

The Department of Mathematical Sciences

**Handbook for Graduate Studies in
Mathematical Sciences at the University
of Cincinnati**

<http://math.uc.edu>

Revised August 2006.

Table of Contents

Area	Page
Section 1 – The Graduate Program	4
1. The Graduate School	
2. The Department of Mathematical Sciences	
3. Graduate Degrees Offered	
Section 2 – Admission to the Graduate Program	6
1. Admission	
1. Requirements	
2. Types	
3. International Students Admission	
2. After Admission	
3. Transfer of Credits	
Section 3 – Registration, Leaves, Graduate Credits, Grades, Review	10
1. Registration	
2. Leaves	
3. Graduate Credits	
4. Grades	
5. Student Review	
Section 4 – Financial Aid	12
1. Types of Financial Aid	
2. Conditions of Financial Aid	
3. English Proficiency Testing	
Section 5 – Master of Science (MS) in Mathematical Sciences	15
1. Description	
2. Requirements	
3. Candidacy, etc.	
4. Minimum Academic Performance	
Section 6 – Master of Science (MS) in Statistics	16
1. Description	
2. Requirements	
3. Candidacy, etc.	
4. Minimum Academic Performance	

Section 7 – Master of Arts (MAT) in Teaching of Mathematics	18
1. Description	
2. Requirements	
3. Candidacy, etc.	
4. Minimum Academic Performance	
Section 8 – Doctorate (Ph.D.) in Mathematical Sciences	19
1. Description	
2. Requirements	
3. Candidacy, etc.	
4. Minimum Academic Performance	
Section 8a – Doctorate (PhD) in Mathematical Sciences with a Statistics Concentration	23
1. Description	
2. Requirements	
3. Candidacy, etc.	
4. Minimum Academic Performance	
Section 9 – Special Rules	26
1. Right to Review Records	
2. Nondiscrimination Policy	
3. Grievance Procedures	
4. Misconduct	
5. Probation and Dismissal	
6. Implementation of Provisions of this Handbook	

Section 1 - The Graduate Program

1.1 Division of Research and Advanced Studies

The Graduate School promotes research and graduate studies at the University of Cincinnati. It is headed by the Senior Vice President and University Dean of The Graduate School (*The University Dean*.)

Rules and policies of The Graduate School cover educational policies and requirements, admission of students, candidacy, and awarding of degrees. These rules are formulated by the Graduate Council and approved by the All-University Graduate Faculty.

Each department sets rules on courses of study, examinations, and requirements and makes decisions on the admission, evaluation, and graduation of individual graduate students.

The University Dean coordinates, implements, and administers all regulations pertaining to graduate degree programs, including those of the Department of Mathematical Sciences.

The *University Graduate Handbook* contains the rules and regulations of The Graduate School and can be accessed on line at: www.grad.uc.edu.

The *Graduate Handbook of the Department of Mathematical Sciences* (the "Department Graduate Handbook") contains the graduate rules and regulations of the Department of Mathematical Sciences and is in compliance with the rules and regulations of Advanced Studies. Copies of the handbook are available in the Departmental office, or online at: <http://math.uc.edu>.

Further relevant information, such as *Student Code of Conduct* and *Student Grievance Procedures* can also be accessed through the University Graduate Handbook listed above.

1.2 The Department of Mathematical Sciences

The administrative organization of the graduate program of the Department of Mathematical Sciences consists of the following seven units:

1.2.1 The Graduate Program Director (GPD)

The Graduate Program Director (GPD) is appointed by the Department Head. The GPD sets guidelines for graduate students and, with the Graduate Advisors Committee (see below) and the dissertation advisors, monitors the students' progress by evaluating their program of courses as well as their success in passing the required examinations. In case of substandard academic performance, the GPD can place a student on probation.

The GPD, together with the Assistant Department Head, monitors the performance of Graduate Assistants duties.

The GPD chairs the Graduate Advisors Committee, the GSEC, and serves ex-officio in the Graduate Affairs Committee (see below).

The GPD works with the Graduate Secretary in administering the graduate budget, processing appointments, keeping records, and directing necessary correspondence.

The GPD updates graduate brochures and other information materials; and together with the Graduate Affairs Committee (see below) revises the Department Graduate Handbook when rules and policies change.

The GPD coordinates the Department's recruiting of graduate students and in conjunction with the GSEC (see below) makes admission and financial aid decisions.

The GPD oversees arrangements for the MS oral examination in collaboration with the Graduate Secretary.

The GPD is responsible for gathering assessment data on the effectiveness of the graduate program.

The GPD coordinates the orientation of new students and new teaching assistants prior to the beginning of classes in the Fall.

The GPD represents the Department in the A&S Graduate Council and keeps the necessary contacts with other offices and organizations involved with graduate studies. In particular, the GPD submits information concerning UC's graduate program to the Notices of the American Mathematical Society and to other reference sources.

1.2.2 Graduate Students Evaluation Committee (GSEC)

The Graduate Students Evaluation Committee (GSEC) consists of the GPD (chair) and two other faculty members elected by the Department.

The GSEC selects applicants for admission to the MS & PhD programs throughout the year and makes decisions on awarding financial aid to new and current students.

The GSEC selects new students to nominate for fellowships and grants.

1.2.3 Graduate Affairs Committee

The Graduate Affairs Committee is appointed by the Department Head. It consists of a Chair, the GPD, and other faculty members.

The Graduate Affairs Committee makes recommendations to the Department's faculty concerning new graduate courses in the MS & PhD programs and changes in requirements for the MS and Ph.D. degrees. The faculty votes on the Committee's recommendations at a meeting or by mail ballot.

The Committee makes periodic reviews of the graduate curriculum and of the Department Graduate Handbook. The Committee decides on dismissal, termination, or reduction of financial aid of graduate students.

The Committee hears students' petitions and grievances. The committee also selects the recipients of the departmental Outstanding Graduate Assistant, the Outstanding Doctoral Student and the Outstanding Master of Science awards.

1.2.4 MAT Committee

MAT Committee is appointed by the Department Head and consists of a Chair, the GPD, and faculty members.

The MAT Committee monitors the MAT program, reviews and revises course syllabi, maintains contact with graduates, advertises the program, and recruits students.

The MAT Committee changes the courses and requirements for the MAT degree, reviews the curriculum, and records changes to the MAT program in the department handbook.

The MAT Committee selects applicants for admission to the MAT program and makes decision on the financial aid to new and continuing students. It also decides on dismissal, termination, or reduction of financial aid of graduate students as well as hearing students' petitions and grievances.

1.2.5 Executive Committee

The Executive Committee is partly elected by the Department's faculty and partly appointed by the Department Head. The Executive Committee is the departmental body to which graduate students can appeal against decisions by the GPD, the GSEC, or the Graduate Affairs Committee.

1.2.6 Graduate Advisors Committee

The Graduate Advisors Committee is chaired by the GPD and consists of faculty members appointed by the Department Head.

Upon entering the graduate program, each student is assigned a graduate advisor who generally belongs to the Graduate Advisors Committee. Students can ask the GPD to change their advisor at any time.

Students must consult with their advisor at least one time per quarter, prior to registration, to obtain approval of their schedule of courses. Each course change, add or drop, should be authorized by the graduate advisor.

The advisors monitor and report their advisees' progress to the GPD. At the beginning of Spring Quarter, the Graduate Advisors Committee reviews each graduate student who has not yet chosen a dissertation advisor.

The Graduate Advisors Committee evaluates, and when necessary, ranks current students who are applicants/nominees for fellowships and grants.

1.2.7 Assistant Department Head

The Assistant Department Head assigns duties to graduate assistants after consulting with the GPD on their academic performance and their ability to perform their duties.

The Assistant Department Head consults with the GPD if problems arise in the performance of a GA's duties.

1.2.8 Graduate Secretary

The Graduate Secretary sends information packages and applications to prospective students, receives and processes their applications, and keeps necessary contacts with the applicants. After admission, the Graduate Secretary processes awards, enrollment, and payroll forms. The Graduate Secretary organizes the scheduling of office hours for GA's.

The Graduate Secretary is responsible for filing students' grade reports, teaching evaluations, and annual reviews, for recording progress in the degree program in the student's permanent file, and for processing degree awards.

The Graduate Secretary also schedules MS and MAT oral examinations and schedules Ph.D. preliminary examinations.

1.3 Graduate Degrees Offered

The Department of Mathematical Sciences offers graduate programs leading to the following degrees:

1.3.1 Master of Science (MS)

The MS degree prepares students for employment in industry, business, government, and for entering the Ph.D. program. It typically requires two academic years, although it can and has been earned in one year (see Section 5).

1.3.2 Master of Science in Statistics (MS)

The MS in Statistics degree prepares students for entry level employment as statisticians in industry or government, as well as to prepare students for entry into Ph.D. programs in Statistics. It typically requires two academic years, although it can and has been earned in one year (see Section 6).

1.3.3 Master of Arts in Teaching of Mathematics (MAT)

The MAT is a three summer long program for certified secondary school teachers (see Section 7).

1.3.4 Doctor of Philosophy Ph.D.

The Ph.D. degree represents the achievement of a general knowledge of the various branches of mathematics, the ability to communicate mathematics in both written and oral form, and a demonstrated creative ability in a particular branch of mathematics. It requires about 5 to 6 years of full-time work after the Bachelor's degree (see Section 9).

Section 2 - Admission to the Graduate Program

2.1 Admission

2.1.1 Admission Requirements

For admission to full graduate standing, a prospective student should have completed the equivalent of an undergraduate major in mathematics or statistics. Applicants should have a grade point average (GPA) of at least 3.0 in mathematics.

In some cases, a student with a BA, BS, or MS in some other field or with a lower GPA will be provisionally admitted. However, every prospective student should have mastered multivariable calculus and linear algebra prior to entering the graduate program. In such cases, the GPD will inform the student prior to admission of what progress is expected.

The MAT program is designed for secondary school teachers, therefore secondary school certification in mathematics is required of MAT degree candidates. The program is not intended for individuals who want teacher certification in mathematics.

Students are admitted to one specific degree program: MS, MS in Stats, MAT, or Ph.D. Admission to the MS program does not automatically grant the student admission to the Ph.D. program. Students who wish to change their degree program must have the approval of the GPD.

2.1.2 Types of Admission

2.1.2.1 Full graduate standing

In order to maintain full graduate standing (i.e., full time status), students have to register for a minimum of 12 graduate credits per quarter (Fall, Winter, and Spring quarters). Only students with full graduate standing are eligible for financial aid.

2.1.2.2 Part-time admission

Part time students are those who are registered for fewer than 12 graduate credits per quarter. They are not eligible for financial aid.

Students who have met the minimum course requirements of their degree or have entered candidacy must register for 1 graduate credit in the Fall Quarter in order to be considered a graduate student for the entire academic year. Students with an F-1 visa need to register for 1 graduate credit each quarter.

2.1.2.3 Joint admission

The Department of Mathematical Sciences does not have formal joint degree programs with other departments.

Under special circumstances and with the approval of the GPD, a student admitted to the Department of Mathematical Sciences may also work toward a graduate degree in a different department.

Students admitted to the Department must have the approval of the GPD to take graduate courses from other departments for credit toward a graduate degree in mathematics.

Certain courses offered by the Department of Computer Science (Section 5.2.2) can be counted towards a graduate degree in mathematics without previous approval of the GPD.

2.1.2.4 Provisional admission

Provisional admission may be granted to applicants who lack undergraduate work considered essential for graduate studies in mathematics. Graduates of non-accredited institutions and graduates from accredited institutions whose scholastic records are below the standards for admission may be admitted, provided there is reason to believe their previous performance does not reflect their true ability.

Course work, without graduate credit, will be required of provisionally admitted students to make up deficiencies before admission to full graduate standing can be granted. International students may not be admitted with provisional status.

Provisionally admitted students are not eligible for financial aid.

2.1.2.5 Unclassified graduate admission

Unclassified graduate students are admitted to graduate studies but not admitted to a graduate degree program. Generally, only 15 graduate credits taken under this classification can be accepted toward a later degree program and GPD approval is necessary. The only requirement for admission as an unclassified student is evidence of a Bachelor's degree.

Unclassified graduate students are not eligible for financial aid.

2.1.2.6 Admission without a Bachelor's degree

A student without a Bachelor's degree can petition the Department for admission. After review, the Department may recommend such admission to the Graduate Council, which makes the final decision.

2.1.3 International Students Admission

2.1.3.1 General requirements

International students will be granted admission only on a full graduate standing.

Exceptions may be made for international students currently in the USA with a valid visa (e.g., spouses of graduate students).

If an international student holds a degree for which the U.S. equivalent is not known or if the Department and/or International Student Services determine that the applicant does not have the equivalent of a Bachelor's degree, the Department can submit a petition for admission without a Bachelor's degree to the Graduate Council (see 2.1.2.5 above) and provide any supporting documentation deemed pertinent.

2.1.3.2 English testing

The Test of English as a Foreign Language (TOEFL) is required of all international applicants whose native language is not English. This requirement may be waived (with permission of the University Dean) for international students who have a degree from an accredited American college or university and have studied oral and written English while at the American college or university.

A score of at least 520 on the paper based, 190 on the computer based and 68 on the internet based TOEFL is required for admission to the graduate program.

A score of at least 560 on the paper based, 220 on the computer based and 83 on the internet based TOEFL is required for a University Graduate Scholarship (UGS).

A score of at least 580 on the paper based, 237 on the computer based and 93 on the internet based TOEFL with a minimum of 58 paper, 23 in the computer and internet Section 1 (Listening Comprehension) is required for a graduate assistantship or a fellowship. This requirement is waived for students with a score of at least 520, 190 or 68 on the TOEFL, who have passed the University of Cincinnati Oral English Proficiency Test or have earned at least 50 on the Test of Spoken English (TSE) (see 2.2.1 below) or 230 if TSE was prior to July, 1995).

2.2 Application for Admission in Degree Programs

There is no separate application form for financial aid. In order to request financial aid, check the box on the admissions application form. Applications should be submitted as early as possible.

2.2.1 Application to the MS, MS in Stats and Ph.D. program

- Applications should be completed by February 1 in order to be considered in the initial review, but will be accepted as long as there are positions available.
- Applications from international students not currently holding an appropriate visa for pursuing a degree may not be considered for fall admission if they are not complete by April 1.
- Except in unusual cases, students are admitted into the graduate program Fall Quarter.
- An application is considered complete when the following have been received:
- A completed application form and the additional information sheet. (These forms are available from the Department.)
- Official transcripts of the applicant's academic record at all colleges and universities attended, including evidence of degree(s) conferred, bearing the original signature of the authorized official and the seal of the institution (to be requested by the applicant and forwarded to the Department by the institution).
- Three letters of recommendation from persons who are in a position to judge the applicant's academic qualifications and promise.
- Results of the Graduate Record Examination (GRE) General Test (aptitude). The GRE Mathematics Test is recommended but not required.
- Results of the Test of English as a Foreign Language (TOEFL) are required of all international applicants whose native language is not English. It is also recommended but not required that these applicants submit the results of the Test of Spoken English (TSE) and of the Test of Written English (TWE). (See Section 2.3.2. below for minimum scores and waiver provisions.)
- An application fee of \$40.00.

Entering students are not required to have chosen a research field. A statement of interest in some area of mathematics is an optional part of the application.

Students are advised to schedule their GRE and TOEFL tests well in advance. (The last GRE examination where scores are reported by February - our initial review deadline - is in December, with registration in October.)

2.2.2 Application to the MAT program

Applications should be complete by April 15, but in case of vacancies, late applications may be considered.

An application for the MAT requires the same material as listed in above, with the exceptions: A copy of the secondary school teacher certification in mathematics is required, and the GRE General Test is not required.

2.2.3 Admission and financial aid decisions

The Graduate Secretary receives application materials from prospective students and transmits the completed files to the Graduate Students Evaluation Committee (GSEC). Students with a good undergraduate major in mathematics or statistics or a Masters degree in these disciplines stand the best chance of being awarded financial aid. The GSEC considers the transcript, the letters of recommendations, the GRE, the TOEFL, and what is known of the programs of the various undergraduate or graduate institutions attended to evaluate the students' academic merit and their ability to perform their duties. The GSEC decides on admission and financial aid and nominates outstanding applicants for fellowships. The first review for the PhD and MS programs is held in February and the first awards are announced in March. Additional financial aid decisions are made when openings occur. Admissions decisions are made until the beginning of Fall Quarter. At subsequent reviews, the GSEC considers all applicants whose files are complete at that time. Students denied admission or financial aid may ask for reconsideration upon submission of additional supporting material.

2.3 After Admission

2.3.1 Orientation and pre-registration procedures

A Supplementary Information Form must be completed prior to registration by the following individuals:

- new students entering the University,
- students not enrolled the previous academic year,
- students who transfer from another college, and
- students who have earned their MS and are admitted to the Ph.D. program.

All students must meet with their advisor prior to registration. Students are asked to register prior to the beginning of classes. There is a late charge for registration after classes begin. University regulations permit students to change their course schedule for a certain limited period after courses begin, but there is a late charge for all late registrations. Students are responsible for knowing all registration deadlines.

All new graduate assistants are requested to take part in University orientations and departmental orientations before the start of Fall courses. The GPD will provide students with the schedule of these orientations before they arrive on campus.

A physical examination is required of each newly admitted international student. A tuberculine Tine Test or chest X-ray is required within three months of registration.

2.3.2 Procedures for international students

2.3.2.1 Visas

The Department of Mathematical Sciences will provide needed documentation to International Student Services, which supplies information and documentation usually required for obtaining a United States Student Visa (F-1).

Students must secure their own visa. Visas may take a long time to process. Students who do not secure visas on time and arrive late are often at a disadvantage in their studies and may jeopardize their admission and/or their financial support (see 3.1.6 and 4.2.2.3)

2.3.2.2 Registration with International Student Services

In compliance with U.S. Immigration Service requirements and in order to complete the admission process, international students must register upon their arrival with the International Student Services offices of the University of Cincinnati.

2.3.2.3 English courses and tests

Occasionally, an intensive English course is offered before the beginning of classes in the Fall quarter. If requested by the GPD, international graduate students whose native language is not English are required to attend this course.

International students whose native language is not English and who receive financial awards from general University funds must take the Oral English Proficiency Test (OEPT) offered by the University of Cincinnati at the beginning of their first quarter of study. Those who do not pass are not allowed to assume instructional responsibilities. They will be recommended for an English as a Second Language (ESL) course suited to their needs. The OEPT is given in September, December, March, and May, but students are allowed to take the OEPT only twice during an academic year. A score of 50 or better (230 on the old scale) on the Test of Spoken English (TSE) will exempt a student from the OEPT. See also Section 4.3.

2.3.2.4 Other

A mandatory orientation session for new international students will be scheduled about two weeks before the beginning of classes in the Fall quarter.

All international students at the University of Cincinnati are required to carry student health insurance offered by the University. Their dependents (spouses and children) are also required to carry health insurance. Quarterly fees (reflecting the number of accompanying dependents) will be assessed each registration period.

2.4 Transfer of Credits

There are both residency requirements and limitations on work completed at other institutions which can be counted to fulfill graduate degree requirements. These rules are detailed in the sections describing the different graduate programs in the Department of Mathematical Sciences.

Students may petition the Graduate Affairs Committee for permission to transfer graduate credits earned at other institutions. The petition will be judged according to the applicability of the courses in the student's program of study, when and where the courses were taken, and which grades were earned. Credits that counted toward a previous degree from another department or institution cannot be transferred to fulfill graduate degree requirements.

Section 3 - Registration, Leaves, Graduate Credits, Grades, Review

3.1 Registration

A graduate student must be matriculated into the graduate program in order to receive graduate credit. Unclassified students may be eligible to apply a maximum of 15 specific course credits toward their degree if they are later admitted into the graduate program (subject to the approval of the GPD.)

3.1.1 Registration Procedures

Students admitted into the graduate program register each quarter by registering online after consulting with their graduate advisor. Students should file a department Course Form, signed by their advisor, with the Graduate Secretary.

University regulations do not allow students to attend classes until the registration process is complete. Students who arrive late should see their instructors as soon as possible so as not to fall too far behind.

All students must obtain written schedule approval from their advisor or the GPD before registration.

3.1.2 Registration Changes (Add/Drop)

Through the 16th day of the quarter, students can change registration (add courses, drop courses, change from credit to audit or vice-versa, and change from undergraduate to graduate credit or vice-versa) without instructor's signature, by using the official change of registration form ("Add/Drop Form"). These forms are available in the Department and College offices.

After the 16th day through the 58th day of the quarter, students need their instructors' signatures on the Add/Drop Form to change registrations.

Students should not make a registration change after the start of classes except for compelling reasons. For every registration change, students should also file with the Graduate Secretary a new departmental Course Form signed by their advisor.

There is no additional cost for registration changes as long as the student is registered for at least one class. A late fee is charged if the student is not registered at all by the first day of classes. For information on withdrawals, (see Section 3.1.3 below).

3.1.3 Withdrawals

Withdrawals from courses are made using Add/Drop Forms or online. Withdrawal forms are considered processed only when they have been submitted and stamped by the Office of Registration. Students should keep the stamped student copy of the Add/Drop form until the withdrawal is posted on the official record.

A student may drop a course by the 16th calendar day of the quarter with no academic penalty. After the 16th calendar day of the quarter through the 58th day of the quarter, withdrawals are accepted by the Office of Registration only with the signature of the class instructor. As there is no Departmental policy on withdrawals, students should ascertain what is the policy of their course instructor. After the third week of classes, instructors who allow a withdrawal must post a grade of W (withdrawal passing) or F on a withdrawal form. After the 58th day of the quarter, the Office of Registration will accept withdrawals only with the signature of the Dean or a representative of the Dean. The Dean will sign a withdrawal at this time only for the most serious reasons.

Students may be withdrawn by the instructor at any time for excessive absences. The instructor must provide the student and the GPD with written reasons for his/her actions (within 24 hours of forwarding the withdrawal form to the Registrar.)

3.1.4 Audit

The audit option is intended for cases in which course work is desired or advised but for which a grade is deemed unnecessary by the student and the advisor or GPD. Admission and conditions for participation in audit courses are at the discretion of the instructor, who is not obligated to accept a student for audit.

Audit credits do not count toward the 260 credit hour limit (as a condition of eligibility for financial aid) and cannot be used to satisfy any graduate degree course requirement, nor are they included in the determination of full graduate standing.

Only one audit course per quarter can be charged to a University Graduate Scholarship (UGS) and then only if at least 12 other graduate credits are taken the same quarter (maximum number of credits, inclusive of audit credits, charged to a UGS is 18).

3.1.5 Pass/Fail

The purpose of Pass/Fail is to permit students to take courses for which only course credit is desired. Students are expected to do all the work performed by "graded" students but will earn only a "P" for passing or "F" for failing grade.

Courses which may be taken for Pass/Fail are the Graduate Colloquium, Readings, Research, Individual Work, many Seminars, and courses outside the requirements of the graduate program (e.g., deficiency credits, extra-departmental electives). Courses taken Pass/Fail cannot be counted toward fulfilling the graduate degree course requirements for the Master and MAT programs, nor the breadth requirement for the Ph.D. Program.

3.1.6 Failure to Register

Failure to register by the end of Late Registration of any quarter (the 16th calendar day of the quarter) without having prior written consent from the GPD is ground for dismissal from the graduate program for a new or a returning student.

3.1.7 Inappropriate Courses

Class schedules for students in degree programs must have the approval of the advisor or the GPD. Approval is signified by the advisor's signature on the student's registration form.

Wide latitude in course selection is allowed, however, students must make significant progress in their degree program. To continue in the graduate program, students should not take courses at an inappropriately low level, repeat courses completed at other universities, take courses at a rate inappropriate to their admission status and background, or take courses from other departments without the permission of their advisor.

3.2 Leaves

3.2.1 Leave of Absence

Students may request a leave of absence from the graduate program for medical, financial, or personal reasons. Such requests must be made in writing to the GPD. If the student has a dissertation advisor, the dissertation advisor must endorse the leave of absence. Upon return to the graduate program, the student's admission status will be the same as it was at the

beginning of the leave of absence. (See also Section 8.3.1.2) Graduate assistantships, scholarships, and fellowships held at the beginning of the leave of absence cannot be guaranteed to be available upon return to the program.

3.2.2 Non-completion of Degree

Unless a formal leave of absence is granted, students not in residence in the Department and/or not registered for courses must complete all degree requirements within 15 months of leaving. Students who fail to do so will be dropped from the Department's list of degree-seeking students. If dropped, students who wish to complete their degree at some later date must apply to the GPD for reinstatement. Upon revision of their application, the GPD may recommend such a reinstatement to the University Dean, with whom rests the final decision. If reinstatement is granted, it might entail fulfillment of additional requirements.

3.3 Graduate Credits

3.3.1 Graduate Credits in 500 through 900 Level Courses

Graduate credits can be earned only for those courses listed online with a 500 level and higher. The Department of Mathematical Sciences designates 500 level courses as courses for undergraduates and graduate students, 600 level courses as courses primarily for graduate students, 700-800 level courses as advanced graduate courses, and 900 level courses as seminars, readings and research courses. Students are free to choose whatever courses they wish to apply toward their degree provided they conform to the specific distribution requirements for the degree and the courses are approved by their advisor.

3.3.2 Full Graduate Standing and Part-Time Course Load

Students with full graduate standing, especially those assigned departmental duties, usually take three mathematics courses each quarter. If additional credit hours are necessary to meet the quarterly credit hour requirement, a student can register for the Graduate Colloquium and/or Readings.

Part-time students should register for the number of courses recommended by their advisors.

3.4 Grades

The Department of Mathematical Sciences uses the grading practices outlined in the University Graduate Handbook; the University of Cincinnati now uses the plus-minus grading system. The Grade "A" carries 4.0 quality points; "A-" is 3.67, "B+" is 3.33, "B" is 3.0, "B-" is 2.67, "C+" is 2.33, "C" is 2.0 and "F" (failure) carries 0.0 quality points with no credit awarded (grades C- and D are not applicable to Graduate classes); the grades "P", "I", "N" carry no quality points.

3.5 Student Review

The Department reviews all graduate students in writing. The review covers academic progress and performance of duties.

All students who have not been assigned a dissertation advisor are reviewed by the Graduate Advisors Committee. Students who have a dissertation advisor are reviewed by their advisor and the GPD.

A copy of the review is given to the students by their advisors. Students have the right to put a response (letter of exception) in their file within one week of the receipt of the review.

Section 4 - Financial Aid

4.1 Types of Financial Aid

4.1.1 Graduate Assistantship

Graduate Assistantships (GA) carry a stipend, tuition remission (UGS), and a waiver of the general fee for the Fall, Winter, and Spring quarters. There are three levels of stipend. Students eligible to assume direct instructional duties receive the *regular* stipend, which is \$1000 more than the *base* stipend. Students who have advanced to candidacy for the Ph.D. receive \$800 more than the regular stipend, starting with the academic year following advancement to candidacy. Graduate assistants are expected to perform duties for the Department as detailed in Section 4.2.3. below.

The Proseminar in the Teaching of College Mathematics, 15-MATH-810, is required of all students who have a GA.

4.1.2 University Graduate Scholarship (UGS)

A UGS provides a waiver of a percentage of the tuition for the Fall, Winter, and Spring quarters. A UGS covers up to a maximum of 18 credits per quarter. There are no duties attached to a UGS.

4.1.3 Fellowships

The Department nominates advanced doctoral students of outstanding caliber for the competitive Charles Phelps Taft Fellowships. They include a stipend comparable to the regular GA and an accompanying UGS. There are no teaching duties attached to a Taft fellowship, nor is the fellow allowed to accept any supplemental employment within or outside the University during the duration of the fellowship.

Minority students in the first year of their program can be nominated for fellowships and scholarships (tuition remissions) awarded by the Albert C. Yates Fellows and Scholars Program. There are also other fellowships to which students can be nominated by the Department.

Research Assistantships are occasionally available for advanced students.

4.1.4 Summer support

Continuing students with very good academic records are encouraged to apply for the competitive Summer Research Fellowships awarded by the University Research Council (URC).

4.2 Conditions of Financial Aid

4.2.1 Award criteria

4.2.1.1 Beginning students

The Graduate Students Evaluation Committee (GSEC) decides on the award of financial aid to beginning students on the basis of their academic merit and the ability to perform their duties, as evidenced by the students' record.

4.2.1.2 Renewal of financial aid

The GSEC decides on the award or renewal of GA's and UGS's to current students on the basis of academic progress according to the standards and requirements described in Section 5, 6 and 7. For GA's, satisfactory performance of duties is also considered.

Renewal of financial aid is limited by the 260 credit hour rule (see 4.2.2.2 below) and by limitations on the number of years of eligibility as specified in the degree program descriptions.

In general, decisions for renewal of financial aid are made by April. Decisions are delayed if a student needs to satisfy certain conditions in order to stay in the Program (e.g., pass preliminary examinations, improve the GPA, improve performance of his/her duties, or some probationary condition).

A decision of the GSEC not to renew the current level of financial aid to a student can be appealed to the Executive Committee following the same procedures as for appeals of dismissal described in Section 9.

4.2.2 Requirements for financial Aid

4.2.2.1 Full time course load

Students receiving financial aid from the University (Fellowship, GA, or UGS) must keep full graduate standing and register for a minimum of 12 graduate credit hours for each supported quarter. English as a Second Language (ESL) courses, graduate courses offered by other Departments, and Pass/Fail courses can be taken as part of the 12 graduate credit hours with the approval of the student's advisor provided the student has registered for at least two graduate mathematics courses. Audit credits and courses withdrawn do not count toward the 12 credit minimum.

4.2.2.2 The 260 credit hour rule

Under ordinary circumstances, GA's, UGS's, and most fellowships cannot be awarded to students who have earned 260 or more graduate credit hours or will surpass 260 credits during any given quarter.

All graduate credit hours earned at the University of Cincinnati count toward this rule except classes taken for audit, or hours withdrawn. In particular, ESL courses count toward these 260 credit hours.

Students with a Master's degree in any discipline from another institution begin at the University of Cincinnati with 51 graduate credit hours. Therefore, their credit hour limit is 209.

4.2.2.3 Residency requirement

Graduate students receiving financial aid are expected to be in residence for the duration of each academic quarter, unless they have prior written consent from the GPD.

Failure to comply with this rule is cause for termination of financial support.

Exceptions will be made for emergencies and other very special circumstances.

Graduate assistants who start their duties after the beginning of the quarter or leave before the end of the quarter will have their stipend reduced proportionally, unless previous arrangements have been made to the satisfaction of the GPD.

These rules also apply to late-arriving new graduate students.

4.2.2.4 Additional employment

Graduate assistants can, with the approval of the GPD, be appointed/employed over and above their assistantships, subject to the following limitations:

- The additional appointment should not exceed teaching one course per quarter or equivalent FTE% for non-instructional assignments.
- The GPD will closely monitor the academic progress of students holding such an additional appointment. Should academic progress slow, the additional appointment should be terminated;

International students are subject to rules of the U.S. Immigration Service and should consult the International Student Services before accepting additional employment.

Students receiving a fellowship should abide by the specific rules of their fellowship regarding additional employment.

4.2.3 Graduate Assistant duties

Nearly all GA duties are instructional. Typically, a GA holds 4 office hours, problem sessions and grades for two courses, for an average of 15 hours a week. International GA's who have not yet passed UC's Oral English Proficiency Test are generally given grading duties.

Advanced GA's are sometimes given full responsibility for a class.

GA's are expected to perform their duties to the best of their capabilities and according to acceptable procedures, with punctuality, reliability, and a spirit of helpfulness to fellow teachers and students.

GA's should show responsibility toward their assignment. If for a compelling reason they cannot meet some obligations, they should minimize the disruption to others by finding substitutes, informing the Department in a timely manner, and taking whatever other initiatives are appropriate for the situation.

4.3 English Proficiency Testing

4.3.1 University of Cincinnati Oral English Proficiency Testing (OEPT)

As mentioned in the third statement of 2.3.2, all international GA's from the University of Cincinnati must either pass the Test of Spoken English (TSE) with a score of at least 50 (formerly 230). or pass the University's own OEPT before they are allowed to have any direct instructional contact with students, i.e., teach, assist in a class, hold office hours, tutor, etc.

International GA's receive the base stipend unless they have passed the OEPT before classes begin in September.

International GA's who have not satisfied this requirement by the end of March of the second year of residency will have their graduate assistantship reduced to three-fourths of the Master's student base salary. This reduction will remain in effect until the English requirement is satisfied at which time the student will receive the base salary plus \$1000 at the start of the next academic year.

International students with UGS support are not considered for upgrade to GA until after they have passed the OEPT.

Section 5 - Master of Sciences (MS) Degree Program

5.1 General Description

The Master of Science (MS) degree program can be tailored to match the interests and needs of individual students. Each student in the program is assigned a graduate advisor. In consultation with this advisor, the student selects a program of courses designed to provide basic training in mathematics at the graduate level and in-depth study in areas of special interest. Students intending to seek employment in business, government or industry will generally concentrate on applied mathematics, or numerical analysis courses. Students interested in the Ph.D. degree will generally broaden their training in pure or applied mathematics. The MS degree typically requires two academic years.

5.2 Requirements

5.2.1 A minimum of the equivalent of one year of full-time graduate study.

5.2.2 A minimum of 45 graduate credits of which at least half must be completed while in residence at the University of Cincinnati.

All credits must be approved by an advisor and are chosen from graduate mathematics courses or approved computer science courses viz., Design and Analysis of Algorithms (3 quarters) and Automata and Formal Languages (2 quarters).

The Graduate Colloquium, Research, Statistical Consulting, and the Proseminar in the Teaching of College Mathematics credits cannot be applied toward the degree. At most, 6 credits of Readings or Individual work can be applied toward the degree and then only upon written recommendation of both the supervisor of the readings and the GPD.

No credits can be transferred which were used toward a previous degree.

A student can write a Master's thesis on a topic chosen in consultation with the student's advisor in lieu of 6 credits of formal course work or of readings. An expository thesis is acceptable for the MS. The thesis must be of sufficient quality to earn the grade of B for the 6 credits of thesis.

5.2.3 Two three-quarter graduate level sequences in mathematics, at least one of which is selected from the following list: Numerical Analysis, Advanced Theory of Statistics, Algebraic Structures, Complex Analysis, Dynamical Systems, Ordinary Differential Equations, Partial Differential Equations, Probability Theory, Real Analysis, and Topology.

The GPA computed over these two sequences must be 3.0 or higher.

5.2.4 The GPA computed over all courses applied toward the degree must be 3.0 or higher.

5.2.5 Successful completion of a comprehensive oral examination, (see Section 5.3.3 below) or passing one written Ph.D. preliminary examination, (see Section 7.2.5.), or the defense of a thesis (see below). This requirement must be fulfilled prior to the deadline for certification for the degree in the quarter in which the degree is to be granted.

5.2.6 Knowledge of advanced calculus or linear algebra is expected of all students who earn an MS degree. Questions on advanced calculus or linear algebra may be asked on the oral examination (see section 5.3.3.)

5.3 Candidacy, Time Limitations, Oral Examination, Thesis, Graduation

5.3.1 Candidacy

A student becomes a candidate for the Master's degree upon matriculation in the Master's program: there is no need to submit formal applications for Master's candidacy.

5.3.2 Time Limitations

The minimum time requirement for a MS is the equivalent of one academic year of full-time graduate study consisting of 45 graduate credits.

A MS student must complete all requirements no later than 7 years after first registering in the MS program.

A student who leaves the Department without a formal leave of absence must complete all requirements for the MS within 15 months of leaving (see Section 3.3.2.)

A MS student will receive financial aid for a maximum of two years.

5.3.3 Comprehensive Oral Examination

The examination committee consists of three faculty members chosen from those who taught courses taken by the examinee, in particular the advanced sequence mentioned in Section 5.2.3, and at least one of the faculty members must belong to the all-University Graduate Faculty.

The examination will consist of questions on the subject of the courses taken by the examinee from the examiners and on advanced calculus or linear algebra.

5.3.4 Thesis

The thesis is presented in the same form as the Ph. D. dissertation (see the University Graduate Handbook).

A formal thesis defense is optional. A formal thesis defense can be held in lieu of an oral examination.

5.3.5 Graduation

When all work for the MS has been completed or is about to be completed, prospective graduates are required to complete an online application from the Division of Research and Advanced Studies. This application can be found at: www.grad.uc.edu.

The head of the Comprehensive Oral Examination Committee and/or the thesis advisor will sign the form testifying that the student has passed the examination and/or completed the thesis requirement. The GPD will check that all other requirements have also been satisfied and will endorse the proper form.

5.4 Minimum Academic Performance

5.4.1 Substandard Performance

Substandard performance includes:

- having a GPA lower than 3.0 in graduate courses in mathematics;
- taking inappropriate courses;
- and taking a mathematics course load that is inappropriately light for full graduate status.

5.4.2 Probation, Non-Renewal of Financial Aid, Dismissal

The rules and procedures described in Section 9 apply.

Section 6 – Master of Sciences (MS) in Statistics

6.1 General Description

The Master of Science (MS) in Statistics degree program is intended to prepare students for entry level employment as statisticians in industry or government, as well to prepare students for entry into Ph.D. programs in Statistics. Each student in the program is assigned a graduate advisor. In consultation with this advisor, the student selects a program of study. Students interested in the Ph.D. degree should consult the requirement for a Ph.D. when selecting their program of study. The MS degree typically requires two academic years.

6.2 Requirements

6.2.1 A minimum of the equivalent of one year of full-time graduate study.

6.2.2 A minimum of 48 graduate credits of which at least half must be completed while in residence at the University of Cincinnati.

All credits must be approved by an advisor and are chosen from graduate courses offered by the Department of Mathematical Sciences.

The Graduate Colloquium, Research, and the Proseminar in the Teaching of College Mathematics credits cannot be applied toward the degree.

At most, 6 credits of Readings or Individual Work can be applied toward the degree and them only upon written recommendation of supervisor and the advisor. In lieu of 6 credits of Readings or Individual Work, credit for other statistics courses taken at UC can be applied towards the degree if approval is obtained in writing by the advisor prior to enrolling in such course.

No credits can be transferred which were used toward a previous degree. A student can write a Master's Thesis on a topic chosen in consultation with the student's advisor in lieu of 6 credits of formal work or of readings. An expository thesis is acceptable for the MS degree. The thesis must be of sufficient quality to earn the grade of B for the 6 credits of thesis.

6.2.3 Completion of: Mathematical Statistics (521,522,523), Appl Stat (531), Appl Regression (532), Anal of Var (533), Linear Models and Multivariate Statistics (613,614,615).

The GPA computed over these three sequences must be a 3.0 or higher.

6.2.4 Completion of 3 additional statistics courses selected from: SAS Programming (534), Time Series (571), Survival Analysis (572), Applied Bayesian Analysis (573), Nonparametric Statistics (574), Robust Statistics (575) or Topics in Applied Statistics (576).

6.2.5 Completion of at least one quarter of Statistical consulting (730,1,2,3).

6.2.6 Successful completion of a comprehensive oral examination, (see Section 5.3.3 above) or passing one written Ph.D. preliminary examination, (see Section 8.2.5) or the defense of a thesis (see below).

6.2.7 Knowledge of linear algebra is expected of all students who earn an MS degree in Statistics.

6.3 Candidacy, Time limitations, Oral Examination, Thesis, Graduation

6.3.1 Candidacy:

A student becomes a candidate for the Master's degree upon matriculation in the Master's program; there is no need to submit formal applications for Master's candidacy.

6.3.2 Time Limitations.

The minimum time requirement for a MS degree is the equivalent of one academic year of full-time graduate study of 48 graduate credits.

A MS student must complete all requirements no later than 7 years after first registering in the MS program.

A student who leaves the Department without a formal leave of absence must complete all requirements for the MS within 15 months of leaving (see Section 3.3.2).

A MS student will receive financial aid for a maximum of two years.

6.3.3 Comprehensive Oral Examination.

The examination committee consists of three faculty members chosen from those who taught courses taken by the examinee, in particular the advanced sequence mentioned in Section 6.2.3 and at least one of the faculty members must belong to the all-University Graduate Faculty. The examination will consist of questions on the subject of the courses taken by the examinee from the examiners.

6.3.4 Thesis

The thesis is presented in the same form as the Ph.D dissertation (see University Graduate Handbook). A formal thesis defense is optional. A formal thesis defense can be held in lieu of an oral examination.

6.3.5 Graduation

When all work for the MS has been completed or is about to be completed, prospective graduates are required to complete an online application from the Division of Research and Advanced Studies. This application can be found at: www.grad.uc.edu.

The head of the Comprehensive Oral Examination Committee and/or the thesis advisor will sign the form testifying that the student has passed the examination and/or completed the thesis requirement. The GPD will check that all other requirements have also been satisfied and will endorse the proper form.

6.4 Minimum Academic Performance

6.4.1 Substandard Performance

Substandard performance includes:

- having a GPA lower than 3.0 in graduate courses in mathematics;
- taking inappropriate courses;
- and taking a mathematics course load that is inappropriately light for full graduate status.

6.4.2 Probation, Non-Renewal of Financial Aid, Dismissal

The rules and procedures described in Section 9 apply.

Section 7 - Master of Arts in Teaching of Mathematics (MAT) Degree Program

7.1 General Description

The Master of Arts in Teaching of Mathematics (MAT) degree is for certified secondary school teachers of mathematics and is not intended to prepare students for teacher certification.

To complete this degree, students need three consecutive summers plus additional time to research and write a paper (the MAT Project) during one academic year following the first or second summer.

Classes meet between 8 a.m. and 11:30 a.m. daily during the Summer quarter. The standard load is two courses per each of the two five-week Summer Quarter periods for a total of 12 courses.

Students may enter the program any summer since courses are repeated every third year. Students are expected to follow the program of study as outlined below. Any variation from the program requires prior approval of an advisor.

7.2 Requirements

7.2.1 Required Courses

The program requires the following 12 courses (46 credits): Geometry I, II; Historical Topics in Mathematics; Analysis I, II; Technology in Mathematics; Mathematical Models; Number Theory; Modern Algebra; Probability and Statistics I, II; Matrices.

7.2.2 MAT Project

During one of their summers, students must register for MAT – Project I, II, carrying a total of 4 graduate credits. The MAT Project is prepared as a term paper with appropriate models, graphic displays, computer simulation or statistical data as determined by the student and the graduate advisor. The required reading and term paper must be completed during the academic year. Students must meet the supervising faculty member at least once per quarter. There is no formal defense of the MAT project. Following acceptance of the project, the student will present the results in a half-hour talk, and answer questions on the topic.

7.2.3 Credit Hours

Students must complete 46 graduate credits by taking the 12 courses listed above and the 4 credit MAT Project I, II.

7.2.4 GPA Requirement

Students must maintain a 3.0 grade point average or higher.

7.3 Candidacy, Time Limitations, Presentation of MAT Project, Graduation

7.3.1 Candidacy

There is no candidacy requirement.

7.3.2 Time Limitations

Students must complete the MAT degree in three years. Deviation from the three year schedule ordinarily will not be possible due to the rotation of courses.

7.3.3 Presentation of MAT Project

A one-hour presentation of the MAT Project, consisting of a half-hour talk followed by questions and answers. A committee of three faculty members will evaluate the presentation.

7.3.4 Graduation

When all work for the MAT has been completed or is about to be completed, prospective graduates are required to complete an online application from The Graduate School. This application can be found at: www.grad.uc.edu .
The MAT project committee certifies that the presentation has been successfully completed. The GPD verifies that all course and grade point average requirements have been met and endorses the proper form.

7.4 Minimum Academic Performance

7.3.1 Substandard Performance

Substandard performance includes not taking the required courses or having a GPA lower than 3.0 in required courses.

7.3.2 Probation and Dismissal

The rules and procedures described in Section 9.4 apply.

Section 8 - Doctoral Degree Program

8.1 General Description

8.1.1 Objectives

The Doctor of Philosophy (Ph.D.) degree in Mathematics represents achievement of a general knowledge of the various branches of mathematics, of the ability to communicate mathematics in both written and oral form, and of a demonstrated creative ability in a particular branch of mathematics.

8.1.2 Advisors

Beginning graduate students are assigned a graduate advisor. After passing three preliminary examinations, students select a dissertation advisor who will also serve as advisor from that period onward. The dissertation advisor must agree to serve in this capacity and must be a faculty member when the student makes the selection.

8.2 Requirements

8.2.1 Overview

- A minimum of three years full time graduate study and a minimum of 7 months in Candidacy;
- residency requirement;
- distribution requirement: a minimum of 135 hours graduate credits;
- GPA of at least 3.3 for all courses submitted for the Ph.D. degree;
- breadth requirement: three 3-quarter sequences and two 2-quarter sequences as specified below;
- GPA of at least 3.5 must be maintained in each sequence chosen to satisfy the breadth requirement;
- the Proseminar in the Teaching of Mathematics (15-025-810) is required of all first year students during the first year.

- three preliminary examinations passed within time limits specified below;
- one advanced examination;
- an original and independent doctoral dissertation.

8.2.2 Time and Residency Requirement

The Ph.D. is conferred on the basis of long study and high scholarly attainment. In no case will the degree be granted for less than three years of full time graduate study or its equivalent. A student must be registered during the last year of study.

The Ph.D. cannot be conferred earlier than 7 months after entering Candidacy (see Section 8.3. on Candidacy.)

The residency requirement consists of enrollment for at least 12 graduate credits during each of three quarters within a span of 5 consecutive quarters, including the Summer quarters, so long as a student registers for each Fall quarter in the span.

8.2.3 Distribution and GPA Requirements

A Ph.D. requires a minimum of 135 hours of graduate credits, the last 45 of which (exclusive of research credits) must be completed at the University of Cincinnati, or under its direction.

A student is required to maintain a 3.3 grade point average out of a possible 4.0 average for all course credits submitted for the Ph.D. degree (exclusive of courses taken for Pass/Fail.)

Only courses listed as graduate courses (500 and above) in the Learning Opportunities/Courses of Instruction are acceptable.

All Ph.D. students, starting in their second year of coursework and until advancement to candidacy, are required to take EACH YEAR 2 quarters of coursework chosen from the 600-level sequences and any advanced seminars taught by faculty, or appropriate courses outside the department approved by the advisor.

All courses taken must have the written approval of the student's advisor prior to registration.

8.2.4 Breadth Requirement

The student, together with a graduate advisor, plans a program of study which will insure the breadth of knowledge necessary for a professional mathematician. This knowledge is acquired by completing at least three 3-quarter sequences and at least two 2-quarter sequences from the following list: 514, 515, 516 and all 600-level mathematics courses. A grade point average of 3.5 or better must be earned in these courses. In lieu of the breadth requirement, a student may pass a fourth preliminary examination. This examination must be taken within the time limit for satisfying the preliminary examination requirement specified in Section 8.2.5.2 below.

8.2.5 Preliminary Examinations

Every Ph.D. student must pass three Ph. D. preliminary examinations.

Each examination is based on a course sequence in the area. Questions are creative and require use of a good working knowledge of the subject. Examinations are written and require three or more hours depending on the area. Syllabi and copies of former examinations are on file in the Mathematics/Physics/Geology Library.

8.2.5.1 Areas

At the present time, preliminary examinations are given in the following 9 areas: Abstract Algebra, Applied Statistics, Complex Analysis, Numerical Analysis, Partial Differential Equations, Probability, Real Analysis, Statistics, and Topology.

8.2.5.2 Time limitations

Students with full graduate status entering the graduate program with a Master's degree in Mathematics or Statistics must pass all three preliminary exams by the end of their sixth academic quarter. E.g., students entering the program in September will have until the June session of their second year.

Students with full graduate status who enter the graduate program with a Bachelor's degree must pass at least one preliminary exam by their sixth academic quarter and the remaining preliminary exams must be passed by their ninth quarter.

Part-time students will receive, in writing from the GPD, specific time limitations for passing preliminary examinations.

8.2.5.3 Number of attempts

Students are not permitted to take an examination in the same area more than twice. Examinations taken prior to the first year of graduate study at the University of Cincinnati do not count against the two-attempt limit.

8.2.5.4 Examination schedule

All preliminary examinations are given twice a year: in September, one week before classes begin; and in June, one week after classes end. Six weeks before the examination is given, students must tell the Graduate Secretary of their intention to take a particular examination.

8.2.6 Advanced Examinations

Successful completion of an advanced examination in the area of specialization of the student is required.

Advanced examinations will be given in Algebra, Complex Analysis, Dynamical Systems, Functional Analysis, Numerical Analysis, Partial Differential Equations, Probability, Statistics, Topology, or in any other area upon approval of the Graduate Affairs Committee. To apply for an advanced examination, a student must have successfully completed all three preliminary examinations, and must have chosen an area for the dissertation. The (prospective) dissertation advisor will inform the student of the syllabus for the advanced examination, the form (written or oral), and duration of the examination.

Students must provide their advisor with at least 6 weeks advance notice of their readiness to take the advanced examination.

In case of failure, a student must wait at least one quarter before attempting the advanced examination again.

8.2.7 Dissertation

A student is required to present a dissertation which shows high scholarly achievement through original and independent research.

8.2.7.1 Dissertation advisor

After a Ph.D. student has passed three preliminary examinations, the student should select a dissertation advisor who will also serve as advisor from that period onward. The dissertation advisor must agree to serve in this capacity and must be a faculty member at the time the student makes the selection. The research topic is to be selected by the student in consultation with the dissertation advisor.

8.2.7.2 Dissertation Committee

At the time a student is admitted into Candidacy, the Dissertation Committee is formed upon the recommendation of the dissertation advisor. The dissertation advisor serves as Chair, and the Dissertation Committee usually consists of at least two other members of the Mathematics Faculty but can include faculty members from other departments within the University, or other Universities, or experts without a University affiliation. If the dissertation advisor is not a member of the All-University Graduate Faculty, at least two other members of the Dissertation Committee must be.

The dissertation advisor notifies the members of the Dissertation Committee when significant progress has been made by the student in the research project. Although the student consults primarily with the dissertation advisor during the dissertation research, the student can consult with other members of the Dissertation Committee or with any other faculty member.

When the student and the advisor deem the dissertation to be complete, a copy of it is submitted to each committee member for critical evaluation. The Committee can make recommendations to the student concerning extensions or other avenues of research related to the dissertation problem at this time or can recommend that the open defense be scheduled.

8.2.7.3 Open defense

At least two weeks before the open defense, typed copies of the dissertation in the proposed final form should be distributed to all Dissertation Committee members. The defense of the dissertation is open to all members of the academic community and to the public. During the defense, the candidate makes an oral presentation of the

dissertation and then answers pertinent questions asked by members of the Committee and by the public.

At the conclusion of the defense, the Committee withdraws and decides on the acceptability of the dissertation and its defense. At least 3/4 of the voting members of the Committee must approve the dissertation.

8.2.7.4 Dissertation preparation and submission

When the thesis has been accepted, the student is required to submit copies of the dissertation in the form prescribed by University regulations. Information on preparing the dissertation electronically can be found at www.etsd.uc.edu. It is the responsibility of the student to see that all regulations and requirements have been satisfied. It is customary for the student to prepare an additional copy for his or her dissertation advisor.

8.3 Candidacy, Teaching, Other Requirements, Graduation, Exit Survey

8.3.1 Candidacy

8.3.1.1 Admission to Candidacy

A student who has successfully completed the breadth requirement, three preliminary examinations, the advanced examination and has a GPA of 3.3 or better will be officially admitted into candidacy for the degree of Ph.D. A form, "Application for Admission to Candidacy" endorsed by the dissertation advisor, the Doctoral Dissertation Committee and the GPD is submitted to Advanced Studies.

8.3.1.2 Time limitations

No more than 5 years may elapse between matriculation into the doctoral program and admission to candidacy.

Candidacy automatically terminates after 4 consecutive years.

These limitations are the same for full graduate status students and for part time students and do not depend on whether a student receives financial aid. The length of time a student can receive financial support from the State of Ohio funding University (e.g., GA, or UGS) is limited by the 260 credit hour rule (see Section 3.2.1).

A student who is completing the dissertation off campus can continue candidacy by registering for one credit of Ph.D. Dissertation Research in the Fall Quarter of the year. International students must register for one credit Fall, Winter, and Spring quarters.

Candidacy will automatically terminate if the student fails to register during an academic year.

A student must be a candidate for a doctorate at least 7 months before the degree is granted.

8.3.1.3 Reinstatement of Candidacy

A student may petition the Graduate Council through the Department, College, and University Dean for extension of Candidacy prior to its expiration, or for reinstatement if Candidacy has expired. If the reinstatement is approved, the student will be readmitted to Candidacy only after passing the Advanced Examination again. The Department will support the student's petition only in case of serious reasons for the extension or reinstatement and when there is strong confidence in the ability of the student to complete successfully and in a timely manner the Ph.D. degree.

8.3.2 Teaching and Other Requirements

8.3.2.1 Teaching

The ability to communicate mathematics in oral and written form is an important part of a Ph.D. program. All Ph.D. students must be involved in active teaching during their program of study at the University of Cincinnati. The Department considers effectiveness in teaching to be an integral part of the mathematics program. Records of teaching effectiveness as well as student evaluations are kept in the graduate student's permanent file and are considered in the renewal of graduate assistantships. All students are required to take 15-025-810, Proseminar in the Teaching of College Mathematics, during their first year of study.

8.3.2.2 Other requirements

Other requirements and time limitations are listed in the University Graduate Handbook of The Graduate School. It is the student's obligation to ensure that all deadlines are met.

8.3.3 Graduation

Prospective graduates are required to complete an online graduation application from The Graduate School. This may be found at www.grad.uc.edu.

After acceptance of a student's thesis by the Dissertation Committee, the GPD will verify that the student has fulfilled all other requirements. Upon completion of the Open Defense, the dissertation advisor and members of the Dissertation Committee will endorse the "Dissertation Defense" form and the approval forms if they vote to do so.

8.3.4 Exit Survey

The Graduate School conducts an exit survey on the doctoral experience of all graduating doctoral students. The results are shared with doctoral programs.

8.4 Minimum Academic Performance

8.4.1 Substandard performance

Substandard performance includes:

- having a GPA lower than 3.3 in graduate courses in mathematics;
- taking inappropriate courses;
- taking a mathematics course load that is inappropriately light for full graduate status;
- failure to pass the preliminary examinations within the required time limit;
- failure to choose a dissertation advisor and to pass an advanced examination within reasonable time;
- and failure to make adequate progress in the dissertation.

8.4.2 Probation, non-renewal of financial aid, dismissal

The rules and procedures described in Section 9.5 apply.

Section 8a – Doctorate (PhD) in Mathematical Sciences with a Statistics Concentration

8a.1 General Description

8a.1.1 Objectives

The Doctor of Philosophy (Ph.D.) degree in Mathematical Sciences with a Statistics Concentration represents achievement of a general knowledge of the various branches of statistics, of the ability to communicate statistics in both written and oral form, and of a demonstrated creative ability in a particular branch of statistics or probability.

8a.1.2 Advisors

Beginning graduate students are assigned a graduate advisor. After passing the written qualifying examination and two preliminary examinations, students select a dissertation advisor who will also serve as advisor from that period onward. The dissertation advisor must agree to serve in this capacity and must be a faculty member when the student makes the selection.

8a.2 Requirements

8a.2.1 Overview

- A minimum of three years full time graduate study and a minimum of 7 months in Candidacy;

- residency requirement;
- distribution requirement: a minimum of 135 hours graduate credits;
- GPA of at least 3.3 for all courses submitted for the Ph.D. degree;
- breadth requirement: three 3-quarter sequences and two 2-quarter sequences as specified below;
- GPA of at least 3.5 must be maintained in each sequence chosen to satisfy the breadth requirement;
- the Proseminar in the Teaching of Mathematics (15-025-810) is required of all first year students during the first year.
- One qualifying and two preliminary examinations passed within time limits specified below;
- one advanced examination;
- an original and independent doctoral dissertation.

8a.2.2 Time and Residency Requirement

Same as 8.2.2.

8a.2.3 Distribution and GPA Requirements

Same as 8.2.

8a.2.4 Breadth Requirement

The student, together with a graduate advisor, plans a program of study which will insure the breadth of knowledge necessary for a professional statistician. This knowledge is acquired by completing Linear Models and Multivariate Analysis (613,614,615), Advanced Theory of Statistics (631,632,633), four Applied Statistics courses (from among 571, 572, 573, 574, 575, 576), Probability Theory (634,635,636) and either Numerical Analysis (514,515,516) or Advanced Calculus (504,505,506). A grade point average of 3.5 or better must be earned in these courses.

8a.2.5 Preliminary Examinations

Every Ph.D. student must pass three written examinations.

The first written qualifying examination will be given at the end of the first year and will cover the material in: Mathematical Statistics (521,522,523), Applied Statistical Inference (531), Applied Regression Analysis (532), and Analysis of Variance (533). This examination will also be required of all students in the new Master of Science in Statistics degree program as well as all students interested in the PhD concentrating in Statistics. This examination will have three outcomes: pass at the PhD level, pass at the MS level, or failure. A PhD student who does not pass the qualifying examination at the PhD level by the beginning of their second year will be withdrawn from the PhD program.

The final two written preliminary examinations can be selected from Theory of Statistics, Linear Models, or Probability Theory. The Theory of Statistics preliminary examination will cover the material currently presented in Advanced Theory of Statistics (631,632,633). The Linear Models preliminary examination will cover the material currently presented in Linear Models and Multivariate Analysis (613,614,615). The Probability Theory preliminary examination will cover the material currently presented in Probability Theory (634,635,636). Students interested in writing a dissertation in theoretical statistics are encouraged to take the preliminary examinations in Theory of Statistics and Probability Theory, while students interested in writing a dissertation in applied statistics are encouraged to take the preliminary examinations in Linear Models and Theory of Statistics. Questions are creative and require use of a good working knowledge of the subject. Examinations are written and require three or more hours depending on the area. Syllabi and copies of former examinations are on file in the Mathematics/Physics/Geology Library.

8a.2.5.2 Time limitations

The first qualifying examination can be taken twice and must be passed by the beginning of the student's second year.

Students with full graduate status entering the graduate program in the Department of Mathematical Sciences with a Master's degree in Statistics must pass two of the three required preliminary examinations by the end of their sixth academic quarter at UC.

Students with full graduate status entering the graduate program in the Department of Mathematical Sciences without a Master's degree in Statistics must pass one of the required preliminary examinations by the end of their sixth academic quarter, and must pass all of the required preliminary examinations by the end of their ninth quarter at UC.

Part-time students will receive, in writing from the GPD, specific time limitations for passing the written examinations.

8a.2.5.3 Number of attempts

Students are not permitted to take any examination more than twice. Examinations taken prior to the first year of graduate study at the University of Cincinnati do not count against the two-attempt limit. Students entering with a Master's degree are encouraged to take the preliminary examination before the start of school in September.

8a.2.5.4 Examination schedule

Same as 8.2.5.4.

8.2.6 Advanced Examinations

Successful completion of an advanced examination in the area of specialization of the student is required.

Advanced examinations will be given in Applied Statistics, Theory of Statistics and Probability Theory..

To apply for an advanced examination, a student must have successfully completed all three written examinations, and must have chosen an area for the dissertation. The (prospective) dissertation advisor will inform the student of the syllabus for the advanced examination, the form (written or oral), and duration of the examination.

Students must provide their advisor with at least 6 weeks advance notice of their readiness to take the advanced examination.

In case of failure, a student must wait at least one quarter before attempting the advanced examination again.

8a.2.7 Dissertation

Same as 8.2.7 .

8a.3 Candidacy, Teaching, Other Requirements, Graduation, Exit Survey

Same as 8.3

8a.4 Minimum Academic Performance

8.4.1 Substandard performance

Substandard performance includes:

- having a GPA lower than 3.3 in graduate courses in mathematics;
- taking inappropriate courses;
- taking a statistics course load that is inappropriately light for full graduate status;
- failure to pass the written examinations within the required time limit;
- failure to choose a dissertation advisor and to pass an advanced examination within reasonable time;
- and failure to make adequate progress in the dissertation.

8a.4.2 Probation, non-renewal of financial aid, dismissal

Same as 8.4.2.

Section 9 - Special Rules

9.1 Right to Review Records

Enrolled students have the right to review their educational records, except those excluded by law (those maintained by a physician or psychiatrist, or parents' financial statements). Letters of recommendation for which students have waived the right of review in writing will also be excluded.

Student files are maintained in offices such as the Department of Mathematical Sciences, Student Records, Dean of Arts and Sciences, Office of the Vice President for The Graduate School, Student Financial Aid, Career Development and Placement, and Educational Advising.

The Department of Mathematical Sciences' file includes the original application for admission, letters of recommendation, scores of the GRE, TOEFL and other English language examinations, quarterly grade records, records of preliminary and advanced examinations, oral examinations, application materials submitted in connection with fellowships, record of awards, degree certification forms, record of degrees granted, teaching evaluations, reviews, yearly effort reports, payroll forms, visa forms, personnel forms, records of disciplinary actions, and copies of communications from the Department.

Students may review their file upon request to the Graduate Secretary. A student may submit a letter of exception for inclusion in his or her file to the GPD if the student feels there are any inaccuracies in the material in the file. The student has also the right to request a hearing with the Graduate Affairs Committee.

9.2 Nondiscrimination Policy

The Department of Mathematical Sciences reaffirms the University of Cincinnati's policy that discrimination on the basis of race, color, religion, national origin, sex, sexual orientation, disability, age, or status as a disabled veteran or veteran of the Vietnam era will not be practiced or tolerated in any of its activities.

9.3 Grievance Procedures

If a student feels aggrieved by decisions, actions, or omissions within the Department or the University, he/she may contact the GPD or the Department Head for redress. If the matter is not resolved to the student's satisfaction, the student can file a grievance. There are three types of grievance procedures, handled by different entities:

- grievances on discrimination or harassment;
- grievances on academic evaluation;
- other grievances such as:
 - grievances concerning dismissal or suspension from the graduate program;
 - grievances concerning withholding or termination of financial support of any kind;
 - grievances concerning any other treatment of the graduate student by a faculty member or a University agency, except those listed in (1) and (2), or allegations of unfair recommendation for employment or for further graduate study.

9.3.1 Grievances on discrimination or harassment

Grievances on matters of discrimination or harassment are to be filed with the Office of Affirmative Action of the University of Cincinnati and are subject to the University of Cincinnati Discrimination procedure and the University of Cincinnati Institutional Policy on Sexual Harassment.

9.3.2 Grievances on academic evaluation

Grievances on academic evaluation, i.e., on alleged improper evaluation of quality or quantity of academic work are filed with the Graduate Affairs Committee. During the regular academic year, the Graduate Affairs Committee will convene within 14 days to hear the grievance. Grievances filed during the Summer quarter will be heard during the Fall quarter.

The student has the right to present both oral and written statements which support the grievance.

The student's advisor will be an ex-officio non-voting member of the Committee, unless he or she is the person against whom the grievance is filed.

The Committee will discuss the matter at the meeting and vote either at the meeting or at a subsequent meeting held within 7 days of the first meeting.

The student will be notified within 24 hours of the decision of the Committee.

9.3.3 University of Cincinnati graduate student grievance procedures

The Department of Mathematical Sciences reaffirms its adherence to the principles enunciated in the Graduate Student Grievance Procedures. Copies of this document will be made available at the new student orientation program in September of each year. Additional copies are available in the Departmental Office.

Grievances under these procedures can be brought on any issue with the exception of discrimination, harassment, and academic evaluation which are explained above.

9.4 Misconduct

9.4.1 Academic misconduct

9.4.1.1 Description

Academic misconduct or dishonesty is defined in the University of Cincinnati Student Code of Conduct and includes, but is not limited to: acts of cheating, plagiarism, falsification, forgery, deception of effort, unauthorized assistance, manufacturing of data, and unauthorized use, or tampering with, computer files or data. Academic misconduct in any form is a most serious offense, which cannot and will not be tolerated. It is subject to the University Student Code of Conduct and to the University rule for Investigation of Research Misconduct.

9.4.1.2 Procedures

If a faculty member has sufficient reasons to believe a student is guilty of academic misconduct, he/she must inform the student immediately of the alleged misconduct and provide the student with the opportunity to respond before taking any further action.

If the faculty member takes no further action within 5 days after informing the student, the allegation(s) shall be considered dismissed.

The faculty member can take one or more of the following actions: assign a failing grade in the assignment or examination related to the alleged dishonesty, assign a failing grade in the course, recommend additional sanction(s) including dismissal or termination/nonrenewal of financial aid.

If any of these actions shall be taken, the faculty member must notify the student, in writing, within 5 days of the action (within a maximum of 10 days from the discovery of the alleged misconduct), with a copy to the GPD and to the Dean of the College of Arts and Sciences.

An informal resolution can be attempted, with the help of a facilitator, mediator, and/or observer.

If the student and the Dean accept the faculty member's action/penalty, the resolution shall be recorded and the matter closed. Otherwise, any party can request a Formal Hearing with the College Hearing Committee, following the procedures detailed in the Student Code of Conduct and other pertinent documents of Advanced Studies.

9.4.2 Other misconduct

Other forms of misconduct are defined in the Student Code of Conduct and are subject to the procedures and sanctions discussed there. Misconduct can lead to dismissal from the Graduate Program or termination/non renewal of financial aid.

9.5 Probation and Dismissal

9.5.1 Performance assessment

The academic performance of graduate students is monitored by their advisors and by the GPD. The performance of duties is monitored by the Assistant Head, the instructors to whom they are assigned, the faculty members in charge of monitoring teaching assistants, and the GPD. There is a written yearly review of the students performance as described in Section 3.5.

9.5.2 Probation

Should the academic performance of a graduate student fall to a substandard level according to the criteria described under the Minimum Academic Performance Sections in Sections 5,6 and 7, or should the performance of duties fall below acceptable standards, the GPD will notify in writing the student and his/her advisor and will place the student on probation. The student will be given a specific time period in which to improve his/her record.

If the record of a student does not improve sufficiently within the specified period, the GPD will initiate dismissal procedures with the Graduate Affairs Committee and will inform the student in writing.

9.5.3 Dismissal

Dismissal of a graduate student from the Graduate Program is decided by the GPD and the Graduate Affairs Committee.

All written notices to a student shall be considered received when delivered to the student's mail box in the Department or to the student's local address as on record with the Department. All days refer to working days of the Fall, Winter, and Spring quarters, excluding examination weeks and University holidays. All stated time limits may be extended with the prior written consent of all parties.

9.5.3.1 Grounds for dismissal

- Not meeting the specific time limitations set in this Handbook (e.g., time limitations for passing preliminary examinations or for entering Candidacy);
- failure to maintain enrollment;
- failure to improve performance during a probation period;
- violation of other departmental rules;
- academic misconduct (defined in Section 8.4 above);
- other misconduct (defined in Section 8.4 above).

9.5.3.2 Dismissal procedure

In the case of (1) or (2), no hearing of the Graduate Affairs Committee is required and the GPD is empowered to dismiss the student.

In the case of (5) or (6), the procedures are detailed in Section 8.4.

In the case of (3) or (4), the Graduate Affairs Committee sets a hearing and informs the student with an advanced notice of at least three working days.

This written notice will list the grounds for dismissal, explain the procedures to be followed, and inform the student of his/her right to present oral and written statements supporting his/her continuance in the program.

The student's advisor, if in residence in the Department at the time of the hearing, will be an ex-officio non-voting member of the Committee.

The Committee will discuss the case at the hearing and vote either at the meeting or at a subsequent meeting held within 7 days of the first.

Dismissal will result from a majority vote of the Committee. The student will be notified within 24 hours of the decision of the Committee.

9.5.3.3 Appeal procedure

A student can appeal a dismissal decision as well as any other decision of the Graduate Affairs Committee, the GSEC, or the GPD, by filing a written appeal with the Executive Committee within 7 days of notification of the decision. The Executive Committee will convene during the Fall, Winter, and Spring quarters within 14 days to hear the appeal.

The student has the right to present both oral and written statements supporting the appeal.

The GPD will be an ex-officio, but voting member of the Committee.

The Committee will discuss the matter at the meeting and vote either at the meeting or at a subsequent meeting held within 7 days of the first meeting.

The student will be notified within 24 hours of the decision of the Committee.

9.6 Implementation of Provisions of this Handbook

This document will supersede all previous documents and handbooks beginning August 1, 2006.