REQUIREMENTS AND REGULATIONS
FOR
ADVANCED DEGREES

in the

Department of Chemistry
Kansas State University

2007-2008

This summary constitutes
the complete set of Departmental
regulations, and supersedes
all earlier regulations.
(Revised by the Graduate Program Committee
and approved by the Faculty - May 2004

Code of Honor

"Truth, honor, and integrity are the absolute requirements of scientific investigators and serve as essential guidelines for our everyday lives. Without these human elements, our endeavors in chemical research are compromised, and are of negative value to science and society. The community of chemists expects and requires the highest ethical behavior of you."

Safety

Safety has the highest priority in any experimental science. Graduate students who study in the Department are admitted with qualifications that expect a full training in the major safety skills required in a chemical laboratory.

All graduate students working in laboratories are expected to show their safety skills by:

- *(i) keeping the laboratory in a tidy and clean state,*
- *(ii by storing dangerous chemicals in appropriate locations,*
- *(iii) by wearing safety glasses in all situations where such a practice is expected,*
- *(iv) by disposing of dangerous chemicals in the appropriate manner,*
- *(v) and by reporting to their research advisor any potential hazards in the laboratory.*
- *(vi) and by reporting to the instructor-in-charge any potential hazards in the teaching laboratory.*

***Any graduate students who have questions about safety, or feel that they need further training in safety to comply with these regulations should contact their advisor**. Questions about current Department Safety regulations should be directed to the Chairperson of the Departmental Safety Committee.*

Table of Contents

Introduction 1
- Layout of this Document 1

Admission 2
- Correspondence and Transcripts 2
- Admission to Advanced Degrees 2
- Medical Examinations 2
- A Summary of Entrance Requirements 2
- Admission Categories 3

Graduate Assistants and Research Assistants 3
- Fee Reduction 3
- Proficiency in Spoken English 4

Registration and Enrollment 5
- Who should enroll 5
- Time and Place of Registration 5
- Number and type of Credit Hours to be Enrolled for 5
- Dropping Courses after Registration 6
- Regaining of Candidacy after Program Interruption 7

The Program of Study 7

Course-work 8
- Forms of Course-work 8
- The Levels of Course-work 8

Program of Study and Group Structure 9

Ph.D. degree 9
- Overview and Common Requirements 9
- Group Programs 10
  - Departmental Requirements 10
  - Credit Seminar Programs 11
  - Group Programs 11
    - Analytical Group Program 11
    - Biological Group Program 12
    - Inorganic Group Program 12
    - Materials Group Program 13
- Organic Group Program 14
    - Physical Group Program 14

M.S. degree 16

Course work in Chemistry 17

Grades 23
  - Grades Awarded for Graded Work 23
  - Grades Required for Graduate Credit 23
  - Non-Graded work (Credit-No Credit) 23
  - Treatment of Grades of Incomplete 24
  - Retake Policy 24
  - Further Information 24

Examinations that determine Course-work to be taken 25
Diagnostic Examinations 25
Examinations for Advanced Standing 26

Program of Study - M.S. Degree 28
Residence and Total Credits Required 28
Regulations Regarding Course-Work 28
Graduate School Requirements 28
Chemistry Department Requirements 28
Dropping Classes in the First Year of Study 29
Requirement for Departmental Financial Support 29

Program of Study - Ph.D. Degree 30
Residence and Total Credits Required 30
Regulations Regarding Course-Work 30
Graduate School Requirements 30
Chemistry Department Requirements 31
Seminar Requirement 31
Dropping Classes in the First Year of Study 31
Requirement for Departmental Financial Support 31

Preliminary Examinations 32
Graduate School and Chemistry Department Requirements 32
Cumulative Examinations 32
Students with BS or MS degrees on entry to the Department 32
Students who have completed an interim MS at KSU 34
Times when Cumulative examinations are held 34
Grading of Cumulative Examinations 34
Summary 35
Research Proposition Oral Examination 35
Nature of the Examination 35
Deadline for Taking the Research Proposition Examination 38
Graduate School Regulations regarding timing of Final Exam 39
Examination Procedures 39

Final Examination (M.S. and Ph.D.) 40
The Ph.D. Final Examination 40
Examining Committee for the Ph.D. Degree 40
Submitting of the Ph.D. Dissertation 40
Time and Location of Examination 40
Committee Evaluation of the Examination 41
Final Approval of the Ph.D. 41
The M.S. Final Examination 42
Abstract of the M.S. Thesis or the Ph.D. Dissertation 43
Copies of M.S. Thesis or Ph.D. Dissertation 43
Agreement Form for University Microfilms., Inc. (Ph.D. only) 43
Survey of Earned Doctorates and K-State Alumni Association
Questionnaire (Ph.D. only) 43
Dissertation, Thesis and Report Format (M.S. and Ph.D.) 44

Foreign Language Capability 45

Selection of a Major Professor (Research Director) 46

Supervisory Committee - M.S. Candidate 47

Supervisory Committee - Ph.D. Candidates 48
Membership of the Supervisory Committee 48
Duties of Supervisory Committee 48
Supervisory Committee Restrictions 49

Review of Academic Progress 49

Policy for Academic Probation and Dismissal 50
Actions that lead to automatic placing on probation 50
Actions that lead to a return to regular status 50
Effect of low grades in courses taken for undergraduate credit 50
Conditions that must be met in order for a student to be
awarded a graduate degree 51
Conditions that may lead to a student being denied continued
enrollment in the University or in the graduate curriculum 51
The right of petition to the Graduate School 51
The Readmission Committee and its composition 51
The authority of the Readmission Committee 52
Mechanism for submitting a petition 52
Additional requirements for petitions to entry a new curriculum . . . 52
Status of the student after a successful petition 53
Graduate School Practice on Probation and Dismissal 53
Chemistry Department Practice on Probation and Dismissal 53

Procedure for Dismissal 54

Financial Support Policy 54

Right of petition concerning Chemistry Department Regulations 55

Graduate Program Committee 56

A Typical Graduate Student Program of Accomplishments 57

Policy on Competency Revalidation of Graduate Students 59
Master's Degree Programs 59
Doctoral Degree Programs 59

Introduction

Ideally, we would prefer to operate a graduate program in chemistry such that no rules would be necessary and each student's program could be considered on its individual merits. However, the practical requirements of conducting a large program necessitates the establishment of guidelines. In addition the Graduate School has established regulations for graduate degrees. Therefore, we have compiled these regulations which have evolved to help the student in his/her graduate training and combine the Department regulations with the general regulations of the Graduate School. We believe that they will guide you through the process of development in scholarship and critical thinking while still allowing considerable latitude in each individual program.

The capable, conscientious graduate student should have no trouble living up the letter and spirit of the requirements of the graduate program. However, we recognize that the graduate student body is a collection of individuals, each with his/her own needs, abilities, and goals. We also recognize that it may often be difficult or impossible for an individual to comply with the letter of all regulations. Should you find yourself in such a situation, we urge you to consult with your major professor and the Graduate Program Committee. Alternate, though legitimate means of satisfying a particular requirement can often be found.

The requirements and regulations which follow are those of the Chemistry Department and the Graduate School. The Graduate School regulations are taken from the current Graduate Faculty Handbook.

This document does not cover special regulations. These regulations can be found in the Graduate Faculty Handbook relating to:

a) Graduate Study by Seniors
b) Graduate Work by Staff Members
c) Ph.D. Residence for Staff Members
d) Regulations regarding appointment of KSU graduates to faculty positions at KSU.
e) Enrollment in Short Courses and Workshops in the Summer Session.

Layout of this Document

This document begins with Admission requirements. While most of this will have been completed before the student arrives here, some matters must be dealt with on arrival, and so this section should be read carefully by all incoming students. The next section presents the Enrollment requirements and is important to all students at all stages of their studies. There then follows a number of sections that cover the course-work and examination requirements for the M.S. and Ph.D. degrees. The selection of a Major Professor and the appointment of a Supervisory Committee is then dealt with in detail. The remainder of the document presents the policy of the University and of the Department regarding academic progress and financial support.

Admission

Correspondence and Transcripts

Correspondence regarding admission to the Graduate Program in Chemistry should be addressed to the Chair of the Graduate Admissions and Recruiting Committee. Applicants should see that each undergraduate or graduate institution previously attended sends official transcripts directly to the Department. The application and transcripts should be received by the Department at least three months before the time the student expects to enroll. All transcripts become part of the student's official file and may not be returned.

Admission to Advanced Degrees

Admission to graduate study does not imply admission to candidacy for an advanced degree. For a doctoral degree such candidacy is confirmed only upon successful completion of preliminary examinations.

Medical Examinations

All new graduate students from within the United States are required to fill out a medical history form for the Lafene Student Health Center. International students must submit a health certificate as part of their application and report to the Student Health Center during enrollment for a physical examination. Forms for reporting the preliminary medical examination will be supplied with application materials and must be submitted as part of the application.

A Summary of Entrance Requirements

Full details of current Graduate School requirements and Departmental Requirements can be obtained from the Chairman of the Graduate Admissions and Recruiting Committee. The basic requirements are:

Graduates of Colleges and Universities in the United States

Require a minimum of:

(a) A bachelor's degree from a United States college or university accredited by the cognizant regional accrediting agency.

(b) Undergraduate preparation in the proposed major field equivalent to that acquired by a graduate of KSU in the proposed field of study, or evidence of an appropriate background for undertaking an advanced degree program.
(c) An undergraduate average of B or better in the junior and senior years.

Graduates of Foreign Colleges and Universities

All foreign students admitted to the Graduate School must meet the same level of achievement as American students. In addition they must have evidence of language proficiency adequate to do graduate work. The Graduate School requires a minimum score of at least 550 on the Test of English as a Foreign Language (TOEFL), but candidates with a score below 600 have to demonstrate proficiency in written and oral English at enrollment.

Admission Categories

The Graduate School has established four categories of admission:

a) Full standing
b) Provisional
c) Probation
d) Special

Students admitted in categories b,c and d have some deficiencies in their background. Normally only students in the "Full standing" category are admitted to the graduate program in the Chemistry Department.

Graduate Assistants and Research Assistants

Fee Reduction

To facilitate research work, teaching and the acquisition of advanced degrees, the University has established graduate assistantships in most departments. All research assistants, graduate teaching assistants, graduate research assistants and fellows working 0.4-time or more are assessed in-state fees. Also spouses and dependent children of such full-time employees are assessed resident fees. **All categories of graduate assistants must carry a minimum program of SIX semester hours in every regular semester** unless the Head of Department presents a special case formally to the Dean of the Graduate School before the date set for registration.

Proficiency in Spoken English

The funding for graduate teaching assistants comes from the State and the funding of graduate research assistants comes from Federal, State and Industrial research funds. In all cases it is considered essential that the assistant have a full spoken command of English. All teaching assistants from outside the U.S.A. whose first language is not English must satisfy this requirement by the taking and passing at the 50 point level the Test of Spoken English (TSE or SPEAK) Examination.

All graduate students whose native language is not English are **required** to pass the Test of Spoken English (or equivalent examination) by the end of the second regular semester* at Kansas State University. Any students who have not satisfied this requirement will be terminated at the end of their second regular semester unless their Major Professor supports a petition to the faculty to request that they transfer to a **terminal** M.S. program. They will remain in the terminal M.S. program until such time as they graduate, or pass the Test of Spoken English. Students in the terminal M.S. program who pass the Test of Spoken English may petition the faculty for a transfer to the Ph.D. program. All students who have not passed the Test of Spoken English, and who have been approved for a **terminal** M.S. program will receive financial support **only** if they serve as a Graduate Research Assistant (GRA) funded by an extramural research grant to one of the Graduate Faculty in the Department. While the Principal Investigator of any grant determines the GRA stipend, the Faculty recommends that the Principal Investigator supports the student at a reduced funding level compared to a typical M.S. student students until the Test of Spoken English is passed.

*the regular semesters are the fall semester and the spring semester

Registration and Enrollment

Who should enroll

All graduate students who have matriculated at Kansas State University and are using faculty time and/or University facilities for research or other academic pursuits must be enrolled. A graduate degree candidate must be enrolled during the semester in which the requirements for the degree are completed.

A student working for a doctoral degree must enroll during the session in which the preliminary examination is taken and subsequently in each semester until the degree requirements are met and the dissertation is accepted by the Graduate School. **Failure to enroll will result in loss of candidacy.** To regain candidacy, the student must be re-examined over the areas covered in the preliminary examinations in a manner to be determined by the supervisory committee. If it is necessary to interrupt progress toward the degree after the preliminary examination has been passed, the student (or major professor) may petition for leave of absence for up to one year which subsequently may be renewed. The petition must be submitted at least one month before the effective date of the leave. Approval must be granted by the major professor, chairman of the department or interdepartmental program, and the Dean of the Graduate School.

Time and Place of Registration

Students who have been admitted to the Graduate School register and pay their fees during the regular registration periods. Any change in enrollment must be approved by an adviser and the Dean of the Graduate School. Candidates who do not live in the vicinity of Manhattan may make arrangements to enroll by mail but should request permission for doing so by writing to the Graduate Office prior to the enrollment period.

Number and type of Credit Hours to be enrolled for

The enrollment should reflect, as accurately as possible, the demands made on faculty time and use made of University facilities. The Chemistry Department interprets this requirement to as shown below. As stated above the minimum number of hours is SIX in every regular semester in order that the University still consider the student to be graduate assistant. Failure to meet the Department's requirements will result in delay of processing the student's appointment papers until compliance is established. Failure to meet the University minimum will result in loss of any in-state fee privileges for out-of-state students and may lead (see "Who Should Enroll" above) to loss of candidacy.

The Chemistry Department requirements are:

Student Situation	Credit Hours Required
Normal full time M.S. and Ph.D. students appointed as a GTA.	10 per semester, Fall and Spring 5 Summer
Normal full time M.S. and Ph.D. students appointed as a GRA or a combination of GRA and GTA	6 per semester, Fall and Spring 3 summer
Already has enough hours to graduate but is still not finished with research and thesis.	6 per semester, Fall and Spring 3 Summer
Will be finished with thesis and gone before semester's end	*1 per semester, Fall or Spring 1 Summer (enrolling at this level will be allowed for only one semester)
Has left K-State but thesis is not finished (a very undesirable situation).	1 per semester, Fall and Spring 1 Summer

Note

*This is allowable only if the student is not to be appointed as a graduate assistant. Any fee privileges will be lost by out-of-state students.

A note of caution:
The Ph.D. program still must contain a total of ninety credit hours and the M.S. program still must contain a total of thirty credit hours. Consequently it is wise to consider how many semesters one is likely to be in residence before completing the degree requirements to ensure that the required total number of hours are completed prior to the desired graduation date. In practice a problem would arise for a well prepared student who has spent little time as a GTA and is making rapid progress in research. Think ahead!

Dropping Courses after Registration

The Chemistry Faculty strongly discourages the dropping of a course in the first year of study. **Any student planning to drop a course should obtain approval from the Head of Department before doing so.** If a course is dropped then the credit hours should be replaced by an equal number of hours of research or course-work credit.

Regaining of Candidacy after Program Interruption

Students who decide to interrupt their studies for any extended period of time other than a summer session may lose their candidacy (see "Who Should Enroll" above). The regaining of candidacy requires the student by re-examined over the areas covered in the preliminary examinations in a manner determined by the supervisory committee. In addition the Department requires the candidate to work out a detailed schedule for the completion of their studies with their major professor. This schedule, in writing, must be approved by the student's supervisory committee and filed with the departmental secretary and the Graduate Program Committee **before the student leaves campus. Failure to adhere to the time schedule will be considered an indication that the student does not intend to complete his/her studies**. Readmission of students who fail to adhere to the time schedule may be granted at the discretion of the Departmental Faculty upon petition by the student if such a petition if supported by valid arguments.

The Program of Study

Graduate work demands a high degree of intellectual achievement. It necessarily depends on extensive prior preparation, and it involves the development of understanding and knowledge at the most advanced levels. Programs of study are therefore expected to reflect intensive specialization extending to the limits of knowledge in one's field.

In the Department of Chemistry programs of study contain the following elements:

(i) Original research carried out under the direction of a major professor who is a member of the Graduate Faculty.

(ii) The demonstration of competence in basic chemistry and a program of course-work constructed to ensure such competence.

(iii) Course-work that provides the student with a comprehensive knowledge and understanding of his chosen specialization.

(iv) An appreciation of wider developments in Chemistry or a chosen interdisciplinary program as evidenced by a full attendance at Group Seminars and at Departmental Colloquia.

(v) Involvement and competence in the teaching of Chemistry.

Specific degree programs specify the number of hours that have to be spent on these activities.

Course-work

Forms of Course-work

Course-work for graduate credit can take the following forms:

(i) Practica and Internships

These are practical courses or on-the-job training (such as the practicum in the teaching of chemistry) which **must** have a prerequisite or concurrent enrollment in at least one other graduate course which includes the theory and body of knowledge used in the course. The Board of Regents has established two types of such courses:

Type 1 = Laboratory courses

Type 2 = Experimental courses. This category includes such experiences as practicum, internships, practice teaching, field experiences and other irregular courses not fitting in the type 0 course defined below.

(ii) Problem Courses

No more than 3 hours of such courses are allowed in the M.S. program, and no more than 6 hours in the Ph.D. program.

(iii) Lecture Courses

The Board of Regents has established regularly scheduled academic courses with designated credits as being Type 0 courses.

The Board of Regents requires all graduate students, regardless of degree sought, to complete at least half of their course work in 0, 1 and 2 type courses as defined above.

The Levels of Course-work

All research and course-work that leads to credit is designated with a course number which indicates the level at which the course is offered. The higher the number the higher the level.

500 level courses: Courses that are expected to have been completed as undergraduate prerequisites to graduate study or as undergraduate deficiency courses assigned upon admission

700 and 800 level courses: The principle master's level courses. 600 level courses may be included but a significant majority (interpreted by the Graduate School as 60% or more) of the courses should be at this level for the M.S. program.

800 and 900 level courses: The principle doctor's level courses. A significant majority (interpreted by the Graduate School as 60% or more) of courses should be at this level for the Ph.D. program.

Programs of Study and Group Structure

The Department of Chemistry offers programs leading to the M.S. and Ph.D. degrees specializing in analytical, biological, inorganic, materials, organic, and physical chemistry. The department faculty and research programs are operated through six overlapping "groups". Each "group" has faculty and adjunct faculty who work together to coordinate a "group" graduate program involving graduate courses, seminar programs and a cumulative examination system. The PhD program in chemistry via the Center for Materials Research (CMR) program has been suspended due to formation of the Materials Group Program.

Entering students are administered diagnostic exams in each of the four traditional areas of chemistry (analytical, inorganic, organic, and physical) in order to assess their preparations for graduate studies. There is no prescribed outcome for success or failure on diagnostic exams. Outstanding students are encouraged to take advanced standing exams that allow certain required course work to be bypassed. A minimum grade of C must be obtained in all courses in order to earn credit and a minimum overall grade point average of 3.0 (out of a possible 4.0) is necessary. Original research is the most important part of the graduate program, and selection of a research director is made during the first semester in residence in order to allow students to start work on their research projects at an early date.

Ph.D. degree

Overview and Common Requirements

A program of study must be selected from a "group program" that will include at least 20 hours of graduate course work, which may include courses from all areas of chemistry, and must include at least 16 hours of graduate course work in Chemistry. A total of 90 semester hours is required, including at least 50 hours of research for students entering with a bachelor's degree and 36 hours for students entering with a master's degree.

The preliminary exam for the Ph.D. degree consists of a series of written cumulative exams beginning in the second or third semester of residence on topics within the student's area of specialization, and a research proposition oral examination dealing with a written research proposal that the student must prepare and defend before his or her supervisory committee by the time deadline specified by the particular group graduate program. Completion of the Ph.D. degree requires the submission of a written dissertation and its oral defense before one's supervisory committee.

Group Programs

There are six programs of graduate course work that can be followed for the Ph.D. degree:

- Analytical Group Program
- Biological Group Program
- Inorganic Group Program
- Materials Group Program
- Organic Group Program
- Physical Group Program

The program of study is different in each program, but has the following common features:

- **Departmental Requirements**: Two credit hours of common course work are required for all group programs.
- **Credit Seminar Programs**: Two credit hours of credit seminar are required together with attendance at a seminar program throughout the entire program of study. Students register for 0 credit hours in the seminar course when the seminar program is not taken for credit.
- **Group Programs:**
  - **Substantive Group Courses**: A number of credit hours are required in course work specific to a particular group.
  - **Other Chemistry Department Courses**: A number of credit hours are required in chemistry department courses.
  - **Additional Courses:** A number of credit hours may be required that may be taken from chemistry department courses and sometimes from courses offered in other departments.
- **Cumulative Examinations:** There are separate cumulative examinations in the Analytical, Inorganic, Materials, Organic and Physical groups. Currently, students in the materials group may choose cumulative examinations in any of the four groups (analytical, inorganic, organic, and physical) that offer cumulative examinations, as do students in the biological group.

<u>Department Requirements (2 credit hours)</u>

Every student in the Chemistry Department is required to take the following one credit hour courses:

- **CHM 601** Safe Chemical Laboratory Practices
  CHM 700 Practicum in Teaching Chemistry

Credit Seminar Programs (2 credit hours)

All students in the Chemistry Department are required to attend the appropriate group seminar program every semester (registering for 0 or 1 credit hour), and to register for a total of 2 credit hours during their Ph.D. program. When the seminar program is taken for credit, the student will be evaluated on a 50 minute seminar.

- Analytical Group Program - **CHM 901** Graduate Seminar in Analytical Chemistry
- Biological Group Program - ***one*** from **CHM 901**, **CHM 902**, **CHM 903**, **CHM 904**
- Inorganic Group Program - **CHM 902** Graduate Seminar in Inorganic Chemistry
- Materials Group Program - ***one*** from **CHM 901**, **CHM 902**, **CHM 903**, **CHM 904**
- Organic Group Program - **CHM 903** Graduate Seminar in Organic Chemistry
- Physical Group Program - **CHM 904** Graduate Seminar in Physical Chemistry

Group Programs (16 credit hours)

Analytical Group Program

- **Substantive Group Courses**: **9 credit hours** required consisting of *at least* ***three*** 3-credit-hour analytical group courses that can be chosen from the following courses:
  - **CHM 920** Analytical Separations
  - **CHM 937** Applications of Surface Science to Chemistry
  - **CHM 940** Chemical Microscopy
  - **CHM 944** Electroanalytical Chemistry
  - **CHM 947** Applied Molecular Spectroscopy

- **Other Chemistry Department Courses**: **3 to 6 credit hours** are required consisting of *one or two* 3-credit-hour courses chosen from the following courses:
  - **CHM 711** Inorganic Chemistry I
  - **CHM 712** Inorganic Chemistry II
  - **CHM 752** Advanced Organic Chemistry
  - **CHM 801** Chemical Thermodynamics
  - **CHM 820** Materials Chemistry
  - **CHM 854** Theoretical Chemistry I
  - **CHM 856** Chemical Kinetics
  - **CHM 862** Organic Spectroscopy
  - **CHM 929** Physical Methods in Inorganic Chemistry
  - **CHM 954** Theoretical Chemistry II
  - **CHM 965** Physical Organic Chemistry

- **Additional Courses**: **The remaining 1 to 4 credit hours** may be taken from the two previous lists **or** from:
  - Any Science or Engineering courses at the 600 level or higher in any department other than chemistry in the Colleges of Arts and Sciences, Agriculture, Human Ecology, or Engineering.
  - CHM 600 (Scientific Glassblowing), CHM 650 (History of Chemistry),CHM 657 (Inorganic Techniques), CHM 800 (Chemistry in Outer Space and in the Laboratory), CHM 930 (Homogeneous Catalysis).

Biological Group Program

Students must meet the group requirement by completing one of the other group programs (Analytical, Inorganic, Materials, Organic or Physical). In addition, students in the biological group may select additional courses offered either inside or outside the Department of Chemistry. A list of possible courses that students may choose to take which are offered outside the department include the following:

- **BIOCH 755** Biochemistry I (3 credits).
- **BIOCH 765** Biochemistry II (3 credits).
- **BIOCH 790** Physical Biochemistry (3 credits).
- **BIOL 719** Biomembranes (2 credits).
- **BIOL 855** Molecular Biology of Cellular Membranes (3 credits).
- **BIOL 860** Molecular and Cellular Biology (3 credits).

Inorganic Group Program

- **Substantive Group Courses**: **9 credit hours** required consisting of the following courses:
  - **CHM 711** Inorganic Chemistry I
  - **CHM 712** Inorganic Chemistry II
  - **CHM 929** Physical Methods in Inorganic Chemistry

- **Other Chemistry Department Courses**: **3 to 6 credit hours** from the following courses:
  - **CHM 752** Advanced Organic Chemistry
  - **CHM 801** Chemical Thermodynamics
  - **CHM 820** Materials Chemistry
  - **CHM 854** Theoretical Chemistry I
  - **CHM 856** Chemical Kinetics
  - **CHM 862** Organic Spectroscopy
  - **CHM 920** Analytical Separations
  - **CHM 935** Topics in Inorganic Chemistry
  - **CHM 937** Applications of Surface Science to Chemistry
  - **CHM 940** Chemical Microscopy
  - **CHM 944** Electroanalytical Chemistry
  - **CHM 947** Applied Molecular Spectroscopy
  - **CHM 954** Theoretical Chemistry II
  - **CHM 965** Physical Organic Chemistry

- **Additional Courses**: **The remaining 1 to 4 credit hours** may be taken from the two previous lists **or** from:
  - Any Science or Engineering courses at the 500 level or higher in any department other than chemistry in the Colleges of Arts and Sciences, Agriculture, Human Ecology, or Engineering.
  - CHM600 (Scientific Glassblowing), CHM650 (History of Chemistry),CHM657 (Inorganic Techniques), CHM800 (Chemistry in Outer Space and in the Laboratory), CHM930 (Homogeneous Catalysis).

Materials Group Program

- **Substantive Group Courses**: **3 credit hours** required consisting of the following course:
  - **CHM 820** Materials Chemistry

- **Other Chemistry Department Courses**: **9 to 12 credit hours** from the following courses:
  - **CHM 711** Inorganic Chemistry I
  - **CHM 712** Inorganic Chemistry II
  - **CHM 752** Advanced Organic Chemistry
  - **CHM 801** Chemical Thermodynamics
  - **CHM 854** Theoretical Chemistry I
  - **CHM 856** Chemical Kinetics
  - **CHM 862** Organic Spectroscopy
  - **CMH 920** Analytical Separations
  - **CHM 929** Physical Methods in Inorganic Chemistry
  - **CHM 935** Topics in Inorganic Chemistry (which can be up to **three** different courses: Nanostructured Materials or Supramolecular Chemistry or Metal-Ligand Multiple Bonds)
  - **CHM 937** Applications of Surface Science to Chemistry
  - **CHM 940** Chemical Microscopy
  - **CHM 944** Electroanalytical Chemistry
  - **CHM 947** Applied Molecular Spectroscopy
  - **CHM 954** Theoretical Chemistry II
  - **CHM 965** Physical Organic Chemistry

- **Additional Courses**: **The remaining 1 to 4 credit hours** may be taken from the two previous lists **or** from:
  - Any Science or Engineering courses at the 500 level or higher in any department other than chemistry in the Colleges of Arts and Sciences, Agriculture, Human Ecology, or Engineering. Special consideration should be given to the following courses:
    - **PHYS 564** Thermodynamics and Statistical Physics (3 credits)
    - **PHYS 655** Physics of Solids (3 credits)

- CHM600 (Scientific Glassblowing), CHM650 (History of Chemistry),CHM657 (Inorganic Techniques), CHM800 (Chemistry in Outer Space and in the Laboratory), CHM930 (Homogeneous Catalysis).

The Ph.D. program in chemistry via the Center for Materials Research (CMR) program has been suspended due to the formation of the Materials Group Program. The structure of the Ph.D. program in chemistry via the CMR program was no longer compatible with the current group structure in the Department of Chemistry.

Organic Group Program

- **Substantive Group Courses**: **13 credit hours** required consisting of the following courses:
  - **CHM 752** Advanced Organic Chemistry (3 credits)
  - **CHM 860** Synthetic Organic Chemistry (4 credits)
  - **CHM 862** Organic Spectroscopy (3 credits)
  - **CHM 965** Physical Organic Chemistry (3 credits)

- **Other Chemistry Department Courses**: **0 to 3 credit hours** from any Chemistry Department courses with numbers above 710 excluding seminar courses.

- **Additional Courses**: **0 to 3 credit** from any Science or Engineering courses at the 500 level or higher in any department other than chemistry in the Colleges of Arts and Sciences, Agriculture, Human Ecology, or Engineering.

Physical Group Program

- **Substantive Group Courses**: **3 credit hours** consisting of the following course:
  - **CHM 854** Theoretical Chemistry I

  and **3 credit hours** from the following list of courses:
  - **CHM 801** Chemical Thermodynamics
  - **CHM 856** Chemical Kinetics
  - **CHM 937** Applications of Surface Science to Chemistry
  - **CHM 947** Applied Molecular Spectroscopy
  - **CHM 950** Chemical Statistical Mechanics
  - **CHM 954** Theoretical Chemistry II
  - **CHM 955** Selected Topics in Physical Chemistry

- **Other Chemistry Department Courses**: **6 credit hours** from any Chemistry Department courses with numbers above 710 excluding seminar courses.

- **Additional Courses**: **The remaining 4 credit hours** may be taken from the two previous lists **or** from:
  - Any Science or Engineering courses at the 600 level or higher in any department other than chemistry in the Colleges of Arts and Sciences, Agriculture, Human Ecology, or Engineering.

  - CHM600 (Scientific Glassblowing), CHM650 (History of Chemistry),CHM657 (Inorganic Techniques), CHM800 (Chemistry in Outer Space and in the Laboratory), CHM930 (Homogeneous Catalysis).

M.S. Degree

A minimum of 30 semester hours of graduate credit is required for this degree program, of which no less than 22 hours will be earned in course work. The program of study for the M.S. degree will normally include up to 15 hours in the students major area of study, 6-12 hours in related areas, and one hour of graduate seminar. At least two semester hours of credit must be earned at the 700 level or higher in each of three of the following groups: analytical, inorganic, organic, physical, materials, and biological. Acceptable courses for each group are given below. The program of study must be approved by the supervisory committee. A master's thesis that is based on 6 to 8 hours or original research must also be defended before one's supervisory committee.

Group Programs (up to 15 credit hours)

Analytical Group Program
CHM 920 Analytical Separation
CHM 937 Application of Surface Science to Chemistry
CHM 940 Chemical Microscopy
CHM 944 Electroanalytical Chemistry
CHM 947 Applied Molecular Spectroscopy

Inorganic Group Program
CHM 711 Inorganic Chemistry I
CHM 712 Inorganic Chemistry II
CHM 929 Physical Methods in Inorganic Chemistry
CHM 930 Homogeneous Catalysis
CHM 935 Topics in Inorganic Chemistry

Materials Group Program
CHM 820 Materials Chemistry

Organic Group Program
CHM 752 Advanced Organic Chemistry
CHM 860 Synthetic Organic Chemistry
CHM 862 Organic Spectroscopy
CHM 965 Physical Organic Chemistry

Physical Group Program
CHM 801 Chemical Thermodynamics
CHM 854 Theoretical Chemistry I
CHM 856 Chemical Kinetics
CHM 937 Applications of Surface Science to Chemistry
CHM 947 Applied Molecular Spectroscopy
CHM 950 Chemical Statistical Mechanics
CHM 954 Theoretical Chemistry II
CHM 955 Selected Topics in Physical Chemistry

Biological Group Program
Any 700 level or higher Biochemistry course

Course Work in Chemistry

General chemistry courses

Undergraduate and graduate credit in minor field

CHM 599. Undergraduate research. (1, 2, 3) I, II, S. Analytical, inorganic, organic, or physical chemistry. A final, formal written report is required.

Undergraduate and graduate credit

Unless otherwise stated, all chemistry courses numbers 600 or above require the following as minimum prerequisites

CHM 550 Organic Chemistry II; CHM 532 Organic Chemistry Laboratory; CHM 595 Physical Chemistry II; and CHM 598 Physical Chemistry II Laboratory.

CHM 600. Scientific Glassblowing. (1) II. The basic techniques of bending, sealing, and blowing glass used to fabricate scientific glassware. Three hours of laboratory including one lecture demonstration a week. Pr.: Senior or graduate standing in physical sciences.

CHM 601. Safe Chemical Laboratory Practices. (1) I. A general safety course for persons working or teaching in a chemical laboratory. One hour of lecture per week. Pr.: CHM 371 and CHM 350 or equivalents.

CHM 700. Practicum in Teaching Chemistry. (1) I. Principles and methods of instruction in laboratories and recitation classes in chemistry, including one semester of supervised experience as an instructor in a chemical laboratory. This is a required course of all teaching assistants in the Department of Chemistry. May be taken only once for credit. Pr.: Senior standing in chemistry.

CHM 799. Problems in Chemistry. (Var.) I, II. S. Problems may include classroom or laboratory work. Not for thesis research. Pr.: Consent of instructor.

Graduate credit

CHM 899. Research in Chemistry. (Var.) I, II, S. Research in analytical chemistry, inorganic chemistry, organic chemistry, and physical chemistry for the M.S. degree.

CHM 999. Research in Chemistry. (Var.) I, II, S. Research in analytical chemistry, inorganic chemistry, organic chemistry, and physical chemistry for the Ph.D. degree.

Analytical chemistry courses

Undergraduate and graduate credit in minor field

CHM 545. Chemical Separations. (2) II. Principles of modern separation techniques. One hour. lec. and three hours lab a week. Pr.: CHM 250 or CHM 371, or both CHM 532 and CHM 550.

CHM 566. Instrumental Methods of Analysis. (3) I. Introduction to theory and practice of electrochemical methods, molecular and atomic spectroscopy, surface science, mass spectrometry, separation methods, and electronics in analytical chemistry. Three hours lec. a week. Pr.: CHM 531, and CHM 500 or CHM 585.

CHM 567. Instrumental Methods of Analysis Laboratory. (1) I. Three hours lab a week. Pr.: CHM 566 or conc. enrollment.

Graduate credit

CHM 901. Graduate Seminar in Analytical Chemistry. (0-1) I, II, S.

CHM 920. Analytical Separations. (3) II. The theory, instrumentation, methods, and applications of classical and modern separation techniques are covered in this lecture course. Pr.: CHM 566 and CHM 595.

CHM 937. Applications of Surface Science to Chemistry. (3) I, in even years. Chemical bonding in the solid state. Surface science and related techniques as applied to chemical problems. Special topics including data analysis and corrosion studies.

CHM 940. Chemical Microscopy. (3) II, in even years. The theory, instrumentation, and application of modern microscopic methods are covered in this lecture course. Emphasis is given to the study of chemically-important phenomena in material systems.

CHM 944. Electroanalytical Chemistry. (2-3) I, in odd years. Theory and applications of electrochemical methods; chronoamperometry, chronopotentiometry, cyclic voltammetry, coulometry, polarography, potentiometry, and instrumentation.

CHM 947. Applied Molecular Spectroscopy. (3) II, in odd-numbered years. Experimental, and theoretical methods associated with ultraviolet and visible absorption, fluorescence, Raman scattering, and nonlinear optical spectroscopies. Pr.: CHM 854.

Inorganic chemistry courses

Undergraduate and graduate credit

CHM 650. History of Chemistry. (2) II, in even years. Traces the beginnings of chemistry from 3500 B.C. to 1920 A.D. Early metallurgy, Greek thought about atoms, alchemy, atomic theory, discovery of gases; definition of elements, chemical bonds, organic, inorganic, and physical chemistry. Pr.: CHM 585.

CHM 657. Inorganic Techniques. (1-2) II. The preparation, characterization, and study of transition metal, main group, and organometallic compounds of unusual interest, using techniques commonly encountered in industrial and academic research. Six hours lab a week. Pr.: CHM 585.

CHM 711. Inorganic Chemistry I. (3) I. Atomic and molecular structure, bonding concepts used in the practice of inorganic chemistry. Applications of symmetry and group theory to structure, bonding, and spectra. Three hours lec. a week. Pr.: CHM 550, CHM 595.

CHM 712. Inorganic Chemistry II. (3) II. Structure, reactivity, and mechanistic aspects of main group and transition metal complexes. Organometallic reactions, catalysis, and bioinorganic chemistry. Three hours lec. a week. Pr.: CHM 550, CHM 595.

Graduate credit

CHM 800. Chemistry in Outer Space and in the Laboratory. (2) II, in odd years. The generation of reactive atoms and molecules in outer space and in the laboratory is covered, as well as their chemical reactions and spectroscopy. Extreme conditions of high and low temperatures, synthesis using atoms, nanoscale particles of inorganic materials, and matrix isolation are discussed. Pr.: CHM 712.

CHM 902. Graduate Seminar in Inorganic Chemistry. (0-1) I, II, S.

CHM 929. Physical Methods in Inorganic Chemistry. (3) II. Theory and application of infrared, Raman, visible, ultraviolet, NMR, ESR, NQR, Mossbauer, and mass spectrometry to inorganic chemistry. Three hours lec. a week. Pr.: CHM 711.

CHM 930. Homogeneous Catalysis. (2) II, in even years. The study of industrially important and synthetically useful catalysis of organic reactions by soluble metal complexes. Two hours lec. a week. Pr.: CHM 712 or consent of instructor.

CHM 935. Selected Topics in Inorganic Chemistry. (1-3) I, II. A lecture course in inorganic chemistry in areas of specialization of the faculty, with emphasis on current developments. Specific topics will be changed from semester to semester, so a student may take the course for credit more than once. Pr.: Consent of instructor.

Materials chemistry courses

Graduate credit

CHM 820. Materials Chemistry (3) II. Concepts of materials chemistry developed from an understanding of the chemical composition and structure of materials, and their relationship to the properties of matter. Structures, bonding and preparation of metals, metal clusters, semiconductors, nanomaterials, supramolecular materials, sol-gel materials, liquid crystals, ceramics, glasses, polymers and composites. Probes for bulk and surface chemistry of materials. Crystal engineering and crystallography. Chemical aspects of materials including heterogeneous catalysis, corrosion and surface chemistry. Pr.: Consent of instructor.

Organic chemistry courses

Undergraduate and graduate credit in minor field

CHM 531. Organic Chemistry I. (3) I, II. General principles of organic chemistry; study of the main types of aliphatic compounds, with an introduction to fats, carbohydrates, amino acids, proteins, and aromatic compounds. Required for the chemistry curricula and for entrance to medical schools. Three hours lec. a week. Pr.: CHM 230 or CHM 250.

CHM 532. Organic Chemistry Laboratory. (2) I, II. One five-hour lab and one hour of lec. a week. Pr.: CHM 550 or conc. enrollment.

CHM 550. Organic Chemistry II. (3) I, II. Continuation of CHM 531, including additional aromatic chemistry, condensation reactions, and introduction to some advanced topics, such as dyes, polymers, and heterocyclic chemistry. Three hours lec. a week.Pr.: CHM 531.

CHM 551. Advanced Organic Laboratory. (2) I, II. One five-hour lab and one hour of lec. a week. Pr.: CHM 550 and CHM 532.

Undergraduate and graduate credit

CHM 752. Advanced Organic Chemistry. (3). I. Advanced study of organic compounds and fundamental types of reactions. Three hours lec. a week. Pr.: CHM 550 and CHM 595.

Graduate credit

CHM 860. Synthetic Organic Chemistry. (4) II. Conditions, scope, and applications of reactions useful in synthetic organic chemistry. Four hours lec. a week.

CHM 862. Organic Spectroscopy. (3) I. The principles of IR, UV-VIS, mass, and NMR spectroscopies applied to the problem of structure determination. Three hours lec. a week.

CHM 903. Graduate Seminar in Organic Chemistry. (0-1) I, II, S.

CHM 965. Physical Organic Chemistry. (3) II. Principles of orbital symmetry, thermochemistry, kinetics, and other topics applied to the understanding of reaction mechanisms. Three hours lec. a week.

CHM 970. Selected Topics in Organic Chemistry. (1-3) On sufficient demand. A lecture course in organic chemistry in areas of specialization of the faculty, with emphasis on current developments. Specific topics will be changed from semester to semester, so a student may take the course for credit more than once.

Physical chemistry courses

Undergraduate and graduate credit in minor field

CHM 500. General Physical Chemistry. (3) II. Elementary principles of physical chemistry. Three hours lec. a week. Pr.:CHM 230 or CHM 250 and MATH 210 or MATH 220, and PHYS 114 or equivalent.

CHM 585. Physical Chemistry I. (3) I. Elementary chemical thermodynamics and kinetic theory of gases. Three hours lec. a week. Pr.:CHM 350 or CHM 531, MATH 222, and PHYS 214.

CHM 586. Physical Chemistry I Laboratory. (2) I. Six hours lab a week. Pr.: CHM 585 or conc. enrollment.

CHM 595. Physical Chemistry II. (3) II. Elementary quantum chemistry, spectroscopy, statistical thermodynamics, and chemical kinetics. Three hours lec. a week. Pr.: CHM 350 or CHM 531, MATH 222, and PHYS 214.

CHM 598. Physical Chemistry II Laboratory. (2) II. Six hours lab a week. Pr.: CHM 595 or conc. enrollment.

Graduate credit

CHM 801. Chemical Thermodynamics. (3) II, in alternate years. The laws, principles, and methods of thermodynamics and their applications to chemical systems. Statistical-molecular approach emphasized. Three hours lec. a week.

CHM 854. Theoretical Chemistry I. (3) I. Introduction to quantum mechanics and atomic and molecular spectroscopy. Three hours lec. a week.

CHM 856. Chemical Kinetics. (3) I, in alternate years. Survey of experimental and theoretical aspects of dynamics of chemical reactions. Three hours lec. a week. Pr.: CHM 801 or CHM 854.

CHM 904. Graduate Seminar in Physical Chemistry. (0-1) I, II, S. Presentation of topics from literature in physical chemistry.

CHM 950. Chemical Statistical Mechanics. (3) I, in alternate years. Application of classical and quantum statistical mechanics to chemical phenomena. Three hours lec. a week. Pr.: CHM 801, CHM 854.

CHM 954. Theoretical Chemistry II. (3) II. Quantum theory of atomic and molecular structure. Three hours lec. a week. Pr. CHM 854.

CHM 955. Selected Topics in Physical Chemistry. (1-3) On sufficient demand. A lecture course in physical chemistry in areas of specialization of the faculty, with emphasis on current developments. Specific topics will be changed from semester to semester, so a student may take the course for credit more than once. Pr.: CHM 854.

Grades

Grades Awarded for Graded Work

Graduate work is graded A, B, C, D, F, Credit-No Credit, Pass-Fail, Incomplete, and Withdrawn. Grades are awarded for course-work and for research.

Grades Required for Graduate Credit

For graduate credit the grade in the course must be C or better. All course work taken at Kansas State University for graduate credit must yield a cumulative grade point average (GPA) of 3.00 (i.e. B average). The GPA computation does not include problem courses, practica, internships, research, or other individualized study. This requirement is applicable only in the total program, not semester by semester. The graduate program committee chairperson will be responsible for warning a candidate who is in danger of not meeting the 3.0 GPA.

In addition the Chemistry Department requires that all required courses and all remedial courses must be completed with grades of C or higher. Grades in remedial courses are not used in the GPA calculation since remedial courses are taken for undergraduate credit.

Non-Graded Work (Credit-No Credit)

At the discretion of the Graduate Faculty of the department or interdepartmental committee concerned, seminars or colloquia in which letter grading conflicts with the objectives intended may be offered on a credit-no credit basis rather than for a letter grade. The seminars and colloquia that are to be offered for credit-no credit shall be listed with the Dean of the Graduate School.

All courses on the program of study except research (report, thesis, or dissertation) and seminars or colloquia that have been approved for credit-no credit must be taken for letter grades. Grades for research for master's reports, master's thesis and Ph.D. dissertations will be graded as credit-no credit. **Incompletes may be awarded while research is in progress and not be subject to the incomplete policy for course work.**

Independent of the program of study, additional courses may be taken on a credit-no credit or pass-fail basis with the approval of the major professor and the professor offering the course. *These courses may not be applied toward a degree.*

No more than three hours of credit-no credit courses (exclusive of research credit hours) may appear on the program of study for the master's degree nor more than six for the Ph.D. degree.

Treatment of Grades of Incomplete:

The grade of Incomplete normally is given in regular courses (other than independent studies, research, and problems) only for verifiable personal emergencies. If, after the end of next semester in which the student enrolls, the I remains on the record for a regular course, the I will be designated as an F for record-keeping purposes and will be computed in the student's GPA, weighted as zero points per credit.

Retake Policy

A graduate student is allowed to retake up to two courses on a program of study in order to have the prior grades removed from calculation of the student's GPA. In order to be retaken under this policy, a course must be on the student's approved program of study at the time the request to retake it is received, and the student must be required by the Supervisory Committee to retake the course. The retake grade will always be used in computing the GPA regardless of whether it is higher or lower than the original grade. A student may retake an individual course under this policy only once.

To request that a student be permitted to retake a course, the major professor and Supervisory Committee must submit to the Graduate School a statement to that effect. This request by the major professor and Supervisory Committee, which must be approved by the faculty of the Department of Chemistry prior to submission to the Graduate School, must be received in the Graduate School by the last day to drop a full semester course without a W being recorded, for the semester in which the student has been required by the Supervisory Committee to retake the course. Final approval rests with the Graduate School. Once the student has registered to retake the course, no withdrawal from the course will be allowed except for health related reasons or personal family emergencies.

Further Information

Please refer to the section: Policy for Academic Probation and Dismissal in this handbook for further information.

Examinations That Determine the Course Work to be Taken

The choice of course work to be taken is determined by the student's graduate program. In the normal M.S. and Ph.D. programs course work is determined by the student's chosen area.

Some of the required course work can be reduced by the student demonstrating ability in the appropriate area by passing the Examination for Advanced Standing in that area. **All students for any graduate program in chemistry are required to demonstrate a basic understanding of chemistry by taking Diagnostic Examinations.**

Diagnostic Examinations

All Incoming Graduate Students MUST show their preparedness to take graduate courses by taking FOUR Diagnostic Examinations from Four areas:

Diagnostic examinations in each of the traditional areas of chemistry (analytical, inorganic, organic and physical) are designed to assess the student's ability in these basic areas of chemistry. There is no prescribed outcome for success or failure. The results of the examinations are used by the student's major professor (research director) and Ph.D. Supervisory Committee to select a program of study that will enhance the student's basic knowledge of chemistry. The examinations will cover a variety of topics at the undergraduate level. Reviewing topics using the text books in each student's own undergraduate courses would be appropriate for each individual student.

Examinations for Advanced Standing

Examinations for Advanced Standing (EAS) are optional examinations that are designed to identify chemistry graduate students with strong academic backgrounds. Examinations in Advanced Organic Chemistry, Inorganic Chemistry 1, and Theoretical Chemistry 1 are offered once a year during Fall Orientation Period, while an examination in Inorganic Chemistry 2 is given once a year during the week prior to the spring semester. These exams cover advanced undergraduate or beginning graduate student level material in the indicated area. Each of these exams corresponds to a particular course offered in the Chemistry Department.

Students are not obligated to take these exams and there is no penalty for failure to obtain a good score on these exams. However, students who obtain passing grades on these exams receive certain benefits that are summarized in the accompanying table. To understand these benefits, you should consult the sections of this document concerning the Program of Study for the M.S. and Ph.D. degrees. Briefly, a student passing an EAS will not be obligated to take the course corresponding to the exam that is passed. A student will have at most two opportunities to take each EAS.

The Examinations for Advanced Standing are designed to test the student's mastery of material that is taught in the graduate core course or courses that would be waived if the student passes. The level of difficulty of each of the examinations is consistent with that of the corresponding course(s). However, the faculty recognizes that the specific topics taught in equivalent courses in other institutions may vary from those taught here. In addition, the faculty understands that, even if a student has taken an identical course elsewhere, he/she is unlikely to be as well-prepared for an examination as a student currently enrolled in a course here, due to the passage of time. Therefore, Examinations for Advanced Standing are designed so that they focus on major concepts and results, avoiding subjects that are overly specialized or material that is overly detailed.

Passing an EAS exam DOES NOT earn any graduate credit for the student.

Table of Examinations for Advanced Standing

	Advanced Organic Chem.	Inorganic Chemistry 1	Inorganic Chemistry 2	Theoretical Chemistry 1
Exemption from requirement to take the specific corresponding course	yes	yes	yes	yes

Program of Study - M.S. Degree

Residence and Total Credits Required

Candidates for the M.S. degree are required to spend at least one semester in residence and to complete a minimum of 30 semester hours of graduate credit including a master's thesis of 6 to 8 semester hours. Approximately 15 credit hours should be in the major field and 6 to 12 credits in one or more related fields.

Regulations Regarding Course-work

Graduate School Requirements

More than 60% of the course-work should be at the 700-level or above. 600-level courses are allowed, but 500-level courses are restricted:
(i) No 500-level course in the student's major area may be included
(ii) No more than two courses (a lecture course and associated laboratory are considered as one course) nor more than 20% of the program of study may be at the 500-level. In addition the Board of Regents rule regarding course types must be followed (see "Forms of Course-work" under "Course-work") and the rules regarding credit-no credit courses (see "Non-Graded Work" under "Grades").

All master's degree programs of study must be approved by the supervisory committee and then transmitted by the Department Head to the Dean of the graduate School for final approval. This program must be submitted to the Graduate Office prior to the end of the second semester of graduate work (excluding summers) for full-time students or at the completion of nine hours for part time students.

Chemistry Department Requirements

There must be least 2 semester hours of credit at the 700 level or higher (excluding special topics courses) from each of three of the following groups on each student's program of study: analytical, inorganic, organic, physical chemistry, materials, and biological. Any or all of these course requirements may be waived provided that the student passes the Examination for Advanced Standing in the appropriate areas. Each student's program of study must also include one hour of credit of the graduate seminar appropriate to the student's area of major study. The choice of topic for this seminar, and approval of the topic, are decided upon by the student and the faculty member(s) of his/her major area who are responsible for the area seminar program.

Dropping Classes in the first year of study

The Chemistry Faculty strongly discourage the dropping of a course in the first year of study. **Any student planning to drop a course should obtain approval from the Head of the Department before doing so.** If a course is dropped the credit hours should be replaced by an equal number of hours of research or course-work credit.

Requirement for Departmental Financial Support

No stipend (teaching, research, or fellowship) will be authorized for a student for the third semester of his/her graduate work (excluding summers) unless he/she has arranged a supervisory committee and submitted a program of study to the Graduate School.

The minimum enrollment required to be eligible for appointment as a graduate research assistant (GRA) or as a graduate teaching assistant (GTA) is 6 credit hours during the academic year semesters and 3 credit hours during the summer semester.

GTAs must visit with their research director (or their temporary advisor if they do not yet have a research director) before going on leave. Periods of leave in excess of 14 consecutive days require the approval of their research director (or temporary advisor) and the Department Head. The total amount of leave in any one year must be consistent with the goals of pursuing an advanced degree.

Program of Study - Ph.D. Degree

Residence and Total Credits Required

At least three years of full-time study beyond the bachelor's degree. At least a year of this time must be spent in residence at KSU during which time the student must be enrolled for the whole period and satisfactorily complete 24 semester hours of credit including at least 12 hours of course work.

The three years of study consisting of two semesters in each year to give an equivalent of 90 semester hours, including a doctor's dissertation representing an enrollment of at least 50 hours of research for students entering with a bachelor's degree in chemistry and at least 36 hours of research for students entering with a master's degree in chemistry are required of candidates for the Ph.D. degree.

Ph.D. degree candidates are required to complete at least 20 hours of graduate course work exclusive of research, and to submit a doctoral dissertation. Courses on the program of study are selected in consultation with the student's supervisory committee.

Regulations Regarding Course-work

Graduate School Requirements

More than 60% of the course-work should be at the 800-level or above. No more than 6 hours of 500-level courses above those on the master's degree will be permitted on a Ph.D. program of study and **these only with the written justification from the supervisory committee and Department Head**. In addition the Board of Regents rule regarding course types must be followed (see "Form of Course-work" under "Course-work") and the rules regarding credit-no credit and pass-fail courses (see "Non-Graded Work" under "Grades").

The supervisory committee, in conference with the student, shall formulate a program of study and file it in the Graduate Office, approve plans for developing the student's interest in and capacity for creative scholarship, see that the regulations of the University are met, and make any necessary subsequent adjustments in the program of study. The Department Heads or Interdepartmental Chairs will review the program of study.

Chemistry Department Requirements

Seminar Requirement

Each student's program of study must also include TWO hours of credit of the graduate seminar appropriate to the area of major study.

Dropping Classes in the first year of study

The Chemistry Faculty strongly discourage the dropping of a course in the first year of study. **Any student planning to drop a course should obtain approval from the head of Department before doing so.** If a course is dropped the credit-hours should be replaced by an equal number of hours of research or course-work credit.

Requirement for Departmental Financial Support

No stipend (teaching, research, or fellowship) will be authorized for a student for the third semester of his/her graduate work (excluding summers) unless he/she has arranged a supervisory committee and submitted a program of study to the Graduate School.

The minimum enrollment required to be eligible for appointment as a graduate research assistant (GRA) or as a graduate teaching assistant (GTA) is 6 credit hours during the academic year semesters and 3 credit hours during the summer semester.

GTAs must visit with their research director (or their temporary advisor if they do not yet have a research director) before going on leave. Periods of leave in excess of 14 consecutive days require the approval of their research director (or temporary advisor) and the Department Head. The total amount of leave in any one year must be consistent with the goals of pursuing an advanced degree.

Preliminary Examinations

There are no preliminary examinations for students pursuing the master's degree.

Graduate School and Chemistry Department Requirements

Graduate School rules specify that students be given written preliminary examinations that may be supplemented by oral examinations as prescribed by the supervisory committee. The examinations should be clearly designed to test the student's breadth and depth of knowledge in prescribed areas of study, and to test his/her ability to explore problems on the boundaries of knowledge in the proposed fields of specialization.

The preliminary examination for the Ph.D. degree in chemistry consists of cumulative examinations in the major area of study and a research proposition oral examination. These examinations must be passed before the student is admitted to candidacy for the Ph.D. degree. The cumulative examinations are administered by the faculty of the area in which the student is majoring. The research proposition oral examination is administered by the student's supervisory committee.

The student is referred to the specific sections dealing with the cumulative examinations and the research proposition examination for further details.

Cumulative Examinations

The preliminary examination for the Ph.D. degree in chemistry consists of cumulative examinations in the major area of study and a research proposition oral examination. The cumulative examinations are offered by the analytical, inorganic, organic, and physical chemistry groups. Students in the biological group and in the materials group may choose cumulative examinations in any of the four groups that offer cumulative examinations.

The objectives of the cumulative examinations are to develop the student's ability to use his or her general knowledge about the principles of his or her area of chemistry and to carry out a reasoned and logical analysis when confronted with a new problem. Each group utilizes its own combination of course work, seminars, special assignments, and the literature in formulating cumulative examinations.

Students with B.S. or M.S. degrees on entry to the Department

A student who intends to pursue the Ph.D. degree must take cumulative examinations. Rules for cumulative examinations differ for the different groups:

All Groups - Common Requirements

The intended Ph.D. candidate who enters this department with either a bachelor's degree or a master's degree **must earn a total of 10 points on 12 examination attempts. No more than 5 one-point awards may be counted towards this 10 point total** An exception to the maximum allowable number of attempts is the organic group, which allows 16 attempts rather than 12 attempts to earn a total of 10 points.

Analytical Group

Students commence taking analytical group cumulative exams at the beginning of their second semester of regular academic work. At least 6 of the 10 points acheived must correspond to analytical chemistry examinations.

Inorganic Group

Students commence taking inorganic group cumulative examinations at the beginning of their second semester of regular academic work. *All the 10 points achieved **must** correspond to inorganic chemistry examinations.*

Organic Group

Students commence taking organic group cumulative examinations at the beginning of their second semester of regular academic work. *All of the 10 points achieved **must** correspond to organic chemistry examinations.* **Students in the organic group are allowed 16 attempts to earn 10 points.**

Physical Group

Students commence taking physical group cumulative examinations at the beginning of their second semester of regular academic work. *At least 6 of the 10 points achieved **must** correspond to physical chemistry examinations.*

Students who have completed an interim M.S. at KSU

Graduate students studying for the M.S. degree are not required to take cumulative examinations. If a student should leave the Ph.D. program to complete an interim master's degree, the change in degree program should be made no later than the end of the student's second semester. If the student should wish to reenter the Ph.D. program upon completion of the master's degree and if the request is approved by the chemistry graduate faculty, students in all groups except the organic group will have 9 attempts on examinations to earn 10 points. Students in the organic group will be allowed 13 attempts to earn 10 points.

Times when Cumulative Examinations are Held

Examinations are given during the months of September, October, November, December, January, February, March and April. If a student fails to taken an examination, a failure by default is recorded. However, if the student can present a valid reason for his/her failure to appear for the examination, and if the Graduate Program Committee favorably recommends, the chemistry graduate faculty may grant an additional attempt if one should be required.

Grading of Cumulative Examinations

Grade	Points	Description
Exceptional	3	This grade is awarded rarely, and only to those papers that are very well written and that demonstrate an exceptional command of the subject material.
Good	2	The quality of work expected of a person who is qualified for the Ph.D. degree. The paper is well organized, well written, and demonstrates a command of the subject material.
Fair	1	This grade is awarded to a paper that is considered to be a borderline pass-fail. Although such a paper demonstrated an understanding of the subject material, the paper either contains one or more serious errors in fact or interpretation, or it omits important and significant material.
Fail	0	This quality of work is less than that expected of a candidate for the Ph.D. degree.

The cumulative examinations in an area are graded by faculty from that group. The grades reported are a consensus of these faculty.

Summary:

1. Cumulative examinations are given eight times during each academic year.

2. The intended Ph.D. degree candidate must earn 10 points out of 12 attempts on the cumulative examinations. Students in the organic group are allowed 16 attempts to acquire the 10 points.

3. No more than five one-point scores can be counted towards the 10 point total.

Research Proposition Oral Examination

The objective of the research proposition oral examination is to develop the student's ability to identify significant problems, to gather relevant information, to evaluate the chances for the success of a proposed method for solving the problem, and to communicate information to other orally and in writing. The research proposition oral examination is intended to develop and demonstrate the creative thinking implicit to a Ph.D. degree and not be merely the collection of data or a minor extension of existing knowledge.

Nature of the Examination

The subject of the research proposition oral examination must deal with an original research idea. The research proposal must be of genuine scientific significance and not merely a collection of data or a minor extension of existing knowledge. The topic of the research proposal depends upon the group chosen by the student and must be approved by the research advisor and the student's supervisory committee:

Analytical Group:

The topic of the research proposal **may** be directly related to the student's own research work.

Biological Group:

The topic of the research proposal **may** be directly related to the student's own research work.

Inorganic Group:

The topic of the research proposal **must not** be directly related to the student's own research work.

Materials Group:

The topic of the research proposal **may** be directly related to the student's own research work.

Organic Group:

The topic of the research proposal **may** be directly related to the student's own research work.

Physical Group:

The topic of the research proposal **may** be directly related to the student's own research work.

The research proposition oral examination will be administered by the student's Supervisory Committee with the student's research director serving as Chairperson. For the student, the examination consists of (a) preparing a complete written research proposal, and (b) defending this proposal before the Supervisory Committee. Students and other members of the faculty are encouraged to attend the oral presentation and the initial questioning of the candidate. Final questioning of the candidate is done in the presence of the Supervisory Committee only.

Prior to preparing the complete written research proposal, the student obtains approval of the topic of the research proposal from the Supervisory Committee. The choice of topic will be judged according to the subject group's requirements outlined above. The student prepares a one-page abstract of the topic of the research proposal, gives the abstract to all members of the Supervisory Committee, and schedules a meeting of the Supervisory Committee with the student present. The Supervisory Committee discusses the abstract and decides whether or not the topic is acceptable. This decision considers the relation of the topic to the research areas of the group to which the student belongs and the potential of the topic for allowing the candidate to demonstrate originality. When a topic is accepted by the Supervisory Committee, all members sign a form accepting the topic. The signed form is given to the Chairperson of the Graduate Program Committee.

The following protocol is now mandatory for a student defending his/her Research Proposition or MS thesis or PhD dissertation, with the obligation on the student to ensure compliance:

1. The students must submit the time, date, location, and title of the examination for publication in the weekly "Kansas State Chemistry" flyer to the person responsible for its preparation. The information must be submitted in the week prior to the examination.

2. Notification of the oral defense must be posted in Willard Hall, King Hall, and the Chemistry/Biochemistry building in the appropriate locations at least three business days before the examination. To implement his/her compliance, the student prepares 3 copies of a letter-size announcement about the examination and presents them five business days before the examination to the person who will handle the distribution of the information (posting, e-mailing). The announcement will include the type of examination and the date, time, location, and title of the examination.

3. The oral defense must be held in a room that has an assigned seating capacity of at least 20 people.

Failure to comply with these requirements may mean that the oral defense will need to be rescheduled so that proper notification can be given for the new date and time.

The time for preparation of the research proposal depends upon the group chosen by the student:

Analytical Group:

The student is encouraged to prepare for and complete this examination as soon as possible after completion of the cumulative exams.

Biological Group:

The student is encouraged to prepare for and complete this examination as soon as possible. *A topic **must** be chosen before the end of the first **two weeks** of the student's fifth semester (excluding summers).*

Inorganic Group:

The student is encouraged to prepare for and complete this examination as soon as possible after completion of the cumulative exams.

Materials Group:

The student is encouraged to prepare for and complete this examination as soon as possible after completion of the cumulative exams.

Organic Group:

The student is encouraged to prepare for and complete this examination as soon as possible. *A topic **must** be chosen before the first **two weeks** of the student's fifth semester (excluding summers).*

Physical Group:

The student is encouraged to prepare for and complete this examination as soon as possible.

Successful completion of the research proposition oral examination is required as part of the requirements of the preliminary examination process that must be completed in order to be admitted to candidacy for the Ph.D. degree.

Deadline for taking the research proposition oral examination

The Chemistry Department requires the following deadlines to be met for taking the research proposition oral examination:

For new students with B.S. or M.S. degrees who are in the Ph.D. program:

Analytical Group:	By the end of the student's fifth semester (excluding summers).
Biological Group:	By the end of the student's sixth semester (excluding summers).
Inorganic Group:	By the end of the student's sixth semester (excluding summers).
Materials Group:	By the end of the student's sixth semester (excluding summers).
Organic Group:	By the end of the student's sixth semester (excluding summers).
Physical Group:	By the **start** of the student's fifth semester (excluding summers). The examination **must be passed** before the start of the sixth semester (excluding summers).

In case of failure of the first research proposition oral examination, the supervisory committee may approve a second examination if there is no more than one dissenting vote. A second examination may not be taken sooner than three months following the initial failure.

For students who have completed an interim M.S. degree.

The term semester below refers to semesters in the Ph.D. program.

Analytical Group:	By the end of the student's third semester (excluding summers).
Biological Group:	By the end of the student's fourth semester (excluding summers).
Inorganic Group:	By the end of the student's fourth semester (excluding summers).
Materials Group:	By the end of the student's fourth semester (excluding summers).
Organic Group:	By the end of the student's fourth semester (excluding summers).
Physical Group:	By the start of the student's fourth semester (excluding summers).

In case of failure of the first research proposition oral examination, the supervisory committee may approve a second examination if there is no more than one dissenting vote. A second examination may not be taken sooner than three months following the initial failure.

Failure to meet these deadlines will cause a 50% reduction in stipend until the examination is completed (teaching and/or research duties will remain unchanged).

Graduate School Regulations regarding timing of Final Exam

The Graduate School requires that the preliminary examination be successfully completed at least SEVEN months before the final oral examination.

Examination Procedures

When the Supervisory Committee and the student decide that the research proposition oral examination should be taken, *the student should notify the Graduate School one month before the scheduled date.*

Final Examination (M.S. and Ph.D.)

The Ph.D. Final Examination

Examining Committee for the Ph.D. Degree

On completion of the Preliminary examination, the student is officially designated as a candidate for the Ph.D. degree by the Dean of the Graduate School, who also appoints a member of the Graduate Faculty to the supervisory committee to serve as chairperson of the new committee (the examining committee) for the final oral examination.

Submitting of the Ph.D. Dissertation

The student must present the dissertation to the chairperson of the examining committee who has to sign to acknowledge that the dissertation is in acceptable form to read and make such recommendations as deemed appropriate. The whole examination committee examines a final copy of the doctoral dissertation and committee examines a final copy of the doctoral dissertation and reports on an official form as to whether or not it is in acceptable form before the final examination may be scheduled. All members must sign their approval or disapproval of the dissertation on the official Approval form. The form must be brought to the Graduate School office at least one week before the final examination with an abstract of the dissertation, a title page for the abstract and information as to date, time, and place for the final examination.

Time and Location of Examination

The final oral examination must be given on the Manhattan campus of KSU at a date and time that must be scheduled at least two weeks before the desired date. Oral examinations should NOT be scheduled during times when classes are not in session.

The following protocol is now mandatory for a student defending his/her Research Proposition or MS thesis or PhD dissertation, with the obligation on the student to ensure compliance:

1. The students must submit the time, date, location, and title of the examination for publication in the weekly "Kansas State Chemistry" flyer to the person responsible for its preparation. The information must be submitted in the week prior to the examination.

2. Notification of the oral defense must be posted in Willard Hall, King Hall, and the Chemistry/Biochemistry building in the appropriate locations at least three business days before the examination. To implement his/her compliance, the student prepares 3 copies of a letter-size announcement about the examination and presents them five business days before the examination to the person who will handle the distribution of the information (posting, e-mailing). The announcement will include the type of examination and the date, time, location, and title of the examination.

3. The oral defense must be held in a room that has an assigned seating capacity of at least 20 people.

Failure to comply with these requirements may mean that the oral defense will need to be rescheduled so that proper notification can be given for the new date and time.

Committee Evaluation of the Examination

After the presentation of the defense of the dissertation research and the oral examination, the examining committee reports on an official form the results of the examination to the Graduate School. Three-fourths of the official examining committee or their duly appointed substitutes must examine and approve the candidate before he or she shall be deemed to have passed the final oral examination. The chairperson of the examining committee always has a vote. A refusal to vote by the chairperson or any other member of the committee will be recorded as a negative vote. With the permission of three-fourths of the supervisory committee, a failed oral examination may be retaken three months or more from the date of the failure.

Final Approval of the Ph.D.

After the final oral examination has been passed, and all the requirements for the degree met, the candidate shall be recommended by the Dean of the Graduate School to the Faculty Senate for approval of the degree award.

M.S. Final Examination

For the M.S. degree, no oral examinations are given over course work. Instead, the candidate for the M.S. degree must submit to an oral examination in defense of his/her thesis research after the thesis has been approved by his/her supervisory committee. A satisfactorily typed copy of the thesis must be circulated to committee members at least two weeks before the proposed date of the oral examination. The oral examination is administered and judged by the student's supervisory committee. The committee members should sign the Approval Form, which is then brought to the Graduate School office at least a week before the final examination **together with an abstract of the thesis**, a title page for the abstract and information as to date, time and place for the final examination. The time and location of the examination shall be the same as for the Ph.D. examination.

The following protocol is now mandatory for a student defending his/her Research Proposition or MS thesis or PhD dissertation, with the obligation on the student to ensure compliance:

1. The students must submit the time, date, location, and title of the examination for publication in the weekly "Kansas State Chemistry" flyer to the person responsibile for its preparation. The information must be submitted in the week prior to the examination.

2. Notification of the oral defense must be posted in Willard Hall, King Hall, and the Chemistry/Biochemistry building in the appropriate locations at least three business days before the examination. To implement his/her compliance, the student prepares 3 copies of a letter-size announcement about the examination and presents them five business days before the examination to Linda Gibbs, who will handle the distribution of the information (posting, e-mailing). The announcement will include the type of examination and the date, time, location, and title of the examination.

3. The oral defense must be held in a room that has an assigned seating capacity of at least 20 people.

Failure to comply with these requirements may mean that the oral defense will need to be rescheduled so that proper notification can be given for the new date and time.

Abstract of the M.S. Thesis or the Ph.D. Dissertation

Two copies of an abstract, on the same paper as that used in the manuscript, is to be included with each copy of the thesis or dissertation. This abstract should not exceed 350 words and should have a title page essentially the same as the title page of the thesis or dissertation. The signature of the major professor is **not** required on the title page of the abstract. The abstract should **not** be numbered consecutively with the rest of the thesis.

Copies of the M.S. Thesis or Ph.D. Dissertation

Three copies of the thesis or dissertation shall be submitted to the Dean of the Graduate School at least ONE month prior to commencement. Two of these bound copies remain in the Library and the third is for the Department. One abstract is bound with the thesis or dissertation and the other is for the University Microfilm, Inc. Departmental Regulations ALSO require TWO additional copies to be submitted to the major professor.

Theses or dissertations are bound in accordance with the specifications of the Library Binding Institute. The student must pay for the cost of binding. The amount of the current charge is available in the Graduate School office or in the "Graduate School Student Guide" published each semester. **Payment for binding must be made by money order or cashier's check made payable to "KSU Library".**

Agreement Form for University Microfilms, Inc. (Ph.D. only)

The student must complete the agreement from for the University Microfilms, Inc. Dissertations are microfilmed. Abstracts are published in the monthly publication, "Dissertation Abstracts". **A money order or cashier's check payable to University Microfilms** must be presented tot he Graduate School office. The student should check with the Graduate School office as to the cost of mailing the dissertation.

Survey of Earned Doctorates and K-State Alumni Association Questionnaire (Ph.D. only)

The student must complete the questionnaire for the "Survey of Earned Doctorates" and the questionnaire for the K-State Alumni Association.

Dissertation, Thesis and Report Format (M.S. and Ph.D.)

The Graduate School has specified the standards of preparation for all dissertations, theses and reports. Full details are given in the Graduate Faculty Handbook and the "Graduate School Student Guide" (published each semester). They are summarized below:

a) Binding must meet the specifications for Class A binding of the Library Binding Institute.

b) The layout should consist of:

Title Page
Table of Contents
Lists of Figures and Tables
Acknowledgments (personal, if any, and/or financial support)
Introduction (setting for the context and statement of objectives)
Descriptive, analytical, or critical sections
Conclusions
References and bibliography
Appendices as needed

c) A black record on white paper no smaller than 8-1/2" by 11" of at least 50% cotton fiber content and not less than 16 pound weight. Reproduction by Multilith, Gestetner, Xerox, or other methods acceptable if all other criteria are met.

d) Have text or other material on only one side of each sheet, and be typed single or multiple spaced.

e) Have margins which allow for binding. The binding sewn on left and subsequent trimming require margins of 1.50" on the left and at least 1 inch on the other edges.

f) Have pages, figures, and charts numbered uniquely and in an obvious serial manner for ease in making reference to the text.

Foreign Language Capability

There are no formal foreign language requirements for advanced degrees in the Department of Chemistry, Kansas State University. However, the importance of achieving a reading ability in a foreign language with a significant chemical literature (especially German) cannot be emphasized enough. It is assumed that every entering graduate degree candidate will have completed some type of foreign language training as part of his or her undergraduate degree work. If not, it is hoped that students deficient in such ability will avail themselves of the opportunity for such training as part of their graduate work at this university. Indeed, such students are strongly urged to do this for the sake of their professional careers.

Selection of a Major Professor (Research Director)

The selection of a major professor (i.e., a research director) is one of the most critical decisions facing a new graduate student. The professor under whose guidance the student will carry out his/her graduate research may have a significant influence on the student's future. Consequently, the choice of a research director should be made in as rational a manner as possible.

In order to expose new graduate students to the research being done by the faculty, and to aid the student in the selection of a research director, most faculty members will present research seminars to all the new graduate students. These faculty research seminars are scheduled during October and November at times that do not conflict with other regularly scheduled events. Students are required to attend the research seminars of all faculty members, or to arrange individual meetings with any faculty members who do not choose to give a research seminar but are accepting students into their research groups.

Each new graduate student will be contacted by the Chairperson of the Graduate Program Committee during the first semester and given a sheet containing the names of all faculty members who are willing to accept students into their research groups.

Before his/her affiliation with a research director, each student must show evidence that he/she is acquainted with the research of all faculty members accepting students. Attendance at the research seminars of all faculty members whose names are included on the student's sheet, mentioned above, will fulfill this requirement, and each student in attendance must obtain the initials of all faculty members whose names appear on his/her sheet either at the research seminars or in individual meetings. Before the selection of a research director can be made, however, it is necessary to consult with the Head of the Department of Chemistry concerning a student's choice. At this meeting a first and second choice of research director should be given. When the choice of research director has been approved by the Department Head, the student's sheet is completed by the Department Head's signature and by the signature of the research director, signifying that he/she accepts the student. The sheet with all required initials and signatures is then returned to the Chairperson of the Graduate Program Committee by the end of the first semester of the student's enrollment at Kansas State.

As already noted, all students are required to attend the research seminars of all faculty members, whether or not they are in an area of mutual interest. Students are also invited and encouraged to arrange individual meetings with faculty members if there appears to be a possible area of mutual interest that could be further developed by additional discussion as a substitute for or as a supplement to the research seminar.

Supervisory Committee - M.S. Candidate

Within the first year of study the student and major professor should identify other members of the supervisory committee who will advise in developing a program of study and act as the committee for the final examination.

A committee of at least three Graduate Faculty members shall supervise the program of study of candidates for the master's degree. The candidate's major professor shall be a committee member and serve as chairman. After the candidate's program of study has been approved by his or her supervisory committee, it shall be transmitted by the department head to the Dean of the Graduate School for approval. This must be done prior to the end of the second semester for full-time students or at the completion of nine hours for part-time students.

No master's or doctoral supervisory committee may include more than one person who is not a full-time regular member of the Graduate Faculty. Thus, no more than one visiting, adjunct, part-time, or emeritus professor or Associate Graduate Faculty member may serve on a master's or doctoral supervisory committee. Adjunct or emeritus professors may not serve as sole major professor but they may serve as co-major professor with a full-time regular member of the Graduate Faculty; in the case of doctoral committees, the full-time regular member must be certified to direct dissertations. A full-time faculty member is one who holds at least a 0.9 appointment.

The Department of Chemistry requires a thesis concerning an original research project. The major professor will assume the responsibility for having the candidate prepare the thesis in acceptable English. The thesis should represent the best writing possible by the student and is not to be written or extensively edited by the major professor or by the Head of Department. The Graduate School office is not expected to make more than the minimum editorial revisions. The manuscripts submitted to the Graduate School shall be considered by the candidate and the major professor to be in the final and acceptable form. Three copies of the thesis and abstracts must be submitted to the Graduate Office to be made available in the library. This thesis will be defended by the student at the final examination, when the supervisory committee will act as an examination committee (see "M.S. Final Examination" on a previous page).

Supervisory Committee - Ph.D. Candidate

Membership of the Supervisory Committee

The Dean of the Graduate School shall appoint a supervisory committee at the beginning of a prospective Ph.D. candidate's first year of graduate work. The committee shall consist of the major professor and at least three other members of the Graduate Faculty. **One member of the committee must be a member of the Graduate Faculty not in the same department or degree program in which the student is working**. This member will participate as an equal member and have continuing responsibility for assisting in planning the program of study, advising the student, and meeting with other committee members in order to assure a quality Ph.D. program. He or she is not the final orals chairman. The major professor shall be chairman of the supervisory committee. Until a major professor has been chosen, the department head shall act as a chairman. In addition to those members recommended, the Dean of the Graduate School may appoint additional members to the supervisory committee from the Graduate Faculty.

The final oral examination is conducted by a modified examination committee which is discussed in the section "Final Oral Examination".

Duties of Supervisory Committee

The supervisory committee, in conference with the candidate, shall formulate a program of study and file it in the Graduate Office, approve plans for developing the candidate's interest in and capacity for creative scholarship, see that the regulations of the University are met, and make any necessary subsequent adjustments in the program of study. The department heads or interdepartmental chairmen will review the program of study.

The supervisory committee shall administer the Preliminary Examination in the manner described in the section "Preliminary Examinations" under the section "Research Proposition Oral Examination".

The duties of the examining committee for the final oral are discussed in the section "Final Oral Examination".

Supervisory Committee Restrictions

No master's or doctoral supervisory committee may include more than one person who is not a full-time regular member of the Graduate faculty. Thus, no more than one visiting, adjunct, part-time, or emeritus professor or Associate Graduate Faculty member may serve on a master's or doctoral supervisory committee. Adjunct or emeritus professors may not serve as sole major professor but they may serve as co-major professor with a full-time regular members of the Graduate Faculty; in the case of doctoral committees, the full-time regular member must be certified to direct dissertations. A full-time faculty member is one who holds at least a 0.9 appointment.

Review of Academic Progress

Each student's progress will be reviewed at the end of the student's first academic year. At that time, the faculty will determine that the student:

1) is cleared for the Ph.D. program; student may opt to pursue M.S. before Ph.D.;

2) is to be placed in a M.S. program, with admission to the Ph.D. program subject to faculty approval upon successful completion of the M.S. thesis defense;

3) is to terminate his/her studies with the M.S. program.

4) is to be terminated immediately.

Policy for Academic Probation and Dismissal

Admission to and continuation in the Graduate School depends upon a satisfactory level of achievement. Accordingly, students who do not maintain satisfactory progress in their graduate studies are placed on probation or denied the privilege of continued enrollment in the University or in a specific graduate curriculum and, in either case, will be so notified by the Dean of the Graduate School.

Actions that lead to automatic placing on probation

Graduate Students will be placed on probation when:

1. At the time of admission, the student's prior academic record does not meet the regular, published admission standards. The student's status is reviewed after completing 9 hours of course work taken for graduate credit at Kansas State University. A student who has achieved a GPA of 3.0 or higher for the first 9 hours of graduate credit, exclusive of individualized study, and removed all deficiencies specified at the time of admission, will be placed in good standing.

2. The cumulative grade point average (GPA) is less than 3.0 in courses taken for graduate credit.

3. Upon recommendation of the major professor or student's committee that satisfactory progress toward a degree is not being maintained.

Actions that lead to a return to regular status

Students placed on probation for deficient grades will be removed from probation if they have a cumulative GPA of 3.0 in all courses taken for graduate credit (exclusive of individualized study such as research, problems, practicums, readings, etc.). Normally this goal must be achieved within 2 semesters for full time students and within 12 credit hours for part-time students.

Effect of low grades in courses taken for undergraduate credit

Courses taken for undergraduate credit with grades of C or lower are not used in the 3.0 GPA calculation. However, the faculty is expected to seriously consider if the student in question will be able to succeed, and make a recommendation accordingly.

Conditions that must be met in order for a student to be awarded a graduate degree

In order for a student to be awarded a graduate degree:

(i) The student must not be on probation.

(ii) All requirements of the Graduate School, the student's academic program area, and the student's supervisory committee must be met and the student must be enrolled during the semester in which the degree requirements are completed.

Conditions that may lead to a student being denied continued enrollment in the University or in the graduate curriculum

A graduate student may be denied continued enrollment in the University or in his/her graduate curriculum in the following cases:

1. Failure to satisfy conditions necessary for removal from probationary status.

2. Failure to meet published departmental or University requirements or failure in preliminary examinations or final degree examinations. Although limited repetition of such examinations may be permitted upon recommendation of the faculty in borderline cases, a single severely adverse result in such examinations is sufficient to deny continued enrollment.

3. Demonstrable lack of diligence in meeting published degree requirements, or in maintaining satisfactory progress toward a graduate degree.

4. Failure to acquire mastery of the methodology and content in a field sufficient to complete a successful thesis or dissertation.

The right of petition to the Graduate School

The Readmission Committee and its composition

A student who has been denied continued enrollment may petition for reinstatement to the same curriculum or for admission to a different one. Petitions for readmission are heard and decided by a standing 5-person Readmission Committee consisting of four members from the Graduate Faculty, one being named for each of the four subcommittees, plus the Dean of the Graduate School (or his designated representative) who presides and who votes only to break a tie. The initial terms of the members are determined by lot, and a staggered succession is established so that each year

one of the subcommittees makes a four-year appointment. Should a position become vacant before the term ends, the subcommittee makes an appointment for the unexpired term. Appointments may be made from among any full-time faculty members within the subcommittee's area, and members may be reappointed. Each subcommittee should be prepared to name a temporary alternate in the event that its principal must be disqualified because of his or her direct involvement in a particular case.

The authority of the Readmission Committee

The committee has the authority to decide that a student:

(i) may not be readmitted to graduate study,

(ii) may be readmitted, with or without conditions, to the current program,

(iii) may be readmitted, with or without conditions, to a different program, provided the faculty of that program approves the admission.

Mechanism for submitted a petition

Petitions for readmission **must be submitted in writing to the Dean of the Graduate School**, setting forth pertinent arguments and extenuating circumstances. The petition will be assigned by the Dean to the Readmission Committee for prompt hearing. The student may appear before the Readmission Committee to make an oral presentation. In hearing petitions for reinstatement, the Readmission Committee has the duty to consult with faculty members who can identify the basis for discontinuing enrollment. These should include the department head or the graduate program director and the student's major professor.

Additional requirements for petitions to enter a new curriculum

In the petitioning to enter a new curriculum the student must submit credentials for regular departmental review. If the department is unwilling to accept the student, the petition shall be considered denied. If the department recommends admission, the Readmission Committee receives and decides the petition.

Status of the student after a successful petition

Students whose petitions are granted are **readmitted on probation as a condition of readmission**. In such cases the Readmission Committee usually stipulated enrollment in a specific number of hours or courses as well as other conditions. To regain regular status, the reinstated student must also achieve a cumulative GPA of 3.0 in the first 9 credit hours of courses taken for graduate credit following readmission, exclusive of individualized study. The Dean of the Graduate School promptly notifies students of the action taken on their petitions.

Graduate School Practice on Probation and Dismissal

The following summarizes the points established by the Graduate School concerning the determination of criteria for probation and dismissal:

1. Students admitted on probation who make poor grades their first semester are subject to dismissal at the end of the first semester.

2. There is no automatic dismissal of any student without consultation with the department involved.

3. Students who are subject to dismissal at the end of the first semester due to entry on probation and poor grades their first semester are brought to the attention of the department by letter requesting the department to recommend dismissal or further probation.

4. Students admitted in good standing and put on probation by getting grades below B in courses taken for graduate credit may get off probation by having a cumulative GPA of 3.0 in courses taken for graduate credit.

5. All courses attempted for graduate credit count in the application of the 3.0 GPA rule, not just graduate courses on the program of study.

6. All these points dealing with course grades are for regular courses exclusive of individualized study.

7. The Graduate School is always willing to discuss any probation or dismissal with the department involved.

Chemistry Department Practice on Probation and Dismissal

Students who earn an F in any course are in serious danger of being recommended for dismissal by the Chemistry Faculty.

Procedure for Dismissal

It is critical to distinguish between dismissal from a research group and dismissal from the graduate program in the Department of Chemistry.

1. The research director has the authority to dismiss a graduate student from that research group but not from the graduate program in the Department of Chemistry.

2. The Graduate Faculty of the Department of Chemistry has the authority to recommend that a graduate student be dismissed from the graduate program in the Department of Chemistry.

3. The Dean of the Graduate School retains the authority to actually carry out the dismissal of a graduate student from the graduate program in the Department of Chemistry upon receiving a recommendation for dismissal from the Graduate Faculty of Department of Chemistry.

Financial Support Policy

A graduate student shall not be allowed financial support from any University source beyond a period of 2-1/2 years of residence time if he/she is engaged in a master's program, five years of residence time if in a Ph.D. program, or six years if he/she has taken an interim M.S. degree in this Department and continued for the Ph.D. Residence time begins with the semester during which the student first takes diagnostic examinations. This regulation in no way obligates the Department of Chemistry to support a student for the periods of time mentioned above. Support may be withdrawn at any time if the student if not fulfilling his/her responsibilities.

Financial support from the teaching budget should not be provided in the summer term for students on probation.

No stipend (teaching, research, or fellowship) will be authorized for a student for the third semester of his/her graduate work (excluding summers) unless he/she has arranged a supervisory committee and submitted a program of study to the Graduate School.

Right of Petition concerning Chemistry Department Regulations

As pointed out in the introduction to these regulations, they are meant to be guidelines set out to ensure that the graduate program operates smoothly. They are also meant to inform the student of their responsibilities to him/her self, his/her profession, the faculty, and the Department. The capable, conscientious student will have no difficulty earning a degree within the framework of these guidelines. However, it is recognized that circumstances beyond the control of a student may make it difficult or impossible to comply with all regulations. In such cases, a student may submit a petition to the Chairperson of the Graduate Program Committee in which petition he/she states his/her problem and the desired course of action. The Graduate Program Committee will consider such petitions carefully and either act on the petition or make recommendations to the Faculty of the Department of Chemistry. In the latter circumstance the Faculty as a whole will then consider the matter and act accordingly.

We wish to emphasize the student's right of petition. Reasonable petitions from students who have shown promise in course work, research, and teaching will normally be favorably considered.

It is to be noted that there are some regulations which emanate from the Graduate School. In addition there may be other, more specific regulations of the Graduate School which may be applied by that office in special cases. The Graduate School alone has the prerogative in enforcing any such rules and policies, and any petitions or appeals concerning any enforcement of this type will have to be considered by that office. If in doubt, the student is encouraged to consult either with the Chairperson of the Graduate Program Committee or with the Dean of the Graduate School.

Graduate Program Committee

The primary function of the Graduate Program Committee is to deal with all matters which pertain to the affairs of graduate students in residence and to ensure the smooth functioning of the graduate program.

Clerical duties of the Committee include:

1. Scheduling of faculty research seminars, cumulative examinations, and diagnostic examinations.

2. Informing the Department Faculty of the results of placement and Cumulative examinations, as well as making certain that each student is informed of his/her results.

3. Informing a student that he/she has completed the cumulative requirement by transmitting a letter to that effect to the student and his/her major professor.

The Committee also watches the progress of individual students through their degree programs. A warning may be issued to a student not making satisfactory progress, or the Committee may recommend to the Department Faculty that an individual be discharged for work or conduct unbecoming a student engaged in a professional education.

Finally, the Graduate Program Committee considers petitions from students having difficulties with the regulations that apply to the degree programs.

A Typical Graduate Student Program of Accomplishments

The application of these regulations is illustrated by a listing of the accomplishments of a typical graduate student after entry in the Fall Semester.

Year 1

General Requirements: Take diagnostic exams; take area/course work, exams for advanced standing if desired; enroll in and complete any suggested remedial courses; choose major professor (research director) during first semester; begin taking cumulative exams during second semester (Analytical, Inorganic, Organic, Physical).

Fall Semester

August - Take diagnostic exams in four areas of chemistry. Take exams for advanced standing if desired. Enroll in any suggested remedial courses.

October-November - Faculty research seminars.

December - **Choose major professor (research director) by end of the first semester, and discuss choice with Department Head.**

Spring Semester

January - Take exams for advanced standing if desired.

January - Begin taking cumulative exams (Analytical, Inorganic, Organic, Physical).

Continue any required remedial course work.

Summer Term - Research

Consult with major professor concerning appointment of a supervisory committee and formulation of a program of study, and submit these through the Department Head to the Graduate School by 31 July. NO STIPEND IS AUTHORIZED FOR THIRD SEMESTER UNTIL THIS IS DONE.

Year 2

General Requirements: Advanced course work, seminar, and research. If in Ph.D. program continue cumulative exams (Analytical, Inorganic, Organic, Physical) and complete cumulative exams (Analytical, Inorganic, Physical). If in Ph.D. program complete research proposition oral exam if ready to do so. Complete M.S. degree requirements.

Year 3

General Requirements: Complete cumulative exams in the first semester (Organic). Complete research proposition oral exam, if not done in Year 2, by the start of the first semester (Physical) or the end of the first semester (Analytical) or the end of the second semester (Biological, Inorganic, Materials, Organic).

FINANCIAL SUPPORT FOR M.S. CANDIDATES TERMINATES AT END OF FIRST SEMESTER.

Complete Ph.D. course work, if not done in year 2.
Research

Year 4

Complete Ph.D. research and defend dissertation in final oral examination.

If Ph.D. degree requirements are still not met by the end of the fourth year, the following deadlines apply:

FINANCIAL SUPPORT FOR Ph.D. CANDIDATES WHO <u>HAVE NOT</u> TAKEN AN INTERIM M.S. DEGREE TERMINATES AT END OF <u>FIFTH YEAR</u>.

FINANCIAL SUPPORT FOR Ph.D. CANDIDATES WHO <u>HAVE</u> TAKEN AN INTERIM M.S. DEGREE TERMINATES AT END OF <u>SIXTH YEAR</u>.

Policy on Competency Revalidation of Graduate Students

Master's Degree Programs

If a student's program of study includes any course credits more than six years old at the time the student is about to complete all degree requirements, the final Master's examination will normally include an examination over the body of course work listed on the program of study. The form and content of this examination is determined by each Master's program, which may impose additional requirements for revalidating the student's competency in the supporting course work. In a Master's program for which such a revalidation examination may be inappropriate, an exception to this policy may be sought from the Dean of the Graduate School.

Doctoral Degree Programs

A full-time doctoral student should normally complete the preliminary examination within three years of entry into the doctoral program. Upon satisfactory completion of the examination, the student is automatically advanced to candidacy for the degree.

The period of candidacy may last up to five years from the end of the semester in which the preliminary examination was passed. If a student fails to complete both the dissertation and final oral examination within this period, the student will be dropped from candidacy. Any student whose candidacy has thus lapsed may regain the statue of a doctoral candidate by successfully retaking the preliminary examination.

Failure to maintain continuous enrollment from the completion of the preliminary examination until the dissertation is accepted by the Graduate School will also result in loss of candidacy.