Regulations for Graduate Degrees in Chemistry

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CONTENTS

I. Common Regulations 3

A. Entrance Requirements 3
B. Transfer of Credits 3
C. Placement Examinations 4
D. Registration 4
E. The Research Advisor 4

II. The Master of Science Degree 7

A. Course Requirements 7
B. The Advisory Committee (Thesis Committee) 7
C. Thesis 8
D. Final Oral Examination 8
E. Continuation in the Program: Good Standing 8

III. The Doctor of Philosophy Degree 9

A. Course Requirements 9
B. Residence Requirements 10
C. The Advisory Committee (Dissertation Committee) 10
D. Admission to Candidacy 11
  1. The Written Candidacy Examination 12
  2. The Oral Candidacy Examination 13
E. The Dissertation Prospectus 15
F. The Dissertation 15
G. The Final Dissertation Defense 16
H. Continuation in the Program: Good Standing 17
I. Reappointment and Vacation Policy 20

IV. Master of Arts Degree 21

V. Combined Bachelor of Science and Master of Science Degrees 21

VI. Appendices

A. Graduate courses that cannot be used to fulfill degree requirements 22
B. Divisional Lecture-Course Requirements 2010 22
C. Administration of Seminar courses 25
Regulations for the Doctor of Philosophy
and Master of Science Degrees

I. Common Regulations

A. Entrance Requirements

1. A bachelor’s degree is required. Admission of a student to the doctoral program normally requires at least a 3.0 undergraduate grade point average and a 3.25 grade point average in any prior graduate coursework (if applicable). In addition, a minimum quantitative Graduate Record Examination (GRE) score of 600 is expected. Although the subject GRE is not required, candidates are encouraged to provide a subject GRE score to strengthen their application.

Applicants with a grade point average less than 3.0 may be considered for conditional admission if strong letters of recommendation and high GRE scores justify that admission.

The student should have one year's credit each in analytical chemistry or biochemistry, organic chemistry, and physical chemistry, calculus, and physics. A student not having all of the above undergraduate courses may be accepted for graduate study if ability is shown in other courses. Deficiencies can be made up during the first year of graduate study but no graduate credit will be earned from these courses.

2. The student must be accepted both by the Department and by the Graduate School.

B. Transfer of Credits

Transfer of credit for graduate courses completed at another university may be made subject to the following conditions:

1. Only courses in which the student received a grade of B or better may be evaluated for transfer of credit.

2. A transfer course may be substituted for a graduate course if, in the opinion of the Division concerned, the course is of comparable content.

3. A student may also obtain transfer of credit by passing an examination covering the content of the course or courses in question.

4. The maximum number of credits that could be transferred is as stipulated in the Graduate School's Catalog.
5. Whenever the student’s grade point average is calculated in establishing their status in the program, its computation shall be based only on the record earned at Kent State University.

C. Placement Examinations

1. Examinations at the B.S. level in analytical, inorganic, organic, and physical chemistry are given to all graduate students entering in the Fall and Spring semesters. Students majoring in biochemistry will take a biochemistry exam in place of analytical chemistry. The examination dates are communicated to the entering students prior to their arrival.

2. If deficiencies are found in any of the examination areas, the student may be advised to take suitable courses. For full-time graduate students with assistantships, all such courses must be completed during the first year in the program. No credit will be given toward the graduate degree for these courses.

3. Following the placement examinations, the Coordinator of Graduate Studies will communicate the results of the exams to the students individually and make recommendations for any remedial work if warranted.

D. Registration

1. Beginning or transfer students confer with the Coordinator of Graduate Studies concerning registration and selection of courses. Advanced students will meet with their Research Advisors for approval of their course selections.

2. The normal course load for a student devoting full time to graduate study is considered to be 12-15 hours per semester. A student on a full-time teaching assistantship must take no less than 8 hours and should take no more than 12 hours per semester.

3. Students are only allowed to withdraw from classes with permission from the Graduate Coordinator.

E. The Research Advisor

1. Any student working toward a graduate degree is expected to make an early choice of a Major Area (Division) and a Research Advisor which must be accomplished by the end of the first semester in the program.

2. Before the Research Advisor is chosen, and in order to make an informed decision, the student will interview at least half of the Department’s Graduate Faculty during the first six weeks of the first semester. If the selected faculty member agrees to accept the student in the research group and the Chair agrees then the choice is conditional during the first semester and becomes permanent at the beginning of
the student’s second semester. Both student and advisor may decide not to continue their advisor/student relationship beyond the first semester. In that case, the student shall select the permanent research advisor within six weeks of the following semester.

If a student, upon admission, accepted a Research Assistantship position from a faculty mentor, this advisor choice is permanent and the student does not need to interview other faculty members (see section I.E.6 and I.E.7 for rules governing switching of and dismissal from research groups).

3. A student may choose to have two Research Advisors with permission of the faculty involved and approval by the Chair. In this case both Research Advisors must be expert in the area of the student’s research and will direct a major portion of the project.

4. The Research Advisor will approve the Major Area chosen by the student which is customarily in analytical chemistry, biochemistry, inorganic chemistry, organic chemistry or physical chemistry. The Major Area need not be the same as that of the Research Advisor, but the student must fulfill all the requirements of the chosen Major Area.

5. Other duties of the Research Advisor are to:

   a. Counsel and oversee the student in all academic matters.
   b. Plan course work with the student that is appropriate to his/her research area.
   c. Provide reading lists and laboratory exercises that might be necessary to prepare the student for thesis or dissertation research projects.
   d. Assist the student in selecting a thesis/dissertation research project.
   e. Direct the student in accomplishing this project.
   f. Report on the student’s research progress twice a year (near the middle of the Fall and the Spring semesters) to the Coordinator of Graduate Studies.

6. Switching of research groups

Under unusual circumstances, and as judged by the Chair in consultation with the Graduate Coordinator, a student may request a research group change even after completion of the first semester in the program. In such a case, it is mandatory to adhere to the following procedure if the student wishes to switch research groups:

   i. The student shall consult with the Chemistry Graduate Coordinator if the student wishes to switch the research advisor. The Graduate Coordinator will initiate a meeting between the student and the advisor, with the
Graduate Coordinator present as a mediator. The student may also request the student ombudsperson to be present at this and other meetings.

ii. If the differences between the student and the research advisor cannot be reconciled, the Graduate Coordinator makes a recommendation to the Chair of the Department of Chemistry and Biochemistry.

iii. The Chair of the Department of Chemistry and Biochemistry will decide whether or not the student will be allowed to switch research groups. The Chair may seek further input by talking to the student and research advisor.

iv. Without prior authorization by the Chair of the Department of Chemistry and Biochemistry, neither student nor faculty member may discuss transfer of research group.

v. If the Chair of the Department of Chemistry and Biochemistry is the advisor of the student, the student’s first contact in this process will be the Graduate Coordinator, and the Assistant Chair will assume the responsibilities of the Chair in the remainder of the process. If the Graduate Coordinator is the advisor of the student, the Chair of the Department will be the student’s first contact for the process outlined in I.E.6.i. and I.E.6.ii.

7. Dismissal from research group

Under unusual circumstances, a faculty member may inform the Chair and Graduate Coordinator of intention to dismiss a student from a research group. In most cases poor student research performance is likely to be the reason why the faculty member wishes to dismiss a student. However, other reasons for this action may be acceptable as judged by the Chair. It is mandatory to adhere to the following procedure should a faculty member wish to dismiss a student from the research group:

i. If the advisor is dissatisfied with the research performance of the advisee, the advisor must provide the student with sufficient feedback so that the student is given an opportunity to rectify the situation. At a minimum, poor research performance of the student must be documented in at least two recent research performance evaluations before the faculty advisor may seek dismissal of the student from the research group. The student should be given sufficient time to remedy the situation (typically at least 6-8 weeks) before the advisor writes the second evaluation. During this time the advisor should actively engage with the student to assist in improving the research performance. After receiving the first unfavorable evaluation of the student’s research performance, the Graduate Coordinator shall initiate a meeting with the student and the advisor to discuss the situation. The advisor may write student research performance evaluations at any point in time and no less than once a semester (Spring, Summer, Fall).

ii. If the situation between advisor and student cannot be reconciled, the advisor may request dismissal of the student from the research group and the Graduate Coordinator will make a recommendation to the Chair of the Department of Chemistry and Biochemistry.
iii. The Chair of the Department of Chemistry and Biochemistry will decide whether or not the faculty member will be allowed to dismiss the student. The Chair may seek further input by talking to the student and research advisor.

iv. As long as the student is in good standing (see sections II.E. and III.H.), and if no other reasons exist that necessitate dismissal of the student from the graduate program (e.g., scientific misconduct), the student will be permitted to join another research group.

v. If the Chair of the Department of Chemistry and Biochemistry is the advisor of the student, the advisor’s first contact in this process will be the Graduate Coordinator, and the Assistant Chair will assume the responsibilities of the Chair in the remainder of the process. If the Graduate Coordinator is the advisor of the student, the Chair of the Department will be the advisor’s first contact for the process outlined in section I.E.7.i. and I.E.7.ii.

8. The student is allowed to join a research group outside of the chemistry department only when a chemistry faculty member with F3 or F4 status serves as a co-advisor. In this case, the main advisor from outside the department should provide full financial support to the student beginning the following semester, unless special permission is granted from the Graduate Coordinator or Chair.

II. The Master of Science Degree

A. Course Requirements

1. A total of 32 semester hours of credits including research and thesis are required for the MS degree. Of these, at least 18 semester hours must be of graduate academic credit other than research and thesis as indicated below.

2. Students must pass 1 semester hour of “College Teaching of Chemistry.” Two semester hours of “Seminar” and two semester hours of “Problem Solving” or “Recent Developments” courses in the Major Area are also required. (Total of 5 semester hours.)

3. Students must complete additional classroom courses amounting to at least 13 semester hours as prescribed by their Research Advisor. These courses will mainly be in the Major Area but one course has to be outside this area.

B. The Advisory Committee (Thesis Committee)

1. Shortly after the student has formulated a thesis research project, the Research Advisor, in consultation with the student, recommends members of the Advisory Committee to the Chair. The appointment of the committee is made by the Chair in consultation with the Graduate Committee.
2. This committee will consist, at a minimum, of:
   a. The Research Advisor, who will serve as Chair.
   b. One faculty member of the Department of Chemistry and Biochemistry in the Major Area of the student’s research.
   c. One faculty member of the Department of Chemistry and Biochemistry not in the Major Area of the student’s research.
   d. All of the above members should be regular members of the graduate faculty. When appropriate, a temporary member of the graduate faculty may serve in place of one of the above members.

3. Additional members who meet the criteria of item (2,d) may be added as desired.

4. The duties of the Advisory Committee are to:
   a. Meet with the student and approve the Thesis Topic.
   b. Administer the final defense of the Thesis.

C. Thesis

1. A thesis presenting and interpreting the results of original research is required. The Department considers research to be a fundamental part of the Master of Science program. Areas in which research may be carried out are usually in analytical chemistry, biochemistry, inorganic chemistry, organic chemistry, or physical chemistry.

2. The form in which the thesis is presented is the same as that for the doctoral dissertation.

D. Final Oral Examination

1. The candidate must successfully defend this thesis and demonstrate their general knowledge of related chemistry before the Advisory Committee and interested members of the university community.

E. Continuation in the Program: Good Standing

To continue in the program and to receive continued financial support, the student must maintain "good standing." To be in good standing, an MS student must:

1. General:
a. Maintain a GPA of 3.0 in graduate chemistry courses.
b. Maintain a GPA of 3.0 in all courses attempted at KSU.
c. Perform satisfactorily in all graduate teaching assignments as judged by supervising faculty members.
d. Attend Departmental Colloquium and present two divisional seminars.
e. Be progressing satisfactorily in research as judged by his/her Research Advisor.

2. During the first year:
   a. Take the placement examinations.
   b. Make up any deficiencies indicated if deemed appropriate.
   c. Register for credit in two or three classroom chemistry graduate courses per semester.
   d. Select a Major Area (division) and choose a Research Advisor, by the end of the first semester.

3. By the end of the first year:
   a. Have completed at least four classroom chemistry courses.
   b. Have an Advisory Committee.

4. By the end of the second calendar year:
   a. Have completed all required coursework.

5. Master’s degree students will normally complete work within six calendar years after the student’s first graduate registration at Kent State University. Any credit being transferred for meeting degree requirements should also have been earned within the six-year period.

As required by the Graduate Student’s Role and Status document, students not in good standing at the end of the Fall semester will receive a written notice that their graduate appointment will not be renewed for the following year. A student who regains good standing by the end of the Spring semester will be considered for reappointment, if funds are available. Students who are not in good standing at the end of two consecutive semesters will not receive reappointment for the summer and the following year, and may not be allowed to continue in the program. However, such students can apply for retention in the program. These applications should document the special considerations applying to the case, should be supported in writing by their Research
Advisor, with all documentation submitted to the Graduate Committee no later than May 20. Students in good standing whose support has expired after the normal two and one-half year period may likewise request additional appointments, semester by semester. Again, the application should document the special considerations applying to the case, and must be supported by a separate letter from the Research Advisor.

There is no formal student vacation policy but any planned absence for more than two consecutive weeks during the year in which the student has teaching and/or research duties, must be approved by the Graduate Committee.

III. The Doctor of Philosophy Degree

A. Course Requirements

1. A total of 90 semester hours of credit beyond the bachelors degree or 60 hours of credit beyond the masters degree, including research and dissertation, are required for the PhD degree. Of these, at least 27 semester hours must be of graduate academic credit other than research and dissertation as indicated below.

2. Students must pass 1 semester hour of “College Teaching of Chemistry.” In the Major Area, four semester hours of “Seminar” and four semester hours of “Problem Solving” or “Recent Developments” courses are required. (Total of 9 semester hours)

3. Students must complete additional graduate classroom courses amounting to at least 18 semester hours as prescribed by their Research Advisor. These courses will be mainly in the Major Area but one course (which may be CHEM 70050, Chemistry Research Proposal) must be outside this area. A list of required courses in each of the Major Areas is provided in Appendix A.

B. Residence Requirements

The residence requirement normally is satisfied by enrollment for full-time work in two successive semesters, full-time being defined as nine to twelve hours of courses. However, students employed full-time in the chemical or related industry may petition the Graduate Committee for partial or full waiver of this requirement.

Research for the doctorate normally must be done in residence. Students employed full-time in the chemical or related industry may petition the Graduate Committee for permission to conduct their research at their place of employment, subject to the following conditions:

a. The petition must provide the name and professional credentials of the PhD chemist who is to supervise the student’s work at their place of employment. The professional credentials of the supervising chemist must qualify him/her for
temporary appointment to the Graduate Faculty of the Department.

b. The research project will be determined jointly by the supervisor in (a) and the Research Advisor which then will be approved by the Advisory Committee.

c. There will be no constraints on the publication of results from the dissertation research project and the employing company will have no proprietary rights for this work. Patentable compounds, processes, and devices arising from dissertation research are subject to the patent policy of Kent State University.

d. An appropriate official of the employing company shall agree in writing to conditions IV,B,a through IV,B,c above.

C. The Advisory Committee (Dissertation Committee)

1. Shortly after the student has formulated a dissertation research project, the Research Advisor, in consultation with the student, recommends members of the Advisory Committee to the Chair. The actual appointment of the committee is made by the Chair in consultation with Graduate Committee.

2. This committee will consist, at a minimum, of:
   a. The Research Advisor, who will serve as chair.
   b. One faculty member of the Department of Chemistry and Biochemistry in the Major Area of the student’s research.
   c. One faculty member of the Department of Chemistry and Biochemistry not in the Major Area of the student’s research.
   d. One faculty member in a related discipline from outside the Department.

   All of the above should be regular members of the Graduate Faculty. When appropriate, a temporary member of the Graduate Faculty, with the permission of the Chair of the Department of Chemistry and Biochemistry, may serve in place of one of the members under b and c above.

3. If it is desired to have a person on the committee who does not meet the qualifications under item 2 above, special permission must be obtained from the Graduate Dean.

4. Additional members who meet the criteria of item 2 above may be added as desired.

5. Once the Advisory Committee has been appointed by the Chair, its composition may only be changed with the permission of the Chair.

6. The duties of the Advisory Committee are:
a. Meet with the student as needed at the request of the student and/or the Research Advisor.

b. Administer the Oral Candidacy Examination.

g. Meet with the student and approve the Dissertation Prospectus.

d. Administer the final defense of the Dissertation.

D. Admission to Candidacy

A student becomes a candidate for the Doctor of Philosophy degree only after passing a Written Candidacy Examination administered by the graduate faculty in the student's Major Area, and an Oral Candidacy Examination administered by the Advisory Committee based on the dissertation research.

1. The Written Candidacy Examination

The purpose of the written candidacy examination is to test the student’s broad knowledge in their Major Area which is usually that of the Division in which they are affiliated. The form and content of the written candidacy examination is determined by the graduate faculty of the student's Major Area. Preparation usually requires completion of all courses in the Major Area, but completion of courses is not a pre-requisite for taking this examination. Dates for candidacy examinations will be scheduled on a regular basis by the faculty of the respective division. The Written Candidacy Examination should be taken before the beginning of the third academic year. A student who fails an examination will be allowed a second attempt to pass; however, the student has three months maximum (from the date of notification of failure) to attempt the exam a second time. Subsequent failure of this examination will result in dismissal from the doctoral program.

a. Analytical Chemistry

To establish Ph.D. candidacy in the Analytical Chemistry division, each student has to pass a comprehensive written exam. The student will take the comprehensive exam in a period of 6 to 8 hours for two consecutive days. Students will be tested on modern analytical chemistry theory and techniques based on course work, current scientific literature, and fundamental knowledge necessary for the profession. Questions are usually submitted by all of the student’s instructors in analytical courses and seminars. The general subject areas to be covered in the examination will be announced beforehand. The passing grade is 60% of the total points.

b. Biochemistry
Two examinations, each 6 to 8 hours, given on two days within a week, are intended to provide general coverage of the broad discipline of biochemistry. Questions are usually submitted by all of the student’s instructors in classroom and seminar courses. The general areas to be covered in each examination will be announced beforehand. A grade of 70% on each examination is required for a pass.

c. Inorganic Chemistry

The examination is administered in two parts: a proficiency exam and a literature exam. The proficiency exam has three parts that can be taken every other day over the course of a week, and material is based on 75% coursework and 25% fundamental information. The literature exam has two parts that can be taken within a week of one another; 60% of the material on the literature exam comes from the research advisor, and the remaining 40% is written by another member within the division. A score of 70% or higher on each part of every exam is required for a pass.

d. Organic Chemistry

The examination occupies 6 to 8 hours on two days within a week, and is intended to provide general coverage of the discipline of organic chemistry. Topics of particular examinations are not announced, but copies of previous examinations are made available to students. Examinations will be offered at a maximum of two times per year, and an overall score of 55% or higher is required for a pass.

e. Physical Chemistry

The written examination is broken down into 4 tests, each counting for 25% of the overall score. Each exam is 3 to 4 hours in duration and is offered in the areas of 1) Foundations of Physical Chemistry which covers fundamental knowledge in the discipline, 2) Advanced Physical Chemistry Principles within and related to the proposed area of research, and 3,4) Advanced Topics in Physical Chemistry related to coursework offered by the division (but not to overlap with the research area). A grade of 50% on each examination, with an overall score of 70% or higher, is required for a pass.

2. The Oral Candidacy Examination

a. Before taking the oral portion of the candidacy examination, the student must have passed the Written Candidacy Examination. The Oral Candidacy Examination should be taken no later than three months after notification of passing the Written Candidacy Examination.

b. The student will write a dissertation proposal that describes his/her planned
dissertation research according to the following format:

i. **Cover Page** - The full title of the proposed dissertation research, the student’s name and the Advisor's name.

ii. **Project Summary** - A clear statement of the problem to be addressed (hypotheses to be tested) and the student's proposed research (no more than one page).

iii. **Project Description** - No more than 15 pages (single spaced), not including references and appendices, as follows:

   - **Introduction** - An outline of the proposed work, as well as its goals/objectives and impact on the field of study (one page maximum).
   
   - **Background and Significance** - An introduction to the problem with a brief review of the relevant literature. This section should justify the need for the study and describe previous work by others in the field (four pages maximum).
   
   - **Research Plan** - The research plan and experimental design, including detailed methods and procedures. A discussion of the potential difficulties and alternate approaches. Preliminary data should be included in this section if available.

iv. **References** - Citation of the literature, in ACS approved format, is required.

v. **Appendices** - May include figures, synthetic schemes, tables, etc. outside of the page limit above but not more than 10 pages.

c. The student may use grant proposals and other information from the Research Advisor but the dissertation research proposal must: 1) be written independently and in the student’s own words without any assistance, and, 2) contain substantive, original research ideas not provided by others. Also, detailed guidance from the Research Advisor for the oral defense is not permitted.

d. The Research Advisor will read the dissertation research proposal prior to its distribution to the Advisory Committee and may provide comments on issues of style, grammar, spelling, etc.; however, no comments regarding the specific scientific content of the proposal will be given to the student prior to the oral defense.

e. A copy of the dissertation proposal will be provided to each member of the student’s Advisory Committee who will then meet within two weeks to judge whether it is defensible. If the proposal is judged to be inadequate, the student will be given one opportunity to submit a revised proposal based on general guidelines given by the Advisory Committee. The student fails the
Oral Candidacy examination if the second submission is not deemed to be defensible by more than one member of the Advisory Committee. The oral examination of the student will be scheduled upon approval by the Advisory Committee, but not earlier than one week after such approval.

f. One copy of the dissertation proposal should be deposited in the main office of the Department of Chemistry and Biochemistry for perusal by other members of the faculty and graduate students. An announcement will be distributed to all faculty and graduate students after the date for the oral defense has been set.

g. The oral defense will begin with a 20-30 minute presentation of the proposed research. Questioning will then be conducted by the Advisory Committee. The proposed research will be the major focus for inquiry but questions will also involve other areas related to the proposed research. **A successful defense will demonstrate to the Advisory Committee that the student has an independent mastery over the dissertation project and cognate areas.** The student passes the oral examination if there is no more than one negative vote by the Advisory Committee.

h. If the oral portion of the examination is not passed, a second (final) opportunity will be granted. This should take place within three months after notification of failure.

i. Passage of the oral defense will admit the student to Candidacy, whereas, failure will result in dismissal from the doctoral program.

H. The Dissertation Prospectus

The student is required to submit an abbreviated Dissertation Prospectus to each member of their Advisory Committee after the oral candidacy examination but not less than one year before the final defense of the dissertation.

The Dissertation Prospectus should briefly describe a **final** version of the proposed dissertation research according to the following format:

At least two, but no more than three single-spaced pages of text are required.

i. **Title Page** - Include the full title of the proposed dissertation research, the student’s name and the Advisor's name.

ii. **Problem Statement** - A clear statement of the problem to be addressed by the proposed research. (1-2 paragraphs)

iii. **Introduction and Background Information** - Provide an introduction to the problem to be undertaken and include a brief review of the relevant literature. This
section should clearly substantiate the need for the study, describe previous work by others in the field and include a description of the work already accomplished by the student.

iv. **Objectives and Methodology** - List and explain the objectives and experimental procedures of the proposed research. (Appendices may be used for graphs, reaction schemes, etc. if necessary)

v. **References** - Citation of the literature, in ACS approved format, is required. (Not included in the 3 page limitation)

Each member of the student's Advisory Committee is required to approve the dissertation prospectus and indicate such approval on the Dissertation Topic Approval Form. This will be accomplished after the committee meets with the student.

**F. The Dissertation**

A dissertation based on original research is required. At least the final year of doctoral work will be devoted to an intensive research effort. The dissertation must show that the student has acquired the ability to conduct research in a discriminating and original manner. The quality of the dissertation must be such that one or more scholarly articles, acceptable for publication, may be expected to be derived from it. The form of the dissertation must satisfy both the Department of Chemistry requirements (available in the departmental office) and the Graduate School requirements (available in the Graduate College of Arts and Sciences office).

When the Research Advisor believes the dissertation is ready for distribution to the Advisory Committee, he/she will request that the Graduate Dean appoint a Graduate Faculty Representative to serve on the Examining Committee.

**G. The Final Dissertation Defense**

1. The Examining Committee:

   The Examining Committee will consist of the Advisory Committee (at least four persons, as defined above), a Moderator and a Graduate Faculty Representative.

   a. The Moderator:

      The Moderator will be selected by the Advisory Committee from the full members of the Graduate Faculty. This individual may not be a faculty member of the Department of Chemistry and Biochemistry. The principal duties of the moderator are to preside and to moderate. He/She should be familiar with the procedures of the oral defense and
see to it that all participants maintain a proper decorum. The Moderator has the authority to suspend the defense should a situation arise that would not be conducive to a fair examination.

b. The Graduate Faculty Representative:

The representative of the Graduate Faculty will be appointed by the Graduate Dean or his/her designate. To qualify as Graduate Faculty Representative, the individual must have directed a dissertation to completion. The Representative **may** be a member of the Department of Chemistry and Biochemistry and is expected to be at least broadly familiar with the area of the dissertation. He/she represents the Graduate Faculty and monitors whether the questioning and responses meet appropriate scholarly standards. If he/she has some reservations in regard to this, they will be communicated immediately to the Graduate Dean or his/her designate. The Graduate Faculty Representative is expected to question the student and to vote on the passing of the examination.

2. The Final Oral Examination:

a. Copies of the dissertation will be distributed to the Examining Committee (excluding the Moderator) at least ten days prior to meeting to consider whether it is in a defendable form. When this group has met and has agreed to proceed to the final examination, the Research Advisor will designate the time and place of the final oral defense and notify the Moderator. The defense should be scheduled to allow a minimum of ten days after the dissertation has been voted to be acceptable by the Advisory Committee which will provide a reasonable period of time for the candidate to make changes in the dissertation if needed.

b. The dissertation must be in the final form (not merely a late draft) prior to the final oral defense. If, in the opinion of more than one member of the Examining Committee (not including the Moderator), the dissertation is not in acceptable final form, the oral examination will not be scheduled. If a negative decision is made, the student may be asked to provide clarification. “Acceptable form” refers to the substance and usefulness of the dissertation as well as the quality of the writing. The dissertation must be deemed acceptable, with no more than one dissenting vote, before the final oral defense can take place.

c. The final oral examination will be open to the university community. A copy of the abstract of the dissertation will be sent to the Graduate School and the complete dissertation will be available in the Department office for perusal by the Chemistry Faculty prior to the oral defense.

d. The candidate will open the defense with a brief presentation of his/her
results, after which the members of the Examining Committee will question the candidate in an order, and with a time limit, pre-determined by the Moderator. When, in the opinion of the Moderator, all members of the Examining Committee have had sufficient time to question the candidate, he/she may permit others present to ask appropriate questions.

e. After completion of the oral examination, the Moderator will excuse those in the room except the members of the Examining Committee. The Moderator will chair the deliberations of the Examining Committee but will have no vote. Evaluation of the candidate will be based on the quality of the dissertation as well as its oral defense.

f. A candidate passes the final oral examination if there is no more than one dissenting vote among members of the Examining Committee.

g. All members of the Examining Committee (except the Moderator) will sign and record their votes on the Report of Final Examination form. Committee members may vote "Yes" or "No," but they cannot abstain.

h. The Moderator and Department Chairman must then sign this report and send it to the Graduate Dean.

H. Continuation in the Program: Good Standing

To continue in the Doctor of Philosophy program and to receive continued financial support, the student must maintain "good standing." To be in good standing, a PhD student must:

1. General:
   a. Maintain a GPA of 3.0 in graduate Chemistry courses.
   b. Maintain an aggregate GPA of 3.0 in all graduate coursework attempted at KSU.
   c. Perform satisfactorily in all graduate teaching assignments as judged by supervising faculty members.
   d. Attend Departmental Colloquium and present divisional seminars until a minimum of three literature seminars and one research seminar have been given.
   e. Be progressing satisfactorily in research as judged by the student’s Research Advisor.

2. During the Fall and Spring semesters of the first academic year (see item 8 below):
a. Take the placement examinations.

b. Make up any deficiencies if deemed appropriate.

c. Register for two or three chemistry classroom graduate courses per semester.

d. Interview with the faculty and choose a Research Advisor and Major Area (Division) before the end of the Fall semester.

3. By the end of the first Spring semester:
   a. Have completed at least four classroom graduate chemistry courses.
   b. Have an Advisory Committee.

4. By the end of the second Spring semester:
   a. Have completed all required courses.

5. By the end of the second Summer semester:
   a. Have taken the Written Candidacy Examination.

6. By the end of the third Fall semester:
   a. Have taken the Oral Candidacy Examination.

7. By the end of the third Spring semester:
   a. Have entered Candidacy.
   b. Have a clear idea of what is required to complete the dissertation research.

8. Abbreviated time table for students entering the program at the beginning of the Spring semester:
   a. Have completed all required courses by the end of the second Fall semester.
   b. Have taken the Written Candidacy Examination by the end of the third Spring semester.
   c. Have taken the Oral Candidacy Examination by the end of the third Summer semester.

9. Performance deadlines and good standing for part-time students are:
a. Courses must be completed within three and one-half years of enrollment.

b. The Written Candidacy examination must be passed within four and one-half years of enrollment.

c. The Oral Candidacy examination must be passed within five years of enrollment.

d. The Dissertation must be defended within seven and one-half years of enrollment.

10. When an extension of any of these time limits seems to be necessary and proper, the student and advisor will petition the Department for an extension. The extension may be denied, in which case the student will be dismissed, or it may be granted with qualification. The student, advisor and college dean must be informed of the decision in writing. If the extension exceeds one year, the approval of the college dean is required. Requests for time extensions exceeding one year must be submitted to the college dean with evidence that the degree candidate is current in his/her field of study.

I. Reappointment and Vacation Policy

1. Reappointment: As required by the University’s Policy on the Role and Status of Graduate Students Appointees, students not in good standing at the end of the Fall semester will receive a written notice by April 1 that their graduate appointment will not be renewed. However, students who regain good standing by the end of Spring semester, will be considered for reappointment if funds are available. Students who are not in good standing at the end of two consecutive semesters will not receive reappointment and may not be allowed to continue in the program. A student cannot be reappointed if he/she has exceeded 173 graduate semester hours at Kent State University. Students who are terminated in the doctoral program can apply for admission into the MS or the MA programs. Such applications should be supported in writing by the Research Advisor and submitted to the Graduate Committee no later than May 20.

Students in good standing, whose departmental support has expired after the normal four and one-half year period, may request additional appointments, semester by semester. The application should document the special considerations applying to the case, and must be supported by a separate letter from their Research Advisor.

2. Vacation Policy: A total of ten days vacation (two calendar weeks) per year, not including official university holidays, is allowed for full time students. Vacations are not permitted during time periods in which the student has teaching duties. Vacation plans shall be discussed with the Research Advisor at least two weeks prior to the planned leave. Any deviations from these rules must be approved by the Graduate Committee.
IV. Master of Arts Degree

A total of 32 semester hours of graduate credit is required including at least 21 hours of classroom courses. The distribution of these hours will be planned by the student and a faculty advisor. There is no research requirement. This program is only available with permission.

V. Combined Bachelor of Science and Master of Science degree

Persons with outstanding undergraduate records may be eligible for this combined degree program.

A. Requirements:

1. GPA (overall and in chemistry): 3.50 after 60 semester hours; 3.40 after 75 semester hours; 3.30 after 90 semester hours; 3.20 after 105 semester hours

2. Completing the Combined Baccalaureate and Master’s Program form which includes:
   a. Listing undergraduate courses to be taken for completion of the baccalaureate degree.
   b. The beginning date for graduate enrollment.
   c. Listing of graduate courses to satisfy the undergraduate degree requirements. (Up to 12 graduate hours may be used). The selection of courses to be applied toward the undergraduate degree requires the approval of the Coordinator of Graduate Studies and an appropriate undergraduate dean in the College of Arts and Sciences.

3. Provide at least three letters of recommendation from Instructors who are familiar with the student’s achievements in chemistry courses.

4. Graduate Courses in Chemistry that could satisfy requirements for the Bachelor of Science degree will usually have the form 4/5XXX or 4/5/7XXX but other courses may be deemed as appropriate substitutions by the Coordinator of Graduate Studies.

5. Financial support for graduate study (if available) will only commence
after satisfactory completion of all required courses for the Bachelor of Science degree other than those taken for combined graduate credit.

VI. Appendices

A. Graduate courses that cannot be used to fulfill degree requirements:

- 5/70000 Chemical Information
- 50795 Chemical Education
- 5/70362 Intermediate Inorg. Chemistry II
- 5/70555 Elementary Physical Chemistry I
- 5/70557 Physical Chemistry Laboratory I
- 5/70570 Intermediate Physical Chemistry
- 5/70093 Workshop in Chemistry
- 5/70361 Intermediate Inorganic Chemistry I
- 5/70481 Intermediate Organic Chemistry
- 5/70556 Elementary Physical Chemistry II
- 5/70558 Physical Chemistry Laboratory II

B. Divisional Lecture-Course Requirements:

Analytical Chemistry:

**MS** Choose three courses from:

<table>
<thead>
<tr>
<th>Course</th>
<th>Code</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mass Spectrometry</td>
<td>70195</td>
<td>3 hrs</td>
</tr>
<tr>
<td>Bioanalytical Chemistry</td>
<td>70109</td>
<td>3 hrs</td>
</tr>
<tr>
<td>Adv. Analytical Chemistry</td>
<td>70112</td>
<td>3 hrs</td>
</tr>
<tr>
<td>Chemical Separations</td>
<td>70113</td>
<td>3 hrs</td>
</tr>
<tr>
<td>Sub Total</td>
<td></td>
<td>9 hrs</td>
</tr>
</tbody>
</table>

| Elective*                           |         | 4 hrs |

| Total                               |         | 13 hrs |

**PhD** Choose three courses from:

<table>
<thead>
<tr>
<th>Course</th>
<th>Code</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mass Spectrometry</td>
<td>70195</td>
<td>3 hrs</td>
</tr>
<tr>
<td>Bioanalytical Chemistry</td>
<td>70109</td>
<td>3 hrs</td>
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<tr>
<td>Adv. Analytical Chemistry</td>
<td>70112</td>
<td>3 hrs</td>
</tr>
<tr>
<td>Chemical Separations</td>
<td>70113</td>
<td>3 hrs</td>
</tr>
<tr>
<td>Sub Total</td>
<td></td>
<td>9 hrs</td>
</tr>
</tbody>
</table>

| Elective**                          |         | 9 hrs |

| Total                               |         | 18 hrs |

Biochemistry:
<table>
<thead>
<tr>
<th>Program</th>
<th>Course</th>
<th>Code</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MS</td>
<td>Princ. Biochem I</td>
<td>(50261)</td>
<td>3 hrs</td>
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<tr>
<td></td>
<td>Princ. Biochem II</td>
<td>(50262)</td>
<td>3 hrs</td>
</tr>
<tr>
<td></td>
<td>Phys. Biochem</td>
<td>(50263)</td>
<td>3 hrs</td>
</tr>
<tr>
<td></td>
<td>Sub Total</td>
<td></td>
<td>9 hrs</td>
</tr>
<tr>
<td></td>
<td>Elective*</td>
<td></td>
<td>4 hrs</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td></td>
<td>13 hrs</td>
</tr>
<tr>
<td>PhD</td>
<td>Princ. Biochem I</td>
<td>(70261)</td>
<td>3 hrs</td>
</tr>
<tr>
<td></td>
<td>Princ. Biochem II</td>
<td>(70262)</td>
<td>3 hrs</td>
</tr>
<tr>
<td></td>
<td>Phys. Biochem</td>
<td>(70263)</td>
<td>3 hrs</td>
</tr>
<tr>
<td></td>
<td>Advanced Biological Chemistry</td>
<td>(70248)</td>
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<td></td>
<td>Sub Total</td>
<td></td>
<td>12 hrs</td>
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<tr>
<td></td>
<td>Elective**</td>
<td></td>
<td>6 hrs</td>
</tr>
<tr>
<td></td>
<td>[can include 70253 – Biomacromolecular Structures (1hr) and/or 70254 – Biomembranes (2 hrs)]</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td></td>
<td>18 hrs</td>
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</tbody>
</table>

**Inorganic Chemistry:**

<table>
<thead>
<tr>
<th>Program</th>
<th>Course</th>
<th>Code</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MS</td>
<td>Mod. Inorg. Chem</td>
<td>(60327)</td>
<td>3 hrs</td>
</tr>
<tr>
<td></td>
<td>Choose one course from:</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Bio-Inorg. Chem</td>
<td>(60364)</td>
<td>3 hrs</td>
</tr>
<tr>
<td></td>
<td>Chem. Crystal</td>
<td>(60347)</td>
<td>3 hrs</td>
</tr>
<tr>
<td></td>
<td>Inorg. Mater Chem</td>
<td>(50352)</td>
<td>3 hrs</td>
</tr>
<tr>
<td></td>
<td>Sub Total</td>
<td></td>
<td>6 hrs</td>
</tr>
<tr>
<td></td>
<td>Elective**</td>
<td></td>
<td>7 hrs</td>
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<tr>
<td></td>
<td>Total</td>
<td></td>
<td>13 hrs</td>
</tr>
<tr>
<td>PhD</td>
<td>Mod. Inorg. Chem</td>
<td>(70327)</td>
<td>3 hrs</td>
</tr>
<tr>
<td></td>
<td>Choose two courses from:</td>
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<tr>
<td></td>
<td>Chem. Crystal</td>
<td>(70347)</td>
<td>3 hrs</td>
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<tr>
<td></td>
<td>Bio-Inorg. Chem</td>
<td>(70364)</td>
<td>3 hrs</td>
</tr>
<tr>
<td></td>
<td>Inorg. Mater Chem</td>
<td>(70352)</td>
<td>3 hrs</td>
</tr>
<tr>
<td></td>
<td>Sub Total</td>
<td></td>
<td>9 hrs</td>
</tr>
<tr>
<td></td>
<td>Elective**</td>
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<td>9 hrs</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td></td>
<td>18 hrs</td>
</tr>
</tbody>
</table>

**Organic Chemistry:**
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Name</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>60471</td>
<td>Adv Org Chem – Mech Aspects</td>
<td>3 hrs</td>
</tr>
<tr>
<td>60472</td>
<td>Adv Org Chem – Synth Aspects</td>
<td>3 hrs</td>
</tr>
<tr>
<td>50476</td>
<td>Spect Ident Org Cpds</td>
<td>2 hrs</td>
</tr>
</tbody>
</table>

-*Choose one from the following:*

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Name</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>50478</td>
<td>Synth Org Liq Cryst</td>
<td>3 hrs</td>
</tr>
<tr>
<td>50451</td>
<td>Org Mater Chem</td>
<td>3 hrs</td>
</tr>
<tr>
<td>60473</td>
<td>Stereo Org Synth</td>
<td>3 hrs</td>
</tr>
</tbody>
</table>

**Sub Total** 11 hrs

**Elective** 2 hrs

**Total** 13 hrs

### PhD

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Name</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>70472</td>
<td>Adv Org Chem – Synth Aspects</td>
<td>3 hrs</td>
</tr>
<tr>
<td>70473</td>
<td>Stereo Org Synth</td>
<td>3 hrs</td>
</tr>
<tr>
<td>70476</td>
<td>Spect Ident Org Cpds</td>
<td>2 hrs</td>
</tr>
</tbody>
</table>

-*Choose one from the following:*

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Name</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>70471</td>
<td>Adv Org Chem – Mech Aspects</td>
<td>3 hrs</td>
</tr>
<tr>
<td>70495</td>
<td>Adv Top Org Chem: Org Reactions</td>
<td>3 hrs</td>
</tr>
</tbody>
</table>

-*Choose one from the following:*

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Name</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>70478</td>
<td>Synth Org Liq Cryst</td>
<td>3 hrs</td>
</tr>
<tr>
<td>70451</td>
<td>Synth Org Mater</td>
<td>3 hrs</td>
</tr>
</tbody>
</table>

**Sub Total** 14 hrs

**Elective** 4 hrs

**Total** 18 hrs

### Physical Chemistry:

#### MS

Choose at least 6 hrs from the following:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Name</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>60541</td>
<td>Adv Phys Chem</td>
<td>3 hrs</td>
</tr>
<tr>
<td>60542</td>
<td>Adv Phys Chem II</td>
<td>3 hrs</td>
</tr>
<tr>
<td>70595</td>
<td>Spectroscopy</td>
<td>2 hrs</td>
</tr>
<tr>
<td>50571</td>
<td>Surface Chem I</td>
<td>2 hrs</td>
</tr>
<tr>
<td>70595</td>
<td>Surf Chem II</td>
<td>1 hrs</td>
</tr>
</tbody>
</table>

**Sub Total** 6 hrs

**Elective** 7 hrs

**Total** 13 hrs

#### PhD

Choose at least 9 hrs from the following:
Adv Phys Chem (70541) 3 hrs
Adv Phys Chem II (70542) 3 hrs
Spectroscopy (70595) 2 hrs
Surface Chem I (70571) 2 hrs
Surf Chem II (70595) 1 hrs
Sub Total 9 hrs

Elective** 9 hrs
Total 18 hrs

* Must include at least one extradivisional course.
** Must include at least one extradivisional course; Chem Res Prop (CHEM 70050; 3 hrs) counts as an extradivisional course.

C. Administration of seminar courses:

Each Division administers a practical seminar course which is either Seminar: Recent Developments in ... (CHEM 6/70X91) or Seminar: Problem Solving in ... (CHEM 6/71X91) and a formal seminar course ... (CHEM 6/72X91) for X = 1(Anal), 2(Bio), 3(Inorg), 4(Org) or 5(Phys).

The following policies are for doctoral students. The same rules apply for masters students except that they enroll for two (instead of four) times for each divisional seminar.

1. All seminar courses require student participation for one year (e.g., consecutive Fall and Spring semesters) before a letter grade is determined.

2. Incoming graduate students enroll in each of the first four semesters for both divisional seminars (i.e., a total of four times for each course).

3. A formal seminar will usually not be given by students in the first semester but attendance and participation in both seminars is mandatory throughout the academic year.

4. Letter grades for both seminars are determined by the divisional faculty and reported by the Instructor in charge. These grades are mainly based on individual performance(s). Evaluation of the formal seminar will be completed within a week after presentation.

5. The following grading procedures are for both seminars (Instructors in charge for a particular courses/semesters are responsible for submitting grades and grade changes):

Grade for the first semester enrolled: An IP (In Progress) grade is reported by the instructor in charge who will submit a change in grade form in the future;
i.e., to change this IP to the letter grade awarded for performance in the fifth and sixth semesters (or for the third and fourth semesters for MS students*).

**Grade for the second semester enrolled:** A letter grade will be entered by the instructor in charge for performance in the first and second semesters.

**Grade for the third semester enrolled:** An IP (In Progress) grade is reported by the instructor in charge who will submit a change in grade form in the future; *i.e.*, to change this IP to the letter grade awarded for performance in the seventh and eighth semesters.*

**Grade for the fourth semester enrolled:** A letter grade will be entered by the instructor in charge for performance in the third and fourth semesters.

* The last formal seminar is based on the student’s research and may be given at a later time just prior to the dissertation/thesis defense.

All submitted grades are to be reported to the graduate secretary for record keeping.