

The University of Georgia Department of Statistics Graduate Handbook

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The best thing about being a statistician is that you get to play in everyone's back yard.
– John Tukey.

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Introduction

Just ask any faculty member in this department – we will tell you that statistics is a very exciting discipline. Every one of us will give credit to the departments we came from for excellent training! It is our goal to offer you the best of all of those departments as we train you for a future in statistics.

Bear in mind that you were admitted to this program because your record reflected a **potential** to succeed in statistics. Graduate study requires not only good preparation, but also discipline and diligence. The fact that you have been admitted to the program does not guarantee that you will be able to **finish** the program!

We offer several means for earning a Master of Science (MS) degree in statistics, as well as a rigorous program leading to the Doctor of Philosophy (PhD) degree. Each program emphasizes BOTH theory AND applications, because a good statistician must have training in both.

Some students express that they want to see more applications, and exposure to applications can be helpful in developing a better understanding of new ideas or methods. But most real-world data will present you with some challenge which you have never encountered before, and this is when you must fall back on your statistics toolbox – the theory and the methods that you have learned. Theory tells you how the statistical tool works, and the more you understand about how to use it, the more easily you can modify it for your own purposes.

Our MS program emphasizes data collection & analysis, an understanding of the underlying theory, and how one modifies this theory for real-world applications. The real world is a dirty place, and it will not take you long before you find yourself with a set of data that requires some creative insight – grounded in theory!! – for effective analysis.

To train you for this inevitability, the program gives you opportunities to handle real (clean!) data of many kinds through our coursework, as well as enough theory to provide you with an effective toolbox. Of course, the real data you will see will be chosen specifically to illustrate concepts in a given course, and it is up to you to understand the methods well enough to be able to recognize when they are appropriate. No one in the real world will tell you what method to use and when!!

Our PhD program blends data collection & analysis, theory, and computing in order to give you the necessary tools to develop new and cutting-edge statistical techniques. Most modern research, no matter how theoretical, will feature a computing component which either supplements the theory (in cases where the theory can only go so far) or provides insight (in cases that are too complicated to develop useful theory).

You will be exposed to computing in most of your courses as you are simultaneously exposed to data analysis. You will also receive a rigorous grounding in theory. It is up to

you to assimilate the material and develop your own intuition so that you can allow your creativity to shine.

Creativity? You can bet your job on it!! Cutting edge statistics requires you to be able to think creatively. You will be solving problems that no one has ever solved before. Others may have solved pieces of it, but even in an industrial position, you will have to put those pieces together in a way that no one else has.

This document, in tandem with the University's [Graduate School Bulletin](#), should provide you the information you need as a student in Statistics. Other up-to-date information you need may be found on the [Department's web site](#).

If you have questions, concerns, corrections, confusion, etc. about the information in this handbook, please discuss it with the Graduate Coordinator or the Department Head.

Department Overview

The Department of Statistics was originally formed in 1964, when it broke with the Department of Mathematics and became the Department of Statistics and Computer Science. It remained such until 1984, when it became the Department of Statistics. Today, we maintain the three-fold mission of teaching, research, and service. Our teaching provides you with a broad foundation in statistical theory and applications. Such training has enabled our graduates to earn jobs in government, all branches of industry, and academia. We currently maintain a wide spectrum of research, with many of our faculty active in cross-disciplinary research projects. Listings of all faculty and staff in the Department may be found [here](#).

Research

Faculty members at a research university such as the University of Georgia are expected to engage in an active program of research. An integral part of that research is the involvement of graduate students – the thesis or dissertation is one of the main avenues by which you are trained to do research on your own, while aiding your advisor in his/her own research program.

The combined research interests in the Department cover a broad range of modern statistics. A list of our Graduate Faculty (those who may direct graduate student research) may be found at the end of this chapter. Graduate students are strongly encouraged to talk to faculty about their research interests, and we even have courses designed to facilitate that interaction (STAT 8910-20-30).

A departmental colloquium – a research talk aimed at faculty and students – is held each week, usually on Thursdays at 3:30pm, with refreshments offered afterwards so that attendees and the speaker may meet for further discussion on the topic presented. The speaker is often a researcher from outside of the University, but occasionally we host speakers from our own Department or other departments on campus. Students who are defending their dissertations are expected to present their dissertation research as a departmental colloquium before their Advisory Committee questions them on their work.

Each Spring, typically in April, the student membership of the Stat Club puts on the [Bradley Lectures](#), in honor of the late Professor Emeritus Ralph Bradley. Festivities for the Bradley Lectures include:

- a research colloquium given by a very famous and distinguished statistician on that Friday afternoon;
- a Departmental banquet that same evening, featuring an after-dinner talk by this speaker; and
- a Departmental picnic that Saturday with the speaker as guest of honor.

Past Bradley Lecturers have been C. R. Rao (1993), Peter Bickel (1994), Jayaram Sethuraman (1995), H. A. David (1996), Brad Efron (1997), Ron Pyke (1998), Myles Hollander (1999), Ron Randles (2000), Dick Scheaffer (2001), Robert Hogg (2002), George Casella (2003), Jim Berger (2004), Bruce Lindsay (2005), Ray Carroll (2006), Xiao-

Li Meng (2007), Jayanta Ghosh (2008), Nancy Reid (2009), Steve Marron (2010), Peter McCullagh (2011), R. Dennis Cook (2012), Peter Hall (2013), C. F. Jeff Wu (2014), Susan Murphy (2015), and Jun Liu (2016). The Bradley Lecturer for 2017 will be Andrew Gelman.

Statistical Consulting

The [Statistical Consulting Center](#) (SCC), located in Room 203, exists to provide statistical advice to students and researchers within the University community, and occasionally to entities beyond the University. The Director of the SCC is Dr. Jaxk Reeves, and the Associate Director is Dr. Xianyan Chen.

Each year, two graduate students work as the primary Consulting Assistants (CAs) in the SCC, supported by departmental Teaching Assistantship (TA) money. Most years, at least two other students are hired as CAs with money that the SCC has earned from its services. Recently, an additional CA has been funded by the Graduate School. These students, typically in at least their second year, help to provide the statistical expertise required by clients of the SCC, and should not only be knowledgeable about applications of statistics, but also be able to communicate effectively with the SCC clients.

Important Places

In order to succeed in the Department, you have to take advantage of the many resources which are available to you.

The Main Office for the Department is located in Room 204 of the Statistics Building. Within this office are the offices for the Department Head, Business Manager, Student Affairs Professional, and Administrative Associate.

The IT Professional, who is responsible for all of the Department's computing resources, is in Room 217.

The Graduate Coordinator, who is your primary coursework advisor and who assigns teaching duties for TAs, is in Room 105.

The Cohen Conference Room is Room 230. Research meetings, faculty meetings, and oral examinations are held in this room. There is a smaller meeting room in 215, meant for meetings of 5 people or less. When meetings are not scheduled in these rooms, anyone may use them.

Although some of your courses may be held in buildings other than the Statistics Building, most of your courses will be in our own classrooms, Rooms 303 (for small classes), 306 (for larger classes) and/or 307 (for computing labs).

The Copy Room is Room 206. This room contains not only the Department copy machine, but it also houses the Department mailboxes and a limited amount of office supplies.

Each faculty member, staff member, graduate student and departmental visitor has a mailbox. All are expected to check their physical and electronic mailboxes regularly.

The Department has a common social area, located adjacent to the Cohen Room (Room 230) as well as limited kitchen facilities in both the Cohen Room and in the vending machine area. Faculty and students often have their lunch in the Cohen Room and in the small meeting room. The kitchen facilities are available to all Department citizens – please make sure you clean up after yourself, and please do not leave food you will not soon eat in the refrigerator.

Libraries

The University's library system includes three major on-campus libraries – the Main Library on North Campus, the Science Library in Boyd Graduate Studies Research Center, and the Law Library maintained by the School of Law. Most Statistics publications are in the Science Library. Most journals subscribed to by the University may be accessed online from the University Library's [main web page](#).

Computing

The Department has enjoyed a strong emphasis on computing that stems from its early days as the Department of Statistics and Computer Science. All Departmental computing is networked, so that you cannot access these computing resources without having a UGA MyID.

Each student office contains at least one desktop computer for use by students in that office. There is a central printer in the graduate student office area which is networked to these computers. The copy machine can also serve as a network printer.

Contributions from the former students of Professor Rolf Bargmann enabled the Department to establish the Rolf Bargmann Computing Lab in Room 106. All students who have a key to the Statistics Building have access to the Bargmann Lab. This lab houses several Windows desktops.

Each student also has access to the computer classroom, Room 307. There are 31 Windows computers in this room, and many of our courses will hold computing labs in this classroom. Every Teaching Assistant who has responsibility for some course other than STAT 2000 is expected to hold an open lab hour in this classroom, in order to provide some after-hours access to those students who need the facility to complete their homework assignments.

If you notice any problems with any of the Departmental computing equipment, please alert our IT Professional by submitting a ticket to the [Franklin College Office of Information Technology Helpdesk](#). You will need to login with your UGA MyID in order to report the problem.

The [Georgia Advanced Computing Resource Center](#) (GACRC) provides an advanced computing environment, currently in the form of Linux clusters, to support UGA's research and education community. All faculty are able to have accounts with the GACRC, and as a student, you may use the resources of the GACRC by establishing an account under your advisor's "lab". These are specially-networked computing clusters specifically for high-performance computing. You are strongly encouraged to do any heavy-duty computing through this resource, but before you gain access, you will need to attend at least two training sessions.

Colloquia

You are expected to attend – and attempt to pay attention in – seminars and colloquia. Seminars tend to be aimed at graduate students, and will be about careers, research, or other topics pertinent to your professional growth. Colloquia are research presentations aimed at faculty and senior graduate students, but all graduate students should be able to get something from every colloquium – even if that something is how **not** to give a presentation!!

If you receive financial support from any University source, then you are required to take the STAT 8910-20-30 sequence; if you receive no University support, then you are still strongly encouraged to take them. These courses are in place to ensure your professional growth through colloquium attendance, and to get you thinking about some of the things which make a good statistician but are not taught in any of your regular courses.

You are expected to participate in faculty interviews. When the department interviews a potential faculty member, the graduate students are always given an opportunity to interact with the person being interviewed. There are several reasons for this: the new faculty member will have an impact upon your life here in the department, or have an impact upon your degree through his/her impact upon the reputation of this department, and how this person interacts with you is very important to the faculty. So, the faculty are very interested in your input on those we interview.

Other Resources

Among the MANY resources available to you are:

The Graduate Coordinator

The Graduate Coordinator is an excellent source of information on matters concerning graduate students in the Department. This faculty member is your coursework advisor until you choose someone to be your research advisor. If s/he cannot give you the answers you need, s/he should be able to give you advice on where you can find those answers.

The Stat Club

The [Stat Club](#) is an organization which has both social and political functions within the Department. The membership is open to all students in Statistics, both undergraduate and graduate. The officers of the club organize social outings, such as bowling or mini-golf, about once a month. They also organize the International Potluck Dinner in the Fall and the Bradley Lecture Festivities (the lecture, the banquet, and the picnic) in the Spring.

The officers of the Stat Club also serve very important functions in keeping up the mission of the club. The President is the chief organizer for the activities; the Vice-President is your representative to the faculty and attends regular faculty meetings to give voice to matters that concern you; the Secretary keeps track of membership and helps the Business Manager to fill out paperwork to obtain funds for the Bradley Lecture from the Franklin College Student Fee Allocation Committee; and the Treasurer helps the Business Manager collect dues from the membership to fund the other activities.

As of Fall 2016, your Stat Club President is Kristen Roland, Vice-President is Richard Ross, Treasurer is Vineet Vora, and Secretary is Thad Sulek.

Graduate Student Association

The University's [Graduate Student Association](#) (GSA) exists to represent your interests as a graduate student to the University, and to advocate on your behalf as part of the body of over 8500 graduate and professional students at UGA. They work to advance your rights and to keep you informed about University issues relevant to you. The GSA also holds social activities and community service events.

The Graduate School

The [Graduate School](#) is responsible for the oversight of nearly everything that affects your academic life here at UGA. They admit you, control your tuition waivers, and verify that you meet all of your degree expectations. They have many resources available to you, and you should spend a little time exploring their web site.

UGA Career Center

The University's [Career Center](#) exists to help you as you search for a job or an internship. It is their job to make sure you look good, so that UGA also looks good. They hold career fairs, host recruiters, help you design your resume and cover letter, have mock interviews, etc. In fact, they strongly encourage even beginning students to contact them to get started early on preparing for the inevitable job search.

Professional Societies

Each of the professional societies has student memberships which feature many membership privileges for a very low membership fee.

The [American Statistical Association](#) (ASA) is the world's largest community of statisticians, and supports excellence in the development, application, and

dissemination of statistical science through meetings, publications, membership services, education, accreditation, and advocacy. Members serve in industry, government, and academia in more than 90 countries, advancing research and promoting sound statistical practice to inform public policy and improve human welfare. There is also an Atlanta chapter of ASA.

Student memberships are available to students seeking a degree in Statistics. Benefits include all regular membership benefits (subscriptions to ASA magazines, discounts on ASA journal subscriptions, online access to ASA journal articles, discounts on conference registrations) plus a subscription to *Chance* magazine and even deeper discounts on ASA conference registration fees. All this is available for the student membership fee of \$17.

The [Institute for Mathematical Statistics](#) (IMS) exists to foster the development and dissemination of the theory and applications of statistics and probability. [Student membership](#) is FREE and includes all benefits of a regular membership, including online access to all IMS journal articles and reduced rates for IMS conference registration fees.

The [Eastern North American Region](#) of the [International Biometrics Society](#) (ENAR) exists to advance biological and life science through the development of quantitative theories and the application, development and dissemination of effective mathematical and statistical techniques. ENAR features a student membership for only \$20.

The [Southern Regional Council on Statistics](#) (SRCOS) exists to promote the improvement of postsecondary education in statistical science, assist in the development of high quality statistics instruction in elementary and high schools, and promulgate educational activities which improve the quality of statistical practices. SRCOS sponsors a small Summer Research Conference (SRC) each year which features student posters (including a poster competition) as well as presentations by senior researchers. If you are presenting, then you may apply for travel funds from SRCOS to attend the SRC. The SRC is an excellent opportunity for young statisticians to mix with famous statisticians at a very small meeting. SRCOS membership is limited to institutions.

Departmental Email Aliases

These email addresses are useful for contacting subsets of Department citizens. Note that you will become part of the "grad" alias only if you have a Department computing account.

faculty@stat.uga.edu
staff@stat.uga.edu
grad@stat.uga.edu
all@stat.uga.edu

Graduate Faculty

Members of the Graduate Faculty are those who may direct graduate research at UGA.

Full Professors

Billard, Lynne
Datta, Gauri Sankar
Lazar, Nicole
Ma, Ping
Sriram, T.N.

Associate Professors

Ahn, Jeongyoun
Hall, Dan
Kaplan, Jennifer
Liu, Liang
Mandal, Abhyuday
Park, Cheolwoo
Reeves, Jaxk
Schliekelman, Paul
Seymour, Lynne
Zhong, Wenxuan

Assistant Professors

Bai, Ray
Ji, Pengsheng

M

aster of Science Degree in Statistics

There are several options for earning the Master of Science (MS) degree in Statistics. There are also several tracks for specialization in the MS degree. Each option features core training, elective courses, and a demonstration of mastery of statistical concepts.

A full-time student who is receiving financial assistance from the University must take a total of at least 12 credit hours. Supported students supplement their full course load with STAT 7770 and/or STAT 8910-20 until research begins. Other full-time students must take a total of at least 9 credit hours.

No credit from a previous degree program or institution may be transferred to use toward your degree program at UGA unless that course did not count toward any previous degree. You may transfer at most 6 credit hours which must be approved by the Graduate Coordinator.

Note that the Graduate Coordinator is your coursework advisor, unless you are taking the Thesis Option. Even under the Thesis Option, the Graduate Coordinator is still your coursework advisor until you choose a research advisor.

Core Requirements

The core of the MS degree consists of training in linear models, mathematical statistics or probability & inference, and consulting. The five courses required to develop this mastery are:

Linear Models:

STAT 6420 and STAT 8260

Mathematical Statistics/Probability & Inference:

Choose one sequence:

STAT 6510 and 6520

STAT 6810 and 6820

Consulting:

STAT 8000

Elective Requirements

You may choose either an Examination Option or a Thesis Option, which are described in more detail in the next section on demonstration of mastery. These choices have a direct effect on how many elective courses you may choose:

Thesis Option: Choose 4 electives.

Examination Option: Choose 6 electives.

At most 2 of the elective courses may be approved graduate courses from some discipline other than Statistics. At least 1 elective must be graduate-only.

Elective courses for the MS degree include all 6000- and 8000-level courses except STAT 6050, 6070, 6210, 6220, 6230, 6315; any 7000-level course; 8040, 8050, 8200, 8250; any other 6000- or 8000-level course aimed primarily at students who are not in Statistics; 8910, 8920, 8930; and any 9000-level course.

Research Skills Requirements

All financially supported MS students are required to register for STAT 8910 and STAT 8920. These courses are designed to help you develop the habit of attending research talks to understand the research that is on the cutting edge of statistics, and to learn about other matters of professional development. Students who take the Thesis Option are gaining some of these skills already, in the course of researching and writing a thesis. More about these courses may be found in the chapter on Research Skills Requirements.

Demonstration of Mastery

Thesis Option

Under this option, you will choose a research advisor (also called your major professor) and write a thesis under that person's direction. You are expected to choose your research advisor during the first semester of your second year, as part of the expectations of STAT 8920.

The relationship between you and your advisor is one which both of you must agree to. It is, however, not set in stone, and either you or your advisor can terminate this relationship when it is not working out for whatever reason.

Once the thesis is written, your Advisory Committee will read your thesis, and you will present and defend your results to them.

The Graduate Bulletin contains more on the [Graduate School's requirements for a Master's thesis](#). Of specific interest to you, and with some modifications for the Department's purposes, are the following items.

Program of Study

You must complete a Program of Study which constitutes a logical whole. The MS degree in Statistics requires a minimum of 33 semester hours. Under the Thesis Option, this means 9 courses plus 3 hours of STAT 7000 Thesis Research and 3 hours of STAT 7300 Thesis Writing. At least half of this course work must be open only to graduate students (exclusive of 7000 and 7300). You must use an asterisk (*) to designate 6000-level courses open only to graduate students. No grade below C will be accepted on the

Program of Study. To be eligible for graduation, a student must maintain a 3.0 (B) average on the graduate transcript and a 3.0 (B) average on the Program of Study.

The typed Program of Study must be submitted on the [proper form](#), with approval by your major professor, the Department Graduate Coordinator, and the Dean of the Graduate School. This step should be completed by Friday of the second full week of classes of the semester in which degree requirements are completed. Exception: If degree requirements will be completed during summer term, the program of study will be due by Friday of the first full week of classes in that semester.

Advisory Committee

The Advisory Committee, in consultation with you, is charged with approving your Program of Study, reading and approving your thesis, and administering your final examination.

Before the end of your third semester of residence and upon the recommendation of the Department Graduate Coordinator, the Dean of the Graduate School appoints an Advisory Committee for you. The Master's Advisory Committee must consist of a minimum of three members, at least half of which must be from Statistics. The chair (who is your advisor) and at least one other member must be members of the Graduate Faculty of the University of Georgia.

The third member may be a member of the Graduate Faculty or a person with a terminal degree holding one of the following ranks at the University of Georgia: professor, associate professor, assistant professor, public service assistant, public service associate, senior public service associate, assistant research scientist, associate research scientist, or senior research scientist. A UGA employee who holds one of these ranks or who holds a terminal degree in his/her field may be appointed as a third member upon approval by the Department Graduate Faculty and the Dean of the Graduate School. The third member can also be a non-UGA faculty member with a terminal degree in his/her field of study. No more than one non-UGA committee member may be appointed as a voting member. If there are more than three members on the committee, a majority of Graduate Faculty members must be maintained, and a majority of Statistics faculty must be maintained. Co-major professors count as one Graduate Faculty member. The committee will be recommended to the dean of the Graduate School by the Graduate Coordinator after consultation with the student and faculty members involved.

When nominating a non-UGA committee member, the Graduate Coordinator must submit the nominee's current CV with the appropriate forms, along with a letter addressed to the Dean of the Graduate School explaining why the services of the non-UGA person are requested. The non-affiliated member must attend meetings associated with the appointment.

Thesis

Please refer to the Graduate School's [Thesis Guidelines](#) for more details than given here.

You must submit a thesis which shows independent judgment in developing a problem from primary sources. Your thesis shall be written under the direction of your major professor(s), but preparation of the thesis is your responsibility. Your thesis must be approved by the major professor, who will distribute copies to the remaining members of the Advisory Committee and schedule a final examination. The committee members must have three weeks to read and evaluate the completed thesis. Written assent of two of the three committee members will be required before a thesis will be approved as ready for a final defense.

One complete formatted copy of your thesis must be electronically submitted to the Graduate School no later than four weeks prior to graduation for a format check. All requirements for the thesis must be completed no later than two full weeks prior to graduation.

Final Examination

You must submit to a final examination on the contents of your thesis, and this must be an oral examination. The final examination will be administered by your Advisory Committee, with your major professor serving as chair. All members of the Advisory Committee must be present for the entire examination period. An abstention is not an appropriate vote for the defense of the thesis or the final exam. Thesis approval can have no more than one dissenting vote.

Submitting the Thesis and Final Clearance

The Graduate School must receive the Final Defense Approval form and an electronic submission of the corrected thesis no later than two weeks prior to graduation. All requirements for the degree must be completed and reported to the Graduate School no later than one week prior to graduation.

You must enroll for a minimum of 3 hours of credit during the semester in which you complete your degree requirements unless additional stipulations are required by other units of the university.

Time Limit

All requirements for the MS degree must be completed within six years beginning with the first registration for graduate courses on the Program of Study. An extension of time may be granted only for conditions beyond the control of the individual.

Timeline for Defense

Let T be your defense date, which must be at least 1 week before the final copy of your thesis is due to the Graduate School.

At T – 3 weeks you must give the next-to-final draft of your thesis to your Advisory Committee, allowing them sufficient time to read it.

Items to address will almost surely come up during the reading of the Thesis, the Final Defense and Final Examination, so you will be able to make the requested changes during the week before the final copy must be turned in to the Graduate School.

Graduation

An application for graduation must be filed with the Graduate School via Athena no later than Friday of the second full week (the first full week for summer) of classes in the semester of the anticipated graduation date. The application must be submitted online. The link is available from the Graduate School's web page for forms.

All requirements for the degree must be completed and reported to the Graduate School no later than one week prior to graduation. You must enroll for a minimum of 3 hours of credit the semester in which graduation requirements are completed.

To be eligible for graduation, you must maintain a 3.0 (B) average on the graduate transcript and a 3.0 (B) average on the Program of Study.

Examination Option

The MS Qualifying Examination (QEM) is given twice every year, during January and May. The January exam is given prior to the beginning of Spring semester. The May exam is given following the end of Spring semester. The January and May exams are equivalent exams; that is, the January exam is not a “make-up” exam and the two exams have a similar level of difficulty.

Parts, Scope and Time Allowed

The QEM tests material covered during the first year core of the MS program. This core corresponds to STAT 6420, STAT 8260, STAT 6510 and STAT 6520. However, the exam does not have separate sections for each course's material, but rather tests the first-year core in a comprehensive way that requires you to synthesize material from all four courses. The exam has 2 parts:

- Statistical Theory. This is an “in-class” exam which you have 6 hours to complete. During that time, you may refer to books and notes, but you will not have access to a computer or to the Internet. At the discretion of the Examination Committee, the Theory portion may include a take-come component.
- Applied Statistics and Data Analysis. This is a “take-home” exam which you have 2 days to complete. You will be presented with 2 or 3 problems, each with a corresponding data set, from which you must choose 1 problem to solve. The questions are open-ended, requiring you to analyze the data in some appropriate way and draw conclusions about the scientific question(s) of interest. You will hand in a short written report, detailing the decisions you made along the way (for example, which analyses were chosen and why), the

conclusions you drew, and so forth. You will be evaluated on both the quality of the analysis (the choices you made and how well you justified them) and of the written report (organization, etc.; English language usage specifically doesn't need to be a criterion, although reports do need to be understandable).

Grading

Each part of your QEM is graded by at least two members of the committee that set the exam. The resulting scores will be averaged to determine your score for each part. A pass/fail grade will then be determined for each part of the exam. There will be no differentiation of different levels of passing (for example, pass at the MS level, or pass at the PhD level). You must pass both parts of the exam or write a thesis to earn an MS degree.

Rules for Taking and Re-Taking

For your initial attempt, you must take both parts of the QEM. If you do not pass both parts on your initial attempt, you may retake the part or parts of the exam which you failed. More than two attempts at the exam will not be allowed.

Faculty Responsibilities

Two faculty committees, one for each part of the exam, have responsibility for setting the exam and administering it. Each of these committees has 4 members including at least one person who has recently taught one of the MS core courses, and at least one person who has not recently taught one of the MS core courses. Questions for the exam will be solicited from the membership of these exam committees as well as the broader faculty, who are encouraged, but not required, to contribute. The committees do not simply ask instructors of the core courses to formulate the exam. The committees are responsible for ensuring that the exam is appropriate and reasonably consistent from year to year. They also have the responsibility for grading the exams and making pass/fail recommendations to the entire Graduate Faculty of the Department, who will then vote on the results. These committees also have responsibility for the PhD Qualifying Examination.

Program of Study

You must complete a Program of Study which constitutes a logical whole. MS degrees in Statistics under the Examination Option require a minimum of 11 courses. At least half of this course work must be open only to graduate students, and you must use an asterisk (*) to designate 6000-level courses open only to graduate students. No grade below C will be accepted on the Program of Study. To be eligible for graduation, you must maintain a 3.0 (B) average on your graduate transcript and a 3.0 (B) average on your Program of Study.

The typed Program of Study must be submitted on the [proper form](#) with approval by the Department Graduate Coordinator and the dean of the Graduate School. This step should be completed by Friday of the second full week of classes of the semester

in which degree requirements are completed. Exception: If degree requirements will be completed during summer term, the program of study will be due by Friday of the first full week of classes in that semester.

Advisory Committee

For the Examination Option, the Advisory Committee is just a formality. Three faculty members who satisfy the requirements of the Advisory Committee for the Thesis Option must sign your Program of Study. You may choose these faculty members yourself, or you may allow the Graduate Coordinator's Assistant to choose them.

Time Limit

Under the Examination Option, you should need no more than 4 terms to complete the requirements.

Graduation

An application for graduation must be filed with the Graduate School no later than Friday of the second full week (the first full week for summer) of classes in the semester of the anticipated graduation date. The application must be submitted online. The link is available from the Graduate School's web page for forms.

All requirements for the degree must be completed and reported to the Graduate School no later than one week prior to graduation. You must enroll for a minimum of 3 hours of credit the semester in which graduation requirements are completed.

To be eligible for graduation, you must maintain a 3.0 (B) average on the graduate transcript and a 3.0 (B) average on the Program of Study.

Tracks for the MS in Statistics

You have the option of structuring your Program of Study around several areas of concentration, or "tracks" for specific statistical applications, available in the program. To satisfy the requirement of a track, the student must satisfy the existing requirements for an MS degree as outlined previously in this section. In addition, your elective courses must include the three courses required for that track, as listed below. Additional electives related to the track may be taken but are not required.

Note that you are not required to participate in any track, and may choose your electives to suit your own purposes.

Business and Engineering

STAT 6280 Applied Time Series Analysis
STAT 6430 Design and Analysis of Experiments
Choose 1: STAT 6240 Sampling and Survey Methods

STAT 6260 Statistical Quality Assurance
STAT 8210 Multivariate: Theory and Methods

Additional recommended electives:

STAT 6100 Applied Stochastic Processes
STAT 6360 Statistical Software Programming
STAT 8060 Computing Techniques in Statistics I
STAT 8070 Computing Techniques in Statistics II
STAT 8290 Advances in Experimental Design

Environmetrics/Biometry

STAT 6240 Sampling and Survey Methods
STAT 6430 Design and Analysis of Experiments
Choose 1: STAT 8230 Applied Nonlinear Regression
STAT 8270 Spatial Statistics

Additional recommended electives:

STAT 6100 Applied Stochastic Processes
STAT 6280 Applied Time Series Analysis
STAT 6290 Nonparametric Methods
STAT 6360 Statistical Software Programming
STAT 8210 Multivariate: Theory and Methods
STAT 8350 Bayesian Data Analysis

Social Sciences

STAT 6240 Sampling and Survey Methods
STAT 8210 Multivariate: Theory and Methods
STAT 8620 Categorical Data Analysis and Generalized Linear Models

Additional recommended electives:

STAT 6290 Nonparametric Methods
STAT 6360 Statistical Software Programming
STAT 6430 Design and Analysis of Experiments
STAT 8350 Bayesian Data Analysis

Statistical Genetics/Bioinformatics

STAT 6630 and 6640 Bioinformatics I and II
Choose 1: STAT 8090 Statistical Analysis of Genetic Data
STAT 8620 Categorical Data Analysis and Generalized Linear Models

Additional recommended electives:

STAT 6100 Applied Stochastic Processes
STAT 6360 Statistical Software Programming
STAT 8060 Computing Techniques in Statistics I
STAT 8070 Computing Techniques in Statistics II

STAT 6430 Design and Analysis of Experiments
STAT 8330 Advanced Applications and Computing

Doctor of Philosophy Degree in Statistics

The Doctor of Philosophy (PhD) program in Statistics is designed to prepare you to work on the frontiers of the discipline of Statistics, whether your career choice leads you into research and teaching or into leadership roles in business, industry and government.

The program is very flexible particularly in the choice of electives and of research topic. You may even choose to do research on the interface of Statistics and some other discipline, such as Computer Science, Genetics, Forestry, Bioinformatics, Economics, etc. The course requirements are designed to ensure that you have sufficient training in Probability, Statistical Inference, Computing, and Applications to prepare you for research on the cutting edge of Statistics.

The MS degree is not a prerequisite for the PhD program, but training equivalent to that specified in the MS program is necessary preparation for the PhD core courses. An incoming PhD student may waive the MS-level core with the appropriate equivalent training from another institution; however, a student who is missing any element of the MS-level core will be required to pass the PhD Qualifying Examination. Proficiency in mathematics, particularly in Real Analysis, and in computing is indispensable for successful completion of the PhD program.

Many items in this section, with some modifications for the Department's purposes, are taken from the [Graduate Bulletin](#).

A full-time student who is receiving financial assistance from the University must take a total of at least 12 credit hours. Supported students supplement their full course load with STAT 7770 and/or STAT 8910-20-30 until research begins. Other full-time students must take a total of at least 9 credit hours.

No credit from a previous degree program or institution may be transferred to use toward your degree program at UGA if that credit counted toward any previous degree. You may transfer at most 6 credit hours which must be approved by the Graduate Coordinator.

Selection of Research Advisor

If you are earning your PhD degree, then you are expected to choose your research advisor while you are taking your PhD core, as part of the expectations of STAT 8920-30.

The relationship between you and your advisor is one which both of you must agree to. It is, however, not set in stone, and either you or your advisor can terminate this relationship when it is not working out for whatever reason.

The Graduate Coordinator is your coursework advisor, until you choose a research advisor.

Residence

The Graduate School requires that a minimum of 30 hours of consecutive course work included on your Program of Study must be spent in resident study on this campus. Undergraduate courses taken either to fulfill research skills requirements or to remove deficiencies may not be calculated in the 30 consecutive hours of resident credit.

Core Requirements

The core of the PhD degree consists of two parts: A First-Year core, for students who have not had previous equivalent training elsewhere, and a Second-Year core.

The First-Year core is in fact one of the options that you may choose for the MS degree outlined in the chapter immediately preceding this one. That First-Year core provides training in

Linear Models: STAT 6420 and STAT 8260

and

Probability and Inference: STAT 6810 and 6820.

The Second-Year core covers

STAT 8170 Probability Theory,
STAT 8530 Advanced Inference,
STAT 8620 Categorical Data Analysis and Generalized Linear Models, and
STAT 8700 Stochastic Processes.

Sub-Core Requirements

The intent of the sub-core is to provide you with some flexibility towards your primary interests. These courses are important, but you may choose those which will be of most benefit to you in your chosen research direction.

You are required to choose two of the following sub-core courses.

STAT 8060 Computing Techniques in Statistics I,
STAT 8210 Multivariate, Theory and Methods,
STAT 8540 Advanced Statistical Inference II, and
STAT 8630 Longitudinal Data Analysis.

Elective Requirements

You may choose 4 electives from among all 8000-level courses, *except* 8040, 8200, 8250, and any other 8000-level course aimed at students who are not in Statistics; 8910, 8920, and 8930; and any 8000-level course cross-listed with Biostatistics (e.g., 8050, 8220, ...).

Research Skills Requirements

To pursue research effectively you must develop a facility with certain research skills and tools such as reading research papers and effectively communicating results to an audience. Toward this goal, the Department requires all supported students to enroll in STAT 8910, STAT 8920 and STAT 8930. These courses are designed to help you develop the habit of attending research talks, understand the research that is on the cutting edge of statistics, learn about professional development as a research scientist, and get a head-start on your dissertation research. More about these courses may be found in the chapter on Research Skills Requirements.

PhD Qualifying Examination

The PhD Qualifying Examination (QEP) is given every year during August, approximately one week prior to the start of Fall semester. This exam is given only once per year.

A student who passes the QEP is eligible for an MS degree in Statistics, pending the completion of the appropriate coursework. See the previous chapter for more details.

Parts, Scope and Time Allowed

The QEP tests material covered during the First-Year core of the PhD program. This core corresponds to STAT 6420, STAT 8260, STAT 6810 and STAT 6820. However, the exam does not have separate sections for each course's material, but rather it tests this core material in a comprehensive way that will require students to synthesize material from all four courses. If you are missing any part of the First-Year core in your previous coursework, you will be required to pass the QEP before continuing in the PhD program.

The exam will have two separate parts:

- Statistical Theory. This is an "in-class" exam which the students have 6 hours to complete. During that time, you may refer to books and notes but will not have access to a computer or the Internet. At the discretion of the Examination Committee, the Theory portion may include a take-come component.
- Applied Statistics and Data Analysis. This is a "take-home" exam which you have 4 days to complete. You will be presented with 2 or 3 problems, each with a corresponding data set, from which you must choose 1 problem to solve. The questions are open-ended, requiring you to analyze the data in some appropriate way and draw conclusions about the scientific question(s) of interest. You will hand in a written report detailing the decision you made along the way (for example, which analyses you chose and why), the conclusions you drew, and so forth. You will be evaluated on both the quality of the analysis (the choices you made and how well you justified them) and of the written report (organization, etc.; English language usage specifically doesn't need to be a criterion, although reports need to be understandable).

Typically, the statistical theory portion of the exam is given on a Monday, and the applied statistics/data analysis portion is made available on the same day, to be turned in on the Friday of the same week.

Grading

Each part of your QEP is graded by at least two members of the committee that set the exam. The resulting scores are averaged to determine your score on each part. A pass/fail grade is then determined for each part of the exam. There is no differentiation of different levels of passing (for example, pass at the MS level, or pass at the PhD level). You must pass both parts of the exam to continue in the PhD program.

Rules for Taking and Re-Taking

For your initial attempt, you must take both parts of the QEP. If you do not pass both parts on your initial attempt, you may retake the part or parts of the exam you failed the following August. More than two attempts at the exam will not be allowed.

Faculty Responsibilities

Two faculty committees, one for each part of the exam (stat theory and applied stats/data analysis), have responsibility for setting the exam and administering it. Each of these committees have 4 members, including at least one person who has recently taught one of the first year PhD core courses, and at least one person who has not recently taught one of the first year PhD core courses. Questions for the exam are solicited from the membership of these exam committees as well as the broader faculty, who are encouraged, but not required, to contribute. The committees are responsible for ensuring that the exam is appropriate and reasonably consistent from year to year. They also have the responsibility for grading the exams and making pass/fail recommendations to the entire Graduate Faculty of the Department, who then vote on the results. These committees also have responsibility for the QEM.

Advisory Committee

Within one year of successful completion of the QEP, you should seek a major professor and, in consultation with your major professor, select faculty to form your PhD Advisory Committee. The form for declaring your Advisory Committee is available on the Graduate School's web site, www.grad.uga.edu, on their forms page.

The Advisory Committee must consist of the major professor as chair, and four additional Graduate Faculty members. At least half of the Advisory Committee must come from the Department of Statistics. Additional voting members may be appointed to the committee, including no more than one non-UGA faculty, who must hold a PhD in his/her field. The Advisory Committee will be recommended to the Dean of the Graduate School by the Graduate Coordinator after consultation with you and the faculty members involved.

The Advisory Committee is charged with approving your Program of Study, arranging and executing the written and oral Comprehensive Examinations, approving a subject for the dissertation, approving the completed dissertation, and approving your defense of your research.

Changes in membership of the Advisory Committee require approval of the Graduate Coordinator and the Dean of the Graduate School.

Program of Study

A Preliminary Program of Study, developed by you, the Graduate Coordinator, and your major professor and approved by a majority of your Advisory Committee, may be submitted to the Graduate Coordinator by the end of the Second-Year core. Filing a Preliminary Program of Study is not necessary; however, you must file a Final Program of Study before you complete your Comprehensive Examination.

Programs of Study are not intended to be standardized. If you are interested in special applications of Statistics, you may include study in the relevant discipline.

The Program of Study should consist of 18 or more semester hours of approved 8000-level courses in addition to research, dissertation writing, and directed study. No grade below C will be accepted on the Program of Study. To be eligible for graduation, you must maintain a 3.0 (B) average on the graduate transcript and a 3.0 (B) average on the Program of Study.

You must submit a final, typed Program of Study to the Graduate School prior to notification of the Comprehensive Examination. This Program of Study must be submitted on the [proper form](#) for approval by the Advisory Committee, the Graduate Coordinator, and the Dean of the Graduate School. The Final Program of Study must show all graduate courses relevant to the doctoral program and not just courses satisfying the minimum degree requirement. Courses from the MS degree and courses taken at other universities may be listed in the "Relevant Master's or Other Graduate Degree Courses" section of the program of study form. The Program of Study must carry a minimum of 30 hours of course work, three hours of which must be dissertation writing (9300).

The Graduate Committee or your Advisory Committee will evaluate carefully and fully your progress and qualifications at the end of each year of study in order to advise you whether or not to continue in the program.

Comprehensive Examination

You must pass formal, comprehensive written and oral examinations before being Admitted to Candidacy for the PhD. These examinations are administered by your Advisory Committee.

The written Comprehensive Examination, although administered by the Advisory Committee, is prepared and graded according to the procedures and policies given in this section. The oral Comprehensive Examination is an inclusive examination within your field of study. An examination of your dissertation prospectus (proposal) takes place on a date after the oral Comprehensive Examination and may not take the place of the oral Comprehensive Examination. All members of your Advisory Committee must be present simultaneously for the oral examination and prospectus (proposal) presentation.

The oral Comprehensive Examination is open to all members of the faculty and shall be announced by the Graduate School. The Graduate Coordinator must notify the Graduate School of the time and place of the examination at least two weeks before the date of the examination.

Following each of the written and oral examinations, each member of the advisory committee will cast a written vote of pass or fail on the examination. To pass each examination, the agreement of the Advisory Committee is achieved with no more than one dissenting vote. An abstention is not an appropriate vote for the Comprehensive Examination. The results of both examinations will be reported to the Graduate School within two weeks following the oral examination.

Grade Requirement

You are required to achieve at least a B+ average grade (3.3 GPA) in the Second-Year core courses. Failure to meet this requirement will result in a remedial measure to be imposed by your Advisory Committee. The choice of remedial measure is at the discretion of the Advisory Committee but could involve retaking a course, completing an independent study or assignment in the area of deficiency.

Any remediation must be completed before you begin the Comprehensive Examination.

Timing

The Comprehensive Examination is taken after completing the Second-Year core courses. If you are required to remediate, then you must complete the prescribed remedial measures before taking your Comprehensive Examination.

Typically, your Comprehensive Examination should be undertaken during the Summer or Fall following the completion of your Second-Year core coursework, but no later than the end of the Spring semester beyond finishing the Second-Year core. You are expected to have made substantial progress on the relevant literature review, although it is not necessary for you to have any novel results nor even a specific research proposal. The Comprehensive Exam is separate from the dissertation proposal and must be completed prior to the presentation of the proposal.

Parts, Scope and Time Allowed

To begin the Comprehensive Examinations, you and your major professor notify the Graduate Coordinator that you are ready, and you call a meeting of your Advisory Committee. At that meeting, you give a short presentation (15 minutes) and/or write-up (1 or 2 pages) of your area of research. Also at that meeting, the Advisory Committee will discuss your record and whether any remediation is warranted.

The Comprehensive Examination must consist of two parts: one written, and one oral. Both parts of the exam are formulated and administered by your dissertation Advisory Committee.

- The written portion of the exam is administered over a period of several days or perhaps as much as four weeks. Typically, each committee member in turn poses questions to you, and these questions are answered in written format. The topics to be examined include:
 1. The PhD core courses with emphasis on the second year core;
 2. Coursework outside of the core that is particularly relevant to your intended research area (including relevant material taught outside the department, conceivably); and
 3. The existing literature related to your intended research area.
- The Oral portion of the exam follows the Written portion. Committee members may examine you on the topics listed above, including, but not limited to, follow-up questions related to the written portion of the exam. There is no time limit for this portion of the exam, but it typically takes 1-3 hours. All committee members must be present for this exam.

You must notify the Graduate Coordinator, who must then notify the Graduate School, of the time, date and location of the Oral Comprehensive Examination at least two weeks in advance.

Grading

Your PhD Advisory Committee has responsibility for evaluating your performance on the Comprehensive Exam. In accordance with Graduate School rules, each committee member assigns pass/fail grades separately for the written and oral portions of the exam. You must pass both the oral and written portions with no more than one “fail” vote in each case. Subject to the committee's discretion, passing grades may be assigned conditional on remedial measures to address a particular area of weakness. For example, you may be required to complete additional coursework and/or directed reading. In the case that you fail either the oral or written components, you may re-attempt either component(s) one time. Failure of either component more than once will result in your being dismissed from the PhD program.

Dissertation

All PhD students at UGA must present a dissertation on some subject connected with his/her major field of study. The dissertation must represent originality in research, independent thinking, scholarly ability, and technical mastery of a field of study. The conclusions must be logical, the literary form acceptable, and the contribution to knowledge meriting publication.

Persons who serve on your Advisory Committee at the time the dissertation research is undertaken must be faculty members knowledgeable in the areas of your research. The major professor has the primary responsibility for guiding your research, but you should consult all members of the Advisory Committee to draw upon their expertise in relevant areas.

Dissertation Prospectus and Proposal

The major professor and Advisory Committee shall guide you in planning your dissertation. To inform your Advisory Committee of your research will write a Dissertation Prospectus, and then give a presentation to your Advisory Committee in which you propose your planned research.

The Dissertation Prospectus is an essay on your proposed dissertation research. This essay should review the pertinent literature, present any new preliminary results you have obtained, and give a clear indication of the direction of proposed research for your dissertation. The essay should demonstrate concise professional writing and should not exceed 30 standard pages of typescript (single-spaced, and in 12-point font).

When your major professor certifies that your Dissertation Prospectus is satisfactory, it must be formally considered by the Advisory Committee in a meeting with you. This meeting is an oral examination during which you present to your Advisory Committee your literature review and preliminary research results, and describe how you intend to complete your dissertation. Your Advisory Committee examines you on the proposed research, considers its feasibility, and advises you accordingly. In rare situations, it is possible that you will be advised to seek another, hopefully related, research topic.

Note that this formal consideration may not take the place of the oral Comprehensive Examination, by specific directive of the Graduate School.

Approval of the Dissertation Prospectus, and of your presentation of its content, signifies that members of the Advisory Committee believe that you have proposed a satisfactory plan for your research study. Approval of the Prospectus requires the agreement of the Advisory Committee with no more than one dissenting vote as evidenced by their signing an appropriate form, which, together with the approved Prospectus, is filed with the Graduate Coordinator.

Admission to Candidacy

Admission to Candidacy for the PhD degree is a formal designation by the Graduate School which indicates that you have passed your Comprehensive Examination and have successfully proposed your dissertation research direction. Prior to Admission to

Candidacy, a PhD student should register for STAT 9000, Dissertation Research; after, the student should register for STAT 9300, Dissertation Writing.

You are responsible for initiating an application for Admission to Candidacy so that it is filed with the dean of the Graduate School at least two full semesters before the semester of graduation. This Application is a certification by the Department of Statistics that you have demonstrated ability to do acceptable graduate work in your chosen area of research and that:

- a. all prerequisites set as a condition to Admission have been satisfactorily completed;
- b. research skills requirements have been met;
- c. the Final Program of Study has been approved by the Advisory Committee, the Graduate Coordinator, and the dean of the Graduate School;
- d. an average of 3.0 (B) has been maintained on all graduate courses taken and on all completed courses on the Program of Study;
- e. written and oral Comprehensive Examinations have been passed and reported to the Graduate School;
- f. the Advisory Committee, including any necessary changes in the membership, is confirmed and all its members have been notified of their appointment;
- g. a Dissertation Prospectus has been approved; and
- h. the Graduate School's residence requirement has been met.

Once a student has been Admitted to Candidacy, the Department has an ethical responsibility to ensure that appropriate faculty mentorship is provided to the Candidate for completion of the degree.

For more information on dissertation writing, please see the [Graduate School's Dissertation Guidelines](#).

Dissertation Approval and Defense

The dissertation must constitute an achievement in research and advance in knowledge in Statistics or on the interface of Statistics and an area of its application. Dissertation topics take on a wide range from development of new theory to innovative application in substantially new ways. Because of the great diversity of topics in Statistics, standards of length and style cannot be prescribed. The basic criterion for approval shall be the excellence of the research conducted to meet the objectives of the approved Dissertation Prospectus. As a minimum guide, any dissertation should be of such quality as to yield at least two papers in refereed journals.

The dissertation is written by you, in consultation with your major professor. Your major professor advises you on the technical aspects of the dissertation topic, the presentation of results, and the organization of your presentations and manuscripts. The Advisory Committee is advised of progress on the dissertation, with members participating in those aspects of your research where they can offer guidance. Members of the Advisory Committee will assist you and your major professor to ensure integrity, correctness and completeness of your research.

Preparation of the dissertation is your responsibility. The writing style in your dissertation must be of professional quality.

When your major professor is satisfied with the completed dissertation, s/he will certify that it has his/her approval and is ready to be read. The major professor will then distribute copies of the dissertation to the remaining members of the Advisory Committee and schedule a final oral defense. The dissertation must be given to the Advisory Committee at least 5 weeks prior to the last day to turn in the final copy of the dissertation to the Graduate School. The date for the final oral defense of the dissertation must be at least 1 week prior to the last day to turn in the final copy of the dissertation to the Graduate School.

The Graduate Coordinator must notify the Graduate School at least 2 weeks prior to the defense. Subsequently, the Graduate School will announce the time and place of the defense of the dissertation to the University community.

Written assent of the committee members (other than the major professor) will be required before a dissertation will be approved as ready for a final defense. No more than one dissenting vote may be allowed for the approval of the dissertation. If the Advisory Committee declines to approve the dissertation as ready for the final defense, the major professor will notify the student and the Graduate School.

The defense of the dissertation will be chaired by your major professor and attended by all members of the Advisory Committee simultaneously for the entire examination period. It is open to all members of the University community, and as such, is given as a Departmental Colloquium. The Advisory Committee must approve your dissertation and defense with no more than one dissenting vote and must certify their approval in writing. An abstention is not an appropriate vote for the final defense. The results of the defense of the dissertation must be reported to the Graduate School at least two weeks prior to graduation for the current semester.

Once the dissertation has been approved by the Advisory Committee and the final oral examination has been passed, the dissertation must be submitted to the Graduate School for final approval no later than two weeks prior to graduation. Dissertations which are not submitted by this deadline must be defended again and approved by the Advisory Committee before they will be considered by the Graduate School for final approval.

Timeline for Defense

Let T be your defense date, which must be at least 1 week before the final copy of your dissertation is due to the Graduate School.

At T – 4 weeks you must give the next-to-final draft of your dissertation to your Advisory Committee, allowing them sufficient time to read it.

Items to address will almost surely come up during the reading of the dissertation, the Final Defense and Final Examination, so you will be able to make the requested

changes during the week before the final copy must be turned in to the Graduate School.

Submitting the Dissertation

One complete formatted copy of the dissertation must be electronically submitted to the Graduate School for a format check no later than four weeks prior to graduation. The Graduate School must receive the Final Defense Approval form and an electronic submission of the corrected dissertation no later than two weeks prior to graduation. This official copy of the dissertation will be electronically submitted by the Graduate School to the main library for archiving.

You may not submit a dissertation to the Graduate School for format checking or the dean's approval between the last day of classes and late registration of the following term.

Time Limit

All requirements for the PhD degree, except the dissertation and final oral examination, must be completed within a period of six years. This time requirement dates from the first registration for graduate courses on your Program of Study. A candidate for the PhD who fails to complete all degree requirements within five years after passing the Comprehensive Examination, or being Admitted to Candidacy, will be required to take the Comprehensive Examinations again, or be Admitted to Candidacy a second time.

Graduation

An application for graduation must be filed with the Graduate School no later than Friday of the second full week (the first full week for summer) of classes in the semester of the anticipated graduation date. The application must be submitted online. The link is available from the Graduate School's web page for forms.

All requirements for the degree must be completed and reported to the Graduate School no later than one week prior to graduation. You must enroll for a minimum of 3 hours of credit the semester in which graduation requirements are completed.

To be eligible for graduation, you must maintain a 3.0 (B) average on the graduate transcript and a 3.0 (B) average on the program of study.

Financial Assistance

Many of the graduate students in the Department of Statistics receive some form of financial support. Typically, 35-40 students per semester receive full support, but this number actually fluctuates from one semester to the next. The majority of students are supported by Teaching Assistantships (TAs). A few students receive Research Assistantships (RAs), Consulting Assistantships (CAs), or Graduate School Research Assistantships (GSRAs). A few other students have Graduate Out-of-State Tuition Waivers (GOOSTWs) or Regent's Out-of-State Tuition Waivers (ROOSTWs).

Graduate Students who are supported at 4/9 time are currently paid a monthly stipend of \$1759.20 if they do not already hold an Master's degree (of any kind), and \$1869.20 if they do. Students supported for the academic year are paid August through May. Summer support is available, but is assigned very differently for those who are interested in it.

The Franklin College of Arts and Science provides the TA funds for the Department to use for instructional support. These appointments are 4/9 of full-time, so duties should require an average of 18 hours per week. Duties vary from course to course, and from instructor to instructor, but may include conducting lab/tutorial sessions, computing sessions, and/or grading of assignments.

TAs may also be asked to take responsibility for teaching a course, such as STAT 2000. The pay is the same, except during Summer, but this is typically the only duty given to you during that semester if you do choose to teach on your own. Teaching is excellent experience, no matter what professional direction you ultimately choose.

The students in the courses for which you are a TA are always given a chance at the end of the semester to evaluate your performance. These evaluations are read by the Graduate Coordinator and become a part of your permanent file in the department. If you are a TA for STAT 2000 or STAT 3000, the respective Coordinators also read your evaluations.

All TAs must abide by the [University's policy on being a TA](#). This policy covers teacher training requirements such as STAT 7770, as well as English language training and proficiency requirements.

Essential Skills

As a TA, you are expected to attend every meeting scheduled for your duties, especially for the large-lecture courses. On occasion, such as for writing-intensive courses, you may also be expected to attend the course.

You must be on time for your duties, including all labs. Often the student who is in lab before you is waiting for you before s/he leaves the lab.

You must respect the time and the effort of the instructor(s) you assist, your fellow students, and the students you are responsible for.

If any situation arises which you do not know how to handle, be sure to seek advice from the instructor you assist, the Graduate Coordinator, and/or the Associate Head.

RAs are usually supported from funds from research contracts or grants from outside the Department. Duties involve assisting one or more faculty or scientists in their research. Often such a student combines these duties with dissertation research.

Each year, the Graduate School awards a number of assistantships (GSRAs). These awards are made competitively to new students and to finishing doctoral students. These are highly competitive awards! Nominations are made each year by the Graduate Coordinator, and the number of awards made depends on the funding available that year. Winners of these awards receive a slightly higher monthly stipend and have a greatly reduced workload.

The Graduate School provides a very limited number of Out-of-State Tuition Waivers (OOSTWs) for students who are not on Assistantships. The Graduate Coordinator nominates students each year in the Spring. Students who receive an OOSTW must have a minimum undergraduate GPA of 3.3, and a minimum graduate GPA of 3.5. These are awarded by the Regents of the University System of Georgia through the Graduate School for domestic students, and through the Office of International Education for international students.

If you are an unsupported MS student who is writing a thesis, and have completed all of your coursework, then you are eligible for a Graduate OOSTW. Please see the forms page on the Graduate School web site for an application for this tuition waiver.

If you are an unsupported PhD student who has been Admitted to Candidacy, then you are automatically granted a Graduate OOSTW.

Policy on Continuation of Assistance

Financial support tends to be awarded competitively, especially for new students. It is the Department's policy to continue your financial support once you have received it, **provided** that funds are available, that you are making satisfactory progress towards your degree, and that you are performing your duties in a satisfactory manner. MS students are typically supported for 2 years; PhD students are typically supported for 5 years if they entered the program without an MS degree.

If you are receiving financial assistance through the University, then you must obtain permission from the Department in order to take on additional employment. International students are restricted in their employment options by their visa requirements. No full-time student may work for UGA for more than 50% time (20 hours a week). Additional restrictions will apply when the assistance originates from outside the University. Some major professors will also have their own sets of restrictions.

State Farm Insurance Company's Modeling and Analytics Graduate Network Program

Beginning in Fall 2014, the Fortune 50 company State Farm Insurance starts a new program in the Department to train statisticians for jobs within their company. The [Modeling and Analytics Graduate Network \(MAGNet\) Program](#) will hire students primarily in the Master's program in Statistics to work for 20 hours a week on their data problems. During the Summer, this will be a full-time internship.

State Farm takes applications from students who have been accepted into the MS program in Statistics. State Farm pays tuition and an hourly salary to students who are chosen for the MAGNet program, and students will spend 20 hours a week in State Farm's MAGNet lab downtown, working under the supervision of a State Farm analyst on problems of specific interest to State Farm. Once students satisfactorily complete the program, they will be expected to work for State Farm for at least two years.

This program is open only to students who are already citizens or permanent residents of the US, since other students are prohibited from such a working arrangement by their F1 visas.

Tutoring Opportunities

Many of our graduate students offer private tutoring services for extra money. The amount charged per hour varies according to English capabilities but rates tend to be \$15-25 per hour. The staff in the Department Main Office keeps a list of graduate students who are interested in tutoring, as does the STAT 2000 Coordinator. Occasionally, opportunities for tutoring will be emailed directly to the graduate student alias.

Note that you may NOT charge for helping students who are in courses for which you are a TA! Doing so is a serious breach of ethics and will result in you losing your assistantship.

If you do not have visa restrictions, you may look for a job with the several tutoring businesses in Athens. Search on the terms "tutoring athens ga" to get a list of current tutoring businesses which might be hiring.

There are also organizations on campus which hire tutors. Two of these are the [Division of Academic Enhancement](#) and the [University of Georgia Athletic Foundation](#). You must apply to become a tutor with either of these entities, and you must also be careful that you are not being paid to work more than 20 hours per week if you are also on any Assistantship support.

Teaching and English Language Training Requirements

All students who receive a Teaching Assistantship (TA) are required by the Graduate School to register for some kind of teacher training course. For the University at large, that course is GSRC 7770. Our own STAT 7770 satisfies this requirement and thus substitutes for GSRC 7770.

The [University's TA Policy](#) contains these expectations as well as the expectations for anyone who was required to submit a TOEFL or IELTS score. Because your TA duties are so closely tied to this policy, retention of your assistantship depends upon your taking the appropriate courses and re-taking the TOEFL or IELTS for a score that meets the University's policy. After completing your [LLED sequence](#), you must submit a new TOEFL or IELTS score every 6 months until you have met the University's minimum criteria. The Department will reimburse you for the cost of the exam only when your score meets the University's minimum criteria.

All supported students are required to enroll in hours of STAT 8910, STAT 8920 and STAT 8930. These courses satisfy the Department's Research Skills requirement.

Extensions of Departmental Assistantships

Financial assistance is usually granted to MS students for a period of 2 years, and to PhD students for a period of 5 years.

If you require more time to complete your degree, and you have been making satisfactory progress towards your degree, then you and your research advisor together may request that the Graduate Coordinator extend the duration of your support beyond this period. If you do not have a research advisor, then there should be no reason for your support to be extended (barring some unforeseen circumstance).

Research Skills Requirements

To give our MS students some grounding in what Statistics research is all about, to encourage our PhD students to get an early start on becoming interested and involved in research, and to get both sets of students developing the “soft skills” needed in professional practice, the Department requires that all financially supported students take the courses

STAT 8910 Statistical Seminar,
STAT 8920 Statistical Research & Professional Practice I, and
STAT 8930 Statistical Research & Professional Practice II.

The Graduate School requires that financially supported students take a minimum of 12 credit hours each semester. For students who are not financially supported, a full load is defined as 9 credit hours. If you are financially supported, then you supplement your coursework with these courses covering aspects of Professional Practice.

During your first semester, you will be taking 3 credit hours of STAT 7770 plus 1 credit hour of STAT 8910. For the next several semesters, you will be taking some combination of 8910-20-30, according to the following schedule.

- Year 1, Spring: You take STAT 8910 for 3 credit hours, to introduce you to the research activities of the Department.
- Year 2, Fall: You take 1 credit hour of STAT 8910 and 2 credit hours of STAT 8920.
- Year 2, Spring:
 - If you are in the MS program, you will be taking 1 hour of 8910, as long as this does not affect your ability to waive your fees.
 - If you are in the PhD program, you will be taking 1 credit hour of STAT 8910 and 2 credit hours of STAT 8930.
- Subsequent Years: If you are a PhD student still taking courses, then you must take 1 hour of STAT 8910 each semester in which doing so will not affect your ability to waive your fees.

STAT 8910 Statistical Seminar

STAT 8910 is graded on an S/U basis and provides a relatively light workload. You can take this course for either 1 credit hour or for 3 credit hours, according to the schedule above.

One Hour Option

You will attend departmental Colloquia, typically each Thursday at 3:30pm, and your grade will be based on that attendance. Optionally, the instructor may add an expectation such as writing up a brief summary of one or more Colloquia during the semester.

Three Hour Option

Class is scheduled on a Monday-Wednesday-Friday schedule, but you meet for only two of those three days; you will also attend departmental Colloquia, typically on Thursdays at 3:30pm. This course offers you an opportunity to become familiar with the research interests and activities of the departmental Faculty. The purpose of this is two-fold:

1. It is a useful part of your education to learn about some of the frontiers of statistics and about current topics of research in the field, and
2. If you are looking for a thesis or dissertation advisor, it gives you an opportunity to think about possible topics of research and possible advisors.

The format of the course is to have departmental Faculty come and give non-technical talks about their research activities and interests to the class. Then you meet with individual faculty members to learn more. Specifically, the course might be organized as follows.

- At the beginning of the semester the course instructor would recruit several of the members of the Graduate Faculty to come in and give non-technical talks about their research to the class. The goal would be to get 10 or more faculty members to do this. These professors would be scheduled to speak to the class during the first 5-6 weeks of the term. Each professor would prepare a talk as well as a short written description of their research activities, which would also list a few relevant papers, book chapters or other resources for further information. Some of these might be papers written by the professor, but they would include accessible introductions to the topic.
- Following the professors' presentations to the class, you would select several faculty members (5, say – although this number is just a suggestion) to meet with outside of class. These meetings would be in the professors' offices and could be one-on-one, or perhaps be attended by two or three (no more) students at a time. In preparation for these meetings, you would read about one or more of the professor's research interests and come prepared with questions and some level of familiarity with the topic. These meetings would be meant as opportunities for you to interact directly with faculty and learn about research possibilities. Little would be expected of you other than to come prepared and to ask questions or engage in discussion.
- Evaluation in the course would be based on attendance in Colloquia, attendance in the "professors on parade" portion of the class, and attendance and participation in the meetings with faculty. For those meetings, each professor would give credit to the student for participation if the student shows up, is prepared (shows evidence of having done the reading) and asks questions (or talks at all).
- (Optional) During the last few weeks of the semester, you might be asked to present summaries of the research areas/activities of 1 or more faculty members in an oral presentation. Alternatively, you might be asked to write up a short report rather than doing an oral presentation. These assignments would be made at the discretion of the instructor.

STAT 8920-30 Statistical Research and Professional Practice I & II

STAT 8920-30 is graded on an A-F basis and requires more work than STAT 8910.

STAT 8920 is taken by both MS and PhD students, while STAT 8930 is taken by only PhD students. These courses are designed to introduce you to tools, resources and other aspects of the field, profession and practice of Statistics that will be helpful for research, problem-solving and career development. These courses will have assignments and content useful to both MS and PhD students; e.g., they will concentrate fairly heavily on developing students' communication skills (both written and oral). In addition, there will be some assignments oriented more toward research and others that will be more relevant to practice. Below is a list of topics/activities for the two courses, and how the topics might be divided between the two semesters.

8920:

- Read important papers from the general statistical literature and either
 - a. Present written reports or oral summaries to the class, and/or
 - b. Lead discussions regarding these papers.These papers could include those relevant to your intended area of research, papers of broad import in the field of Statistics, and/or papers on non-research activities (on teaching, on consulting, on working in a given industry, etc.).
- Learn tools for research including
 - a. Literature research tools such as Web of Science;
 - b. Computational resources like the GACRC;
 - c. LaTeX, Beamer.
- Writing skills/how to write a review or research paper.
- Presentation skills/practice.
- How to read a research paper.
- Introduction to Statistical Societies.
- Academic honesty and professional ethics (e.g., plagiarism, fudging results, simultaneous submission).
- Information on careers in Statistics.
- Internship opportunities in Statistics.

8930:

- Literature review. *E.g.*, read several papers related to your anticipated research area and summarize the literature (as opposed to summarizing an individual paper) in written or oral presentation form.
- Writing skills/how to write a research paper.
- Presentation skills/practice.
- Journals, refereeing, and the peer review process.
- How to conduct an effective simulation study.
- Funding agencies and the grant proposal/review process.
- Practice in formulating a problem in statistical terms and/or identifying the appropriate methodology for analysis of a real data set/existing problem.

Academic Issues

Although some of this information is specific to the Department, much of it (especially the sections on Probation and Dismissal, and Appeals) is on the Graduate School's web site, under [Academic Regulations and Procedures](#).

General Expectations

As a student in the Department, you are expected to do several things which will enhance you academically and professionally.

You are expected to hone your writing and presentation skills. As part of your job, no matter where you end up and no matter which degree you pursue, you must also write and present your work. Towards that end, your coursework will also have components in which you must write a report on the results of your class project, and/or give a short presentation of your results or of results you have read in an assigned journal article. You are expected to work on your English language skills – even if you are a native English speaker – so that your writing and your presentations are clear and accessible.

Both the Department and the University take academic honesty **very** seriously. The University's document [A Culture of Honesty](#) states clearly the University's position on the matter, as well as the strong consequences of violating this policy. In particular, the Department strongly encourages you to do all of your work within the context of how your instructor defines acceptable resources. If you are told to work on your own, then do so.

And never, ever, just copy another person's work!! You are hurting yourself when you do this, since it does not help you to understand and be able to think with the material at all. And, you are risking harming the other person, since helping someone cheat is also cheating.

As a practicing Statistician, you must also be aware of your ethical obligations to your clients and/or to science. The American Statistical Association takes this seriously, and has provided [Ethical Guidelines for Statistical Practice](#), which every Statistician should read.

Annual Updates

Each year in the Fall, you will receive an Annual Update letter. This letter details what you have accomplished in the past year, and what you are expected to accomplish in the coming year. If you are not making satisfactory progress in the program, this letter clarifies what you need to do to be making satisfactory progress, and informs you of what you can expect if you continue to lack satisfactory progress.

If you are an international student who is on an assistantship, a separate letter will inform you of your standing in clearing your English language training requirements. Note that

you must also make satisfactory progress towards clearing the Speaking portion of the TOEFL so that you can retain your assistantship.

This letter is signed by the Graduate Coordinator, the Head and your chosen research advisor(s).

Probation and Dismissal

You may be dismissed by the Department at the end of any semester if you have not made sufficient academic progress to warrant continuing your studies. You will be warned in your Annual Update letter if you are in danger of termination due to insufficient academic progress. The Department must immediately notify the Graduate School if you are dismissed, and you will be prevented from enrollment in future terms. You may appeal your dismissal by the Department to the Dean of the Graduate School after all avenues of appeal have been exhausted at the Departmental level (see the next section). You must complete your appeal to the Dean of the Graduate School within 30 calendar days of the decision resulting from an appeal to the Department. If you are terminated by the Department, but not simultaneously by the Graduate School, then you may apply for admission to another graduate program; however, you may not apply for admission to the Department of Statistics.

If your cumulative graduate GPA drops below 3.0 for two consecutive terms, you will be placed on academic probation by the Graduate School. Then, you must make a 3.0 or higher semester graduate GPA each succeeding semester that your overall cumulative graduate average is still below 3.0. You will come off of probation once your cumulative graduate average is 3.0 or above. If you make below a 3.0 semester graduate GPA while on probation, you will be dismissed.

If your GPA over courses which may be counted toward your degree drops below 3.0 for two consecutive semesters, you will be placed on Departmental academic probation (that is, you will be subject to the Graduate School's policies on academic probation, but enforced at the Department level).

When you repeat a graduate course, the last grade will be used to calculate the cumulative graduate GPA that is used for probation, dismissal, admission to candidacy and graduation. Grades of S, U, I, and V are not used in calculating the cumulative graduate GPA. However, when a grade of I converts to F, this may result in an action of probation or dismissal for the semester in which the conversion takes place, even if the student is not registered for the semester in which the grade converted. When you are dismissed under the terms of this policy, you may not apply for admission to another graduate program offered by the University.

If you are dismissed by the Graduate School for academic reasons, you may appeal the dismissal to the dean of the Graduate School. The appeal must be submitted to the dean within 30 calendar days following receipt of notice of dismissal. Information concerning the appeal process may be obtained in the Graduate School.

Appeals

University of Georgia students have the right to appeal academic decisions. Usually the appeal goes first to the unit responsible for the decision (for example, grades or departmental requirements to the Department; college or school requirements to the Franklin College or the Graduate School; university requirements to the Educational Affairs Committee). An unfavorable ruling at one level can be appealed to the successive levels (for example, a Department ruling can be appealed to the Franklin College; a college-level ruling can be appealed to the University Council Educational Affairs Committee; the Educational Affairs Committee ruling can be appealed to the President of the University; and the President's ruling can be appealed to the Board of Regents).

Appeals of academic matters should be referred to the
Office of Vice President for Instruction,
308 New College,
(706) 583-0690

Policies regarding appeals in the Graduate School may be obtained from the
Office of the Dean,
210 S. Jackson St.
or by phoning (706) 542-6394

In the Department, you may appeal by writing a letter to the faculty expressing the reasons for the appeal. If you are appealing the result of the Qualifying or Comprehensive Examination, then your appeal must be accompanied by a letter of support from at least one member of the Graduate Faculty. The appeal will be considered and voted upon by the voting faculty.

Awards

Each year, several kinds of awards are made to students in the Department.

Travel Awards

All students who are involved in research are encouraged to attend conferences and make presentations of the results. If your research advisor has travel funds from a grant source, then those funds may be used to reimburse your travel and local expenses. Beyond that, there are several sources of travel funding for you to use to attend these conferences.

Department

You may apply to the Department for partial support of your travel if you are giving a presentation. You should apply well ahead of time by writing to the Head of the

Department with your request and a budget reflecting the expenses you expect to incur.

Graduate School

The Graduate School provides funds to reimburse travel within the continental US. These funds are awarded competitively, and there are several minimum criteria that you must meet in order to be eligible for the Graduate School's travel award. Please see the [information on their web site](#) for all of the details.

Office of the Vice President for Research

The University's OVPR provides funds to reimburse international travel. Again, these awards are competitive, and there are minimum criteria for eligibility. See the [information on the OVPR's web site](#) for the details.

Departmental Best Student Awards

The Department makes cash awards each year to three students deemed to be the best in their respective groups. The names of these Best Students are engraved on the awards plaque in the Cohen Room.

Students nominated for these awards must meet the criteria listed below. Nomination material must include a nomination letter, composed as outlined below, as well as the nominee's UGA graduate transcript and resume.

The winner in each category will be determined by vote of the Graduate Faculty.

Best Master's Student

- Must be within two years of officially entering the Master's program.
- Must have completed the MS core in the previous year.
- May not be in the Statistics PhD program.
- Award: Certificate & \$100.

Best Beginning PhD Student

- Must be within three years of entering a program in Statistics.
- Must have just completed the PhD core in the previous year.
- Award: Certificate & \$100.

For each of these two awards, the Graduate Coordinator will send a list of eligible students to the faculty and solicit feedback on these students. That feedback will be compiled into a formal nomination letter for the best students, stating clearly why the student is deserving of the award.

Best Senior PhD Student

- Must have completed the dissertation proposal and therefore be Admitted to Candidacy for the PhD.
- Must be nominated by the student's major professor(s).
- Award: Certificate & \$250.

The nomination letter for this award is written by the student's dissertation advisor(s). The letter should describe the student's research and state clearly why the student is deserving of the award.

University Awards

The University holds competitions each year for several different awards for both teaching and research.

Outstanding TA Awards

Outstanding TA Awards are made to only 10% of the University's TA population. Eligible students must have met all of the criteria in the University's [TA Policy](#) in addition to other criteria [outlined by the Center for Teaching and Learning](#).

Graduate School Dissertation Completion Awards

These are Graduate School Assistantships which support the awardee for up to a year while s/he finishes the dissertation. These are extremely competitive, and the Department may nominate only one student for the competition each year. See the [Graduate School's information](#) for more details.

James L. Carmon Scholarship Award

This [scholarship](#) is awarded to a University graduate student who has used computers in an innovative way.

Richard C. Anderson Memorial Award

This [award](#) is made to a recent PhD student for outstanding research while at the University or immediately after graduating.

Graduate Student Excellence-in-Research Award

This [award](#) is made to recognize the quality and significance of graduate student research at the University.

National Awards

Finally, there are several awards made at the national level.

Mu Sigma Rho, the National Statistics Honor Society

The Department established a chapter of Mu Sigma Rho, the national Statistics Honor Society, in 2009. In order to be inducted into Mu Sigma Rho, a graduate student must hold a GPA of 3.85 or higher over at least 18 hours of coursework in Statistics. Inductions are held each Spring.

CGS/ProQuest Distinguished Dissertation Award

This [award](#) is made by the Council of Graduate Schools to individuals who, in the opinion of the award committee, have completed dissertations representing original work that makes an unusually significant contribution to the discipline. For this award, the University may put forth only one nominee, so it is an honor to be nominated by the University for it.

National Science Foundation Graduate Research Fellowship Program

These [NSF fellowships](#) are granted for three years to US citizens or permanent residents who are within the first 12 months of beginning their graduate studies. These awards are extremely competitive and very prestigious.

MS Degree – Thesis Option

Year 1

Fall

6420

6510 or 6810

Elective:

7770 & 8910-1

Choose a Thesis Advisor

Spring

8260

6520 or 6820

Elective:

8910-3

Year 2

Fall

8000 or Elective:

Elective:

7000-3

8910-1 & 8920

Spring

8000 or Elective:

7000-3

7300-3/6

Defend Your Thesis

Core

Required if Financially Supported

MS Degree – Exam Option

Year 1

Fall

6420

6510 or 6810

Elective:

7770 & 8910-1

Spring

8260

6520 or 6820

Elective:

8910-3

Take the MS Qualifying Exam in May of Year 1

Year 2

Fall

8000 or Elective:

Elective:

Elective:

8910-1 & 8920

Spring

8000 or Elective:

Elective:

Elective*:

8910-3

Core

Required if Financially Supported

*The 7th elective, and thus the Spring term of Year 2, may be avoided if you take 8000 and 6360 during the Summer term. You may also avoid the 7th elective if you are NOT financially supported.

PhD Degree

Year 1: Take the PhD Qualifying Exam in late Summer.

Fall	Spring
6420 6810 MS Elective: 7770 & 8910-1	8260 6820 MS Elective: 8910-3

Year 2: Earn MS Degree Along the Way; Choose Research Advisor.

Fall	Spring
8170 8620 8000 or PhD Elective: 8910-1 & 8920	8530 8700 PhD Elective: 8910-1 & 8930

Year 3: Complete Written and Comprehensive Examinations.

Fall	Spring
Elective: Elective: Elective: 9000-3	Elective: 9000-9

Year 4: Complete Dissertation Proposal and be Admitted to Candidacy.

Fall	Spring
9000-12	9000-12

Year 5: Defend Dissertation

Fall	Spring
9300-12	9300-12

MS Core **PhD Core** Required if Financially Supported
May be taken in Summer of Year 1; Required for MS degree; Counts as PhD elective.