5003 and 5013), and a six-hour requirement in the history of science (HSCI 3013 and 3023).

   c. Electives: There will be ten hours of electives in science education, chemistry, education, and/or statistics determined by individual needs and approved by the student's Advisory Committee.

2. Seminar Requirement. The student must meet the seminar requirements of the Disciplinary Program of Study in which s/he has chosen to affiliate.

3. Preliminary Examination. See section VIII.

4. General Examination. During the semester (excluding summer) following successful completion of the Preliminary Exam, the student must submit a written research proposal. If judged acceptable, the student and the committee will set a date for an oral defense of the proposal. If the oral defense is judged acceptable, the student may continue in the Ph.D. program. If judged unacceptable, the student must repeat the oral defense within one month. If the second defense is judged unacceptable, the student will be discontinued from the Ph.D. program. The research proposal may be based on the student's dissertation topic.

5. Dissertation Research. For students who did not write a Masters thesis in Chemistry and Biochemistry, the dissertation requirement is met by one of two options. Option I would consist of a report on chemical research and a dissertation in chemical education. Option II would consist of a report of research in chemical education and a dissertation in chemistry. For those who have written a Masters thesis, which meets the approval of the student's committee, the dissertation would focus on chemical education.
D. INORGANIC PROGRAM

1. Course Requirements. In addition to the general requirements of Section IIIB, two core courses (CHEM 5300 and 5330) and a frontiers course (CHEM 5360) are required for a minimum total of 8 credit hours of CHEM 53Y0 (Y = 0-8) coursework. In addition, at least two breadth courses CHEM 5XY0 (X ≠ 0 or 3 and Y = 0-8) for a minimum total of 4 credit hours are required. A minimum total of 16 credit hours of CHEM 5XY0 (X ≠ 0 and Y = 0-8) are required. Within these parameters, the Advisory Committee for each student will determine the exact distribution of these courses.

2. Seminar Requirement. Enrollment and attendance in CHEM 5391 is mandatory each semester following completion of CHEM 5302. Each student will present at least one 45-minute seminar per year on his/her own research or on a faculty-approved topic.

3. Preliminary Examination. See section VIII.

4. General Examination. See section IX.

E. ORGANIC PROGRAM

1. Course Requirements. In addition to the general requirements of Section IIIB, Students pursuing the Organic Program are expected to take CHEM 5400 “Organic Chemistry I: Mechanisms and Reactivity” for two credit hours in their first semester. They may elect to take any continuation modules of CHEM 5400 in following semesters. The first two credit hour module of CHEM 5400 may be taken without other graduate course prerequisites; the continuation modules may require the prior modules as a prerequisite. The second required course is CHEM 5430 “Organic Chemistry II: Reactions and Synthesis” for a minimum of two credit hours. Students may take additional modules of CHEM 5430 that may emphasize synthetic design or specialized reactions. Students must also take at least four credit hours of organic special topics courses (CHEM 5460 and or CHEM 5470). These credit hours may all be in the same special topic or distributed among multiple courses. The breadth course requirement for the Organic Program must be met by taking courses in two different areas (5XYZ and 5X’YZ where X ≠ X’ ≠ 0 or 4 and Y = 0-7) to total at least four credit hours. The composition of the remaining coursework to a minimum total of 16 credit hours will be determined by the student’s Graduate Advisory Committee. These additional credit hours may be in CHEM 5400, 5430, 5460, 5470 or additional breadth courses. Students entering the program in the fall semester should complete at least two credit hours each of CHEM 5400 and CHEM 5430 within their first year. For students entering the program in the spring semester, these two courses should be taken by the end of the third semester (excluding Summer).

2. Seminar Requirement. Enrollment and attendance in CHEM 5491 is mandatory each semester following completion of CHEM 5400. Each student must give two colloquia. At least one of these should be a critical literature review of a topic of current research activity in organic chemistry. One colloquium may be a progress report on the student’s own dissertation research. Presentation of colloquia should begin the semester after completing the General Exam requirement. Selection of Literature Review Topics: colloquium literature review topics are agreed upon in consultation with the colloquium director (C.D.) and may be in an area of interest or potential interest to the student. The topic should represent a significant area of current research in organic chemistry, should not be directly part of the student’s dissertation research, and should not emphasize a set of topics covered in recent
review articles. Timetable: The following schedule should be followed both for research and literature colloquia:

1. Topic approval by colloquium director (C.D.) at least 5 weeks in advance
2. One page outline to C.D. at least 4 weeks in advance
3. Written draft of abstract & references to C.D. 2 weeks in advance
4. Revised draft to C.D. and organic faculty by Monday preceding colloquium

Detailed guidelines for preparation of written materials and the oral presentation should be obtained from the C.D.

3. Preliminary Examination. See section VIII.

4. General Examination. The semester following completion of the Preliminary exam the student will submit at least three proposal topic mini-abstracts (proposal title, objective, general approach- 2-3 sentences) to each organic faculty member on his/her Advisory Committee. The student will then arrange to discuss the acceptability of the topics at a meeting with the organic faculty on the Advisory Committee that will be held within a week after submission of the written topics. In considering possible proposal topics the following considerations should be kept in mind:

1) The topics should not be closely related to research in his/her research group (e.g. should not have identical objectives, use the same kind of reactions, techniques, or tools);
2) The topics should not be closely related to each other (e.g. two total syntheses of natural products using the same or very similar methodologies or approaches);
3) The topics should be of strong interest to the student;
4) The topics should be original ideas/approaches; and
5) They should address problems of applied and/or fundamental importance. If no topic is acceptable, the student will be given one more opportunity to select a topic(s). A meeting to discuss the additional topic(s) will be arranged by the student, but must be completed within two weeks after the initial research topic meeting. If the second group of topics is not approved, the student will be discontinued from the Organic Ph.D. Program.

Within four weeks following the review of these topics, two of the topics that are deemed suitable by the majority of the faculty should then be outlined in a 1-3 page full abstract to be submitted to each member of the Advisory Committee. The full abstracts should define the objectives more specifically, should properly reference key prior published work, should state the significance/importance of the proposed study, and should briefly outline the plan for solving the problem. The student will then arrange a meeting of his/her Advisory Committee to select the final proposal topic.

Once the proposal topic is chosen, the procedures established in section VIII of the Ph.D. Handbook will be followed.

F. PHYSICAL PROGRAM

1. Course Requirements. In addition to the general requirements of Section IIIB, two core courses (CHEM 5500 and CHEM 5530 for a total of 6 credit hours) and approved special topics courses (CHEM 5510, 5520, 5540, 5550, 5560, or 5570 for a minimum of 4 credit hours) are required for a minimum total of 10 credit hours of CHEM 55Y0 coursework. Two breadth courses CHEM 5XY0 (X ≠ 0 or 5 and Y = 0-8) for a minimum total of 4 credit hours are required. Students entering the program in the fall semester should complete CHEM 5500 in the fall, followed by CHEM 5530 in the spring of the following calendar year. For students entering the program in the spring semester, the two core courses should be completed by the end of the third semester (excluding Summer). A minimum total of 16 credit
hours of CHEM 5XY0 (X ≠ 0 and Y = 0-8) are required. Within these parameters, the Advisory Committee for each student will determine the exact distribution of these courses.

2. Seminar Requirement. Graduate students in the Physical Chemistry Division are required to sign up for and participate in the divisional seminar, CHEM 6621, in every Spring and Fall semester. Each student will present at least one 30-minute seminar per year on his/her own research or on a topic approved by the faculty instructor of CHEM 6621. Students are advised to have the topic approved at least two weeks before the presentation.

3. Preliminary Examination. See section VIII.

4. General Examination. The general examination will consist of a formal research proposal, presented for approval by members of the Advisory Committee. This general examination should be conducted no later than the end of the fourth regular (Fall or Spring) semester from the time a student entered the graduate program. After completion of the Preliminary Examination requirement, a student must distribute separate brief summaries of one, two, or three topics for a research proposal to all members of the Advisory Committee. The student will be expected to meet individually with each of these faculty to obtain approval of a topic. If unanimous approval cannot be obtained within two weeks following distribution of the research proposal topic summaries, the student will have four additional weeks to attempt to obtain approval for a topic from a second list prepared by the student. If no agreement on a topic can be reached by consideration of either list of topics submitted by the student, a meeting of the Advisory Committee will be held within one additional week to attempt to reach agreement on a suitable research proposal topic. Within one week following this meeting, the student must have received approval of a topic, or he/she will be discontinued from the Ph.D. program in physical chemistry.

Within one month following approval of the proposal topic, the student must submit copies of a typewritten research proposal on the topic to all members of the Advisory Committee. An oral presentation of the proposal must be scheduled within two weeks after the proposal is given to the faculty. Unless exceptions are approved by the Advisory Committee, all members of the Advisory Committee must be present at the oral defense of the proposal. The proposal defense will consist of a 40-45 minute oral presentation of the research proposal, followed by questioning by members of the Advisory Committee. The faculty must judge the student's performance as satisfactory or unsatisfactory. If the performance is judged to be unsatisfactory, the committee may, dependent on the performance of the student, request abeyance from the Graduate Dean. If abeyance is approved, the student will be asked to prepare additional material in writing and/or orally, with a deadline no later than one month following the date of the original oral defense. By the date of this deadline, faculty must decide whether the original presentation and written material, augmented by any additional material that may be presented, satisfactorily meet the division's General Examination requirements. A final report of unsatisfactory performance will result in discontinuance from the Ph.D. program in physical chemistry.

G. STRUCTURAL BIOLOGY PROGRAM

1. Course Requirements. In addition to the general requirements of Section IIIB, CHEM 5210 for 2 credit hours, four core courses (CHEM 5730, 5740, 5750, and 5780 for a minimum of 7 credit hours), approved special topics courses (CHEM 5XY0, X ≠ 0 and Y = 6-7 for a minimum of 3 credit hours), and courses to satisfy the breadth requirement (CHEM 5XY0, X ≠ 0 or 7 and Y = 0-7 for a minimum of 4 credit hours). A minimum total of 16 credit hours of CHEM 5XY0 (X ≠ 0 and Y = 0-8) are required. Within these parameters, the Advisory Committee for each student will determine the exact distribution
of these courses.

2. Seminar Requirement. Continuous enrollment and satisfactory participation in CHEM 5X91 (X = 2 or 7) during every regular semester following the first semester.

3. Preliminary Examination. See section VIII.

4. General Examination. See section IX.

H. INTER- AND/OR MULTIDISCIPLINARY PROGRAM*

1. Course Requirements. In addition to the general requirements of Section IIIB (which includes at least 4 credit hours of Introductory courses CHEM 5XY0 with at least two different X = 1-9 and Y = 0-2), at least two core courses (CHEM 5XY0, X ≠ 0 and Y = 3-5, for a minimum of 4 credit hours), and approved special topics courses (CHEM 5XY0, X ≠ 0 and Y = 6-7 for a minimum of 4 credit hours). A minimum total of 16 credit hours of CHEM 5XY0 (X ≠ 0 and Y = 0-8) are required. Within these parameters, the Advisory Committee for each student will determine the exact distribution of these courses. Disciplinary Programs of Study and changes to Disciplinary Programs of Study for students in the Multidisciplinary Program must be approved by the Graduate Committee in consultation with the Curriculum Committee.

2. Seminar Requirement. Continuous enrollment and satisfactory participation in one or more seminars (CHEM 5X91) is required during every regular semester following the first semester.

3. Preliminary Examination. See section VIII.

4. General Examination. See section IX.

*Note: Inter- and Multidisciplinary Programs of Study will not be offered in the 2015/2016 Academic Year.

XIII. COURSE DESCRIPTIONS

A. DEPARTMENTAL COURSES (50YZ)

Note: 5960, 5970, 5980, 5990, and 6980 are Graduate College-reserved course numbers. 5960 (Directed Readings), which may be use for students enrolled in UG remedial courses, and 5990 (Independent Studies) do not count toward the program16 credit hours but does count towards the 90 total hours.

CHEM G5001 CHEMICAL EDUCATION. 1 hour. Prerequisite: enrollment as graduate student in the Department of Chemistry and Biochemistry, or permission. Designed to provide all students entering the graduate program instructional skills required to be an effective teaching assistant. Letter graded. (F)

CHEM G5011 Fundamentals I. 1 hour. Prerequisite: enrollment as graduate student in the Department of Chemistry and Biochemistry, or permission. Designed to provide all students entering the graduate
program with the skills required to succeed in the Ph.D. program. S/U graded. (F)

CHEM G5021 Fundamentals II. 1 hour. Prerequisite: enrollment as graduate student in the Department of Chemistry and Biochemistry, or permission. Designed to provide all first-year graduate students with the skills required to succeed in the Ph.D. program. Letter graded. (Sp)

CHEM G5080 Laboratory Rotations. 1-2 hours (1 hour per rotation). Prerequisite: enrollment as graduate student in the Department of Chemistry and Biochemistry. Seven-week rotations per credit hour in research laboratories, normally during the first semester of graduate school. Letter graded. (F, Sp)

CHEM G5090 Departmental Colloquium. No credit. Prerequisite: enrollment as graduate student in the Department of Chemistry and Biochemistry, or permission of instructor. Enrollment is expected during each semester of graduate study. Oral presentations on recent developments in chemistry and biochemistry by invited speakers, faculty, advanced graduate students, and postdoctoral fellows. (F, Sp)

CHEM G5960 Directed Readings. 1-2 hours. Prerequisite: permission of instructor. May be repeated with change of content; maximum of 6 credit hours. Selected from topics of current interest in any area of chemistry and biochemistry. S/U graded. (F, Sp, Su)

CHEM G5980 Research for Masters Thesis. Variable enrollment, 2-9 hours; maximum number of credit hours applicable toward the degree is 6 credit hours. S/U graded. (F, Sp, Su)

CHEM G5990 Independent Studies. 1-3 hours. May be repeated with change of subject matter; maximum number of credit hours is 9 credit hours. Faculty members in the student’s field of interest supervise research and/or library studies that close gaps in student’s training or builds on this training in specialized areas. S/U graded. (F, Sp, Su)

CHEM G6980 Research for Doctoral Dissertation. 2-16 hours. (F, Sp, Su)

B. ANALYTICAL COURSES (51YZ)

CHEM G5100 Instrumental Methods of Analysis. 1-3 hours. Prerequisite: Graduate standing in the Department of Chemistry and Biochemistry or permission of instructor. May be repeated with change in subject matter for a maximum of 4 hours. Core course for the Analytical Program. Topics will provide an overview of various instrumental methods employed for qualitative and quantitative chemical analysis. Letter graded. (F, Sp)

CHEM G5110 Spectroscopic Chemical Analysis. 1-3 hours. Prerequisite: Graduate standing in the Department of Chemistry and Biochemistry or permission of instructor. May be repeated with change in subject matter for a maximum of 4 hours. Core course for the Analytical Program. Theory and operation of instruments employed for optical spectroscopy. Letter graded. (F, Sp)

CHEM G5120 Separation Methods. 1-3 hours. Prerequisite: Graduate standing in the Department of Chemistry and Biochemistry or permission of instructor. May be repeated with change in subject matter for a maximum of 4 hours. Core course for the Analytical Program. Basic principles underlying methods employed for chemical separations with emphasis on chromatographic methods. Letter graded.
CHEM G5160 Special Topics in Analytical Chemistry: Instrumentation.  1-3 hours. Prerequisite: CHEM 5100 or permission from instructor. May be repeated with change in subject matter for a maximum of 12 hours. Selected topics will focus on instrumentation and applications of selected chemical analysis techniques. Letter graded. (Irreg)

CHEM G5170 Special Topics in Analytical Chemistry: Methodology.  1-3 hours. Prerequisite: CHEM 5100 or permission from instructor. May be repeated with change in subject matter for a maximum of 12 hours. Selected topics will focus on details of specific methodologies employed for chemical analysis. Letter graded. (Irreg).

CHEM G5180 Practicum in Analytical Chemistry.  1-2 hours. Prerequisite: CHEM 5100 or permission of instructor. May be repeated with change of subject matter for a maximum of credit 4 hours. Study and training in practical methods relevant to analytical chemistry. Letter graded. (F, Sp)

CHEM G5191 Seminar in Analytical Chemistry.  1 hour. Prerequisite: Graduate standing in the Department of Chemistry and Biochemistry or permission of instructor. May be repeated for a maximum of 12 hours. Oral presentations and discussions of topics relevant to the current state-of-the-art in analytical chemistry research. S/U graded. (F, Sp).

C. BIOCHEMISTRY COURSES (52YZ)

CHEM G5200 Principles Of Biochemistry.  1 – 3 hours. Prerequisite: Graduate standing in the Department of Chemistry and Biochemistry or permission of instructor. May be repeated with change in subject matter for a maximum of 4 hours. Core course for graduate Biochemistry Program. Fundamental principles of biomolecules, protein structure and function, enzymology, carbohydrate and lipid metabolism, nucleic acid and protein metabolism, membranes and signal transduction, expression and transmission of genetic information, and the interdependence of biochemical pathways. Letter graded. (Fa, Sp)

CHEM G5210 Molecular Biology.  1 – 3 hours. Prerequisite: Graduate standing in the Department of Chemistry and Biochemistry or permission of instructor. May be repeated with change in subject matter for a maximum of 4 hours. Core course for graduate Biochemistry Program. Characteristics and biological functions of nucleic acids and proteins in living cells with emphasis on nucleic acid replication, transcription, translation and regulation; also emphasis on the molecular aspects of genetic engineering/recombinant DNA technology. Letter graded. (Fa, Sp)

CHEM G5240 Biochemical and Biophysical Methods.  1 – 3 hours. Prerequisite: CHEM 5200 or permission of instructor. May be repeated with change in subject matter for a maximum of 4 hours. Core course for graduate Biochemistry Program. Basic principles and practical applications of the analytical and preparative techniques used in current biochemical and biophysical research. Letter graded. (Fa, Sp)
CHEM G5260 Special Topics in Biochemistry I. 1 – 3 hours. Prerequisite: CHEM 5240 or permission of instructor. May be repeated with change of subject matter for a maximum of 12 credit hours. Selected contemporary topics that investigate the frontiers of knowledge in biochemistry. Letter graded. (Irreg.)

CHEM G5270 Special Topics in Biochemistry II. 1 – 3 hours. Prerequisite: CHEM 5240 or permission of instructor. May be repeated with change of subject matter; maximum 12 credit hours. Selected contemporary topics that focus on applications of biochemical knowledge. Letter graded. (Irreg.)

CHEM G5280 Practicum in Biochemistry. 1-2 hours. Prerequisite: CHEM 5240 or permission of instructor. May be repeated with change of subject matter for a maximum credit 4 hours. Study and training in practical methods relevant to biochemistry. Letter graded. (F, Sp)

CHEM G5291 Seminar in Biochemistry. 1 hour (S/U). Prerequisite: Graduate standing in the Department of Chemistry and Biochemistry or permission of instructor. May be repeated for a maximum of 12 credit hours. Research seminar in which graduate students and invited speakers present and discuss current advances in biochemical research. S/U graded. (Fa, Sp)

D. INORGANIC COURSES (53YZ)

CHEM G5300 Intermediate Inorganic Chemistry. 1-3 hours. Prerequisite: Graduate standing in the Department of Chemistry and Biochemistry or permission of instructor. May be repeated with change in subject matter for a maximum of 4 hours. Fundamental concepts and an introduction to modern inorganic chemistry. Topics may include: atomic structure and relation to properties of the elements, bonding theory, coordination and bioinorganic compounds, organometallic compounds and catalysis, symmetry and applications to spectroscopy, magnetic materials. Letter graded. (Fa, Sp)

CHEM G5330 Advanced Inorganic Chemistry. 1-3 hours. Prerequisite: G5300 or permission of instructor. May be repeated with change in subject matter for a maximum of 12 hours. For students majoring in inorganic chemistry. Selected topics for this course may include: physical and experimental methods in inorganic chemistry, modern spectroscopic methods in inorganic chemistry, bioinorganic and organometallic reactions, advanced kinetics and inorganic reaction mechanisms, catalysis, and advanced experimental design for mechanistic evaluation. Letter graded. (Fa, Sp)

CHEM G5360 Frontiers in Inorganic Chemistry. 1-3 hours. Prerequisite: G5300 or permission of instructor. May be repeated with change in subject matter for a maximum of 12 hours. Selected topics concerning the theory, synthesis, reactivity and applications of inorganic and coordination compounds. Topics may include: computational chemistry, electrochemistry, metals in biology and medicine, industrial and biological main group chemistry, environmental chemistry, applications of inorganic compounds in alternative energy (nuclear cycle, hydrogen cycle, photovoltaics), and inorganic materials science (metal-organic frameworks, metallopolymers, inorganic polymers). Letter graded. (F, Sp)

CHEM G5380 Practicum in Inorganic Chemistry. 1-2 hours. Prerequisite: CHEM 5300 or
permission of instructor. May be repeated with change in subject matter for a maximum of 4 hours. Study and training in practical methods relevant to inorganic chemistry. Letter graded. (F, Sp)

**CHEM G5391 Seminar in Inorganic Chemistry.** 1 hour. Prerequisite: CHEM 5300 or permission of instructor. May be repeated for a maximum of 12 hours. Graduate student research seminar and related activities, with a selection of topics related to research preparation and research outcomes. S/U graded. (F, Sp)

**E. ORGANIC COURSES (54YZ)**

**CHEM G5400 Organic Chemistry I: Mechanisms and Reactivity.** 1-3 hours. Prerequisite: Graduate standing in the Department of Chemistry and Biochemistry or permission of instructor. May be repeated with change in subject matter for a maximum of 4 hours. Core course for graduate Program of Study in Organic Chemistry. Introduction to the study of organic reaction mechanisms and reactivity. Letter graded. (F, Sp)

**CHEM G5430 Organic Chemistry II: Reactions and Synthesis.** 1-3 hours. Prerequisite: CHEM 5400 or permission of instructor. May be repeated with change in subject matter for a maximum of 4 hours. Core course for graduate Program of Study in Organic Chemistry. Detailed treatment of reactions used in organic synthesis and the design of synthetic strategy. Letter graded. (F, Sp)

**CHEM G5450 Structural Characterization of Organic Compounds.** 1-3 hours. Prerequisite: CHEM 5400 or permission of instructor. May be repeated with change in subject matter for a maximum of 4 hours. Application of current methods to problems of structure determination in organic chemistry. Letter graded. (F, Sp)

**CHEM G5460 Special Topics in Chemical Reactivity and Physical Organic Chemistry.** 1-3 hours. Prerequisite: CHEM 5400 or permission of instructor. May be repeated with change in subject matter for a maximum of 12 hours. Selected topics in the study and application of specialized chemical reaction methods. Topics may include: theoretical or computational aspects of organic chemistry; advanced study of reaction mechanisms; study and application of novel chemical methods such as photochemical methods, organometallic chemistry, chemical catalysis, reagent design and application. Letter graded. (Irreg.)

**CHEM G5470 Special Topics in Bioorganic and Specialized Organic Compounds.** 1-3 hours. Prerequisite: CHEM 5400 or permission of instructor. May be repeated with change in subject matter for a maximum of 12 hours. Selected topics in the study and preparation of specialized classes of organic compounds including biologically related aspects of organic chemistry. Topics may include: specialized synthesis and design strategies; medicinal chemistry; study and application of biosynthetic methods; advanced synthetic design for targeted organic compounds; study of specialized classes of compounds including natural products, medicinal compounds, bioactive compounds, polymers, functional materials and devices. Letter graded. (Irreg.)
CHEM G5480 Practicum in Organic Chemistry. 1-2 hours. Prerequisite: CHEM 5400 or permission of instructor. May be repeated with change in subject matter for a maximum of 4 hours. Study and training in practical methods relevant to organic chemistry. Topics may include: use of modern instrumental methods for organic structural determination; acquisition and interpretation of spectral data for structural determination; optimization of measurement techniques; specialized preparative laboratory methods; specialized methods for separation and analysis of organic compounds. Letter graded. (F, Sp)

CHEM G5491 Seminar in Organic Chemistry. 1 hour. Prerequisite: CHEM 5400 or permission of instructor. May be repeated for a maximum of 12 hours. Research and literature seminar for presenting and discussing a selection of topics from current literature or research. S/U graded. (F, Sp)

F. PHYSICAL CHEMISTRY COURSES (55YZ)

CHEM G5500 Topics in Quantum Chemistry. 1-3 hours. Prerequisite: Graduate standing in the Department of Chemistry and Biochemistry or permission of instructor. May be repeated with change in subject matter for a maximum of 6 hours. Review of classical mechanics; introduction to wave mechanics and applications to atoms and molecules. This is a core course for graduate majors. Letter graded. (F,Sp)

CHEM G5510 Topics in Molecular Symmetry. 1-3 hours. Prerequisite: Graduate standing in the Department of Chemistry and Biochemistry or permission of instructor. May be repeated with change in subject matter for a maximum of 6 hours. Development of the concept of symmetry elements will be followed by the development of point group theory and applications to molecular systems. Letter graded. (F,Sp)

CHEM G5520 Topics in Physical Chemistry Kinetics. 1-3 hours. Graduate standing in the Department of Chemistry and Biochemistry or permission of instructor. May be repeated with change in subject matter for a maximum of 6 hours. Empirical treatment of reaction rate data, collision and transition state theories of homogeneous and heterogeneous reactions, mechanisms of chemical reactions. Letter graded. (F,Sp)

CHEM G5530 Topics in Statistical Thermodynamics. 1-3 hours. Prerequisite: CHEM 5500 or concurrent enrollment, or permission of instructor. May be repeated with change in subject matter for a maximum of 6 hours. Chemical thermodynamics, statistical thermodynamics, chemical kinetics, applications of quantum chemistry, structure of matter. This is a core course for graduate majors. Letter graded. (F,Sp)

CHEM G5550 Colloid and Surface Science. 1-3 hours. Prerequisite: CHEM 5500 or CHEM 5520 or permission of instructor. May be repeated with change in subject matter for a maximum of 4 hours. Capillarity, surface thermodynamics, adsorption from vapor and liquid phases, contact angles, micelle formation, solubilization, emulsions and foams. Applications to be discussed include detergency, enhanced oil recovery and adsorption for pollution control. Letter graded.
CHEM G5560 Topics in Nanotechnology and Bionanotechnology. 1-3 hours. Prerequisite: CHEM 5500 or CHEM 5520 or permission of instructor. May be repeated with change in subject matter for a maximum of 4 hours. Design and synthesis of nanomaterials. Characterization of nanomaterials using physical and chemical methods. Properties of nanomaterials. Imaging nanomaterials at atomic, molecular and nano scales. New devices designed and fabricated using nanomaterials. Application of nanomaterials to life sciences. Exploitation of biochemistry and biology in developing areas of nanotechnology. Letter graded. (F,Sp)

CHEM G5570 Selected Topics in Physical Chemistry. 1-3 hours. Prerequisite: CHEM 5500 or CHEM 5520 or permission of instructor. May be repeated with change in subject matter for a maximum of 12 hours. Studies in special areas of physical chemistry not covered in the regular course curriculum. Letter graded. (F,Sp)

CHEM G5580 Practicum in Physical Chemistry. 1-2 hours. Prerequisite: CHEM 5500 or CHEM 5520 or permission of instructor. May be repeated with change in subject matter for a maximum of 4 hours. Study and training in practical methods relevant to physical chemistry. Letter graded. (F, Sp)

CHEM G5591 Seminar in Physical Chemistry. 1 hour. Prerequisite: CHEM 5500 or CHEM 5520 or permission of instructor. May be repeated for a maximum of 12 hours. Participation is required of all graduate students majoring in physical chemistry. Research seminar, with a selection of topics from current or projected research at the University of Oklahoma. Discussion of contemporary topics in physical chemistry and related disciplines. S/U graded. (F, Sp)

G. STRUCTURAL BIOLOGY COURSES (57YZ)

CHEM G5730 Macromolecular Crystallography. 1-3 hours. Prerequisite: CHEM G5210 or permission of instructor. May be repeated with change in subject matter for a maximum of 4 hours. Principles of diffraction, symmetry, reciprocal space, data collection, data reduction and absorption corrections, methods for structure solution and refinement, and interpretation of data and limitations thereof. Letter graded. (Fa,Sp)

CHEM G5740 Biological NMR spectroscopy. 1-3 hours. Prerequisite: CHEM G5210 or permission of instructor. May be repeated with change in subject matter for a maximum of 4 hours. Nuclear magnetic resonance (NMR) spectroscopy as a tool to address biological questions regarding macromolecular (REASON: separates this course from organic NMR) structure and dynamics in solution and/or in the solid state. Theory of NMR, chemical shifts and coupling, one-dimensional and multidimensional NMR methods, ligand-binding effects on NMR spectra. Letter graded. (Fa,Sp)

CHEM G5750 Macromolecular Structure and Function. 1-3 hours. Prerequisite: CHEM G5200 or permission of instructor. May be repeated with change in subject matter for a maximum of 4 hours. Principles of protein architecture and levels of organization, nucleic acid structure,
functional roles of intermolecular interactions, structure-function in protein and nucleic acid complexes. Letter graded. (Fa,Sp)

CHEM G5760 Special Topics in Structural Biology. 1-3 hours. Prerequisite: CHEM G5200 or permission of instructor. May be repeated with change in subject matter for a maximum of 12 hours. The content for these courses may include the structural basis of signal transduction, structural dynamics, computational methods for biological macromolecules, microscopy, structural basis for gene regulation, and structure-guided drug discovery and design. Special topics courses from other Disciplinary Programs of Study (e.g., biological mass spectrometry, enzyme kinetics, bioinformatics, metals in biology) may substitute for CHEM G5760 with approval of the student's Advisory Committee. Letter graded. (Irreg.)

CHEM G5780 Practicum in Structural Biology. 1-2 hours. Prerequisite: CHEM G5730 or G5740 or permission of instructor. May be repeated with change in subject matter for a maximum of 4 hours. The X-ray practicum (with CHEM G5730 as prerequisite) will include hands-on crystallization, advanced checkout and operation of X-ray diffractometers, data collection using research samples, structure solution and refinement, and evaluation of crystal structure quality. The NMR practicum (with CHEM G5740 as prerequisite) will include hands-on sample preparation of a biological macromolecule on a research sample, advanced checkout and operation of NMR spectrometers, structure determination and dynamics, and evaluation of structure quality. Letter graded. (Fa,Sp)

CHEM G5791 Seminar in Structural Biology. 1 hour. Prerequisite: CHEM 5200 or permission of instructor. May be repeated for a maximum of 12 hours. Research seminar in which graduate students and invited speakers present and discuss current advances in structural biology research. S/U graded. (Fa, Sp)

XIV. OVERSIGHT OF DISCIPLINARY PROGRAMS AND CURRICULUM

The Curriculum Committee will comprise of the three faculty members. The Chair of the Curriculum Committee will also serve as a member (but not the Chair) of the Graduate Committee. The Curriculum Committee is charged with:

1) Determining whether proposed changes to existing Disciplinary Program of Study follow the Ph.D. Program Handbook as most recently approved by the Regents.
2) Assessing the impact of proposed changes to exiting Disciplinary Program of Study on existing Disciplinary Program of Study.
3) Gathering information for the approval of new courses.
4) Coordinating the scheduling of graduate courses that are offered.

Changes to Existing Disciplinary Program of Study: Changes to existing Disciplinary Program of Study that are determined by the Curriculum Committee to be minor (within the parameters of the Ph.D. Program Handbook and having minor adverse impact on the existing Disciplinary Program of Study) may be approved by the Curriculum Committee. Following assessment by the Curriculum Committee, major changes to existing Disciplinary Program of Study must be approved by the entire faculty.
New Programs: The Curriculum Committee should facilitate gathering information for a proposed new Disciplinary Program of Study and for assessing the impact on existing Disciplinary Programs of Study. After consideration and approval by the faculty, new Disciplinary Programs of Study will require University and Regents’ approval.

New Courses: In the initial implementation of the modular course curriculum, the faculty will have approved the topics and general content for all listed courses. As new courses are proposed within the current course structure, the proposed course content shall be submitted to the Curriculum Committee for its recommendation. A major aspect to be considered in this recommendation is how the new course content relates to other courses and existing Disciplinary Programs of Study.

XV. COURSE SCHEDULING

Courses will be offered on an on-demand basis. The 2015/2016 AY will be unusual in that the new curriculum will be introduced and there will be second-year graduate students who started their studies under the old curriculum. Accordingly, the priorities for scheduling classes during the Fall 2015 semester will be (in order of decreasing priority): 1) undergraduate courses, 2) graduate courses that second-year graduate students need to complete their degrees under the old curriculum, 3) departmental requirements for first-year graduate students, 4) one Introductory (5XYZ, Y = 0-2) courses from each of the five core subdisciplines of chemistry and biochemistry, and 5) all other courses. The priorities for scheduling classes during the Spring 2016 semester will be (in order of decreasing priority): 1) undergraduate courses, 2) graduate courses that second-year graduate students need to complete their degrees under the old curriculum, 3) core requirements for Disciplinary Programs of Study for which there are graduate students enrolled, and 4) all other courses. The priorities for scheduling classes during the Fall 2016 semester will be (in order of decreasing priority): 1) undergraduate courses, 2) departmental requirements for first-year graduate students, 3) one Introductory (5XYZ, Y = 0-2) courses from each of the five core subdisciplines of chemistry and biochemistry, and 4) advanced courses, electives, and special topics that second-year Department of Chemistry and Biochemistry graduate students require to complete their coursework, and 5) all other courses.

Graduate courses in the Fall will comprise Introductory courses from the core disciplines (analytical, biochemistry, inorganic, organic, and physical), Advanced Courses for second-year students, and Electives/Special Topics. In general, there will be one Introductory course offered by the core disciplines each Fall semester. The Advanced courses will be offered as required for the second-year students who are in each Disciplinary Program of Study. Electives/Special Topics may be offered if there is sufficient demand. It will be the responsibility of the faculty member(s) who intends to teach the course to evidence sufficient interest when submitting their request the Curriculum Committee.

Graduate courses in the Spring 2016 term will comprise the core coursework for each Disciplinary Program of Study for which there are graduate students enrolled. In recognition of the challenges that the Department faces in introducing the new curriculum while meeting the needs of the existing second-year students, a set curriculum for majors in each Disciplinary Program of Study will be proposed for the Spring 2016 term. Electives and Special Topics will not be a priority during the Spring 2016 term. Accordingly, all of the students who select a give Disciplinary Program of Study in December 2015 will be enrolled in the same coursework. The topic of offering elective courses in the spring term will be revisited after the 2015/2016 AY.

By March 15, 2015, the faculty for each Disciplinary Program of Study should provide the Curriculum Committee with a prioritized list of courses that they intend to teach during the 2015/2016
AY with an explanation of how the proposed coursework will meet the needs of the existing graduate students and the new graduate students we expect to enroll in Fall 2015. In proposing the curriculum for each Disciplinary Program of Study, a 4/6/6 sequence (two 2-unit Introductory courses in Fa15, 6 units of disciplinary training in Sp16, and one 2-unit Introductory breadth course and 4 units of advanced/elective coursework in Fa16) should be used. After gathering the necessary information and correlating the impact of the requests from all of the Disciplinary Program of Study, the Curriculum Committee will make a recommendation to the Chair of the Department, who will make the teaching assignments.

The following general guidance will be employed when scheduling classes:

1) In the Fall semester, first-year courses should be in the morning and second-year courses should be in the afternoon.
2) In the Spring semester, courses for programs should be taught in their assigned blocks.
3) Blocks of time are allocated for program-specific instruction (in both the Fall and Spring terms). The faculty who are responsible for the program may schedule all of their program-specific courses as they wish to within those blocks of time.

Graduate coursework will be scheduled Monday-Thursday. Blocks of time for each discipline will be offered twice a week (MW or TR). There will be no overlap between any of the courses offered, which will accommodate students who are taking coursework from more than one Disciplinary Program of Study (or courses that are slash-listed).

<table>
<thead>
<tr>
<th>Fall</th>
<th>MW</th>
<th>TR</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:00-9:15</td>
<td>5102*</td>
<td>5402*</td>
</tr>
<tr>
<td>9:30-10:45</td>
<td>5202*</td>
<td>5502</td>
</tr>
<tr>
<td>11:00-12:15</td>
<td>5302 (alt)*</td>
<td>5302 (alt)*</td>
</tr>
<tr>
<td>12:30-3:30</td>
<td>2nd Y Block</td>
<td></td>
</tr>
<tr>
<td>3:45-5:00</td>
<td>59YZ-type</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Spring</th>
<th>MW</th>
<th>TR</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:00-10:30</td>
<td>Disp 1</td>
<td>Disp 4</td>
</tr>
<tr>
<td>10:30-1:00</td>
<td>Disp 2</td>
<td>Disp 5</td>
</tr>
<tr>
<td>1:00-3:30</td>
<td>Disp 3 (alt)</td>
<td>Disp 3 (alt)</td>
</tr>
<tr>
<td>3:30-6:00</td>
<td>59YZ-type**</td>
<td></td>
</tr>
</tbody>
</table>

*Second two-thirds of the semester.
**Only necessary if the 59YZ-type course will not fit in a disciplinary programming slot. TR not scheduled because of faculty meetings and seminars.