

Department of Statistics  
Florida State University  
Graduate Student Handbook  
Academic year 2016-2017

# Contents

- 1 Introduction 3**
- 2 Certificate in Data Management and Analysis with SAS 3**
- 3 Combined Bachelor’s / Master’s Degrees. 4**
  - 3.1 Prerequisites for the Combined Bachelors/Masters Degrees. . . . . 4
  - 3.2 Academic Requirements for the Combined Bachelors/Masters Degrees. . . . . 5
- 4 Master of Science Degrees 5**
  - 4.1 Elective and Outside Courses for all Masters Degrees . . . . . 7
  - 4.2 Master of Science in Statistics, Applied Track, required course work. . . . . 7
  - 4.3 Master of Science in Statistics, Mathematical Statistics Track, required course work. . . . . 8
  - 4.4 Master of Science in Statistics with Major in Statistical Data Science, required course work. 9
  - 4.5 Master of Science in Biostatistics. . . . . 11
  - 4.6 Master of Science in Statistics or Biostatistics, Thesis Option. . . . . 11
- 5 Doctor of Philosophy Degrees 12**
  - 5.1 Requirements for all doctoral students. . . . . 12
    - 5.1.1 Qualifying Examination . . . . . 12
    - 5.1.2 Essay Examination . . . . . 13
    - 5.1.3 Dissertation Defense . . . . . 13
  - 5.2 Other Requirements . . . . . 14
  - 5.3 Interdisciplinary Option . . . . . 14
  - 5.4 Graduation Requirements . . . . . 14
  - 5.5 Transferring credits from another university, waiving required classes. . . . . 15
  - 5.6 PhD Degree in Statistics . . . . . 16
  - 5.7 PhD Degree in Biostatistics . . . . . 16
- 6 Financial Support 17**
  - 6.1 Types of Support . . . . . 17

6.2	Restrictions on Support . . . . .	18
6.3	Requirements for Continued Department Support . . . . .	19
6.4	Tutoring for Payment . . . . .	19
<b>7</b>	<b>The Student Advisory Committee</b>	<b>20</b>
<b>8</b>	<b>Department Colloquia</b>	<b>20</b>

# 1 Introduction

This handbook presents information relevant to a student's graduate career in the Department of Statistics at Florida State University (FSU). A pdf copy of the handbook is available on the department webpage. Student suggestions for changes, additions and corrections to the handbook should be submitted to the faculty through the Department of Statistics Student Advisory Committee.

Additional information relative to graduate students is found in the following (Information from these sources is not repeated here.):

The Florida State University General Bulletin

The Florida State University General Bulletin Graduate Edition

The Florida State University Graduate and Professional Student Handbook

The Florida State University Department of Statistics Undergraduate Handbook

For undergraduates at the Florida State University, the Department of Statistics offers combined undergraduate/graduate (BS/MS) degree in Statistics and Biostatistics and a BS/MS degree in Statistics with a major in Statistical Data Science (Section 3).

For graduate students the Department of Statistics offers Master of Science degrees in Biostatistics and Statistics as well as an MS degree in Statistics with a major in Statistical Data Science. The Department of Statistics also offers Doctor of Philosophy degrees in Biostatistics and Statistics. Additionally, the Department offers graduates certification in Data Management and Analysis using SAS (Section 2).

## 2 Certificate in Data Management and Analysis with SAS

The Florida State University Department of Statistics offers a graduate certificate in *Data Management and Analysis with SAS*. The certificate requires completion of four courses from the Department of Statistics and submission of an accompanying portfolio documenting substantial SAS mastery. Upon approval, the certification will appear on the students transcript.

**Required Coursework:** To earn the certificate, applicants must complete the course STA 5066 Data Management and Analysis with SAS and three additional courses. To be counted towards certification, courses must be taken for a letter grade, and a grade of at least a B- must be earned in all four courses. Some possible courses are listed in Table 1 This is a non-exhaustive list; other courses may be approved by the Certificate Director.

**Required Portfolio:** Before the end of the semester of the last course taken for the certification, an applicant must submit to the Certificate Director a portfolio of SAS assignments or projects completed by the applicant that demonstrate SAS mastery. The portfolio must include four tabbed sections corresponding to the four courses selected toward certification. Each section must document one major assignment from the corresponding course for which the student utilized SAS tools in solution. At least one tabbed section

must contain a course project illustrating an extensive application of the SAS system that demonstrates several dimensions of SAS skills deemed valuable for public sector, private sector, or graduate school work. A suitable project may be selected for inclusion from any of the four courses in the program. More than four assignments/projects may be submitted, but no more than two per tabbed section is permitted. After evaluation by the Certificate Director, the portfolio will be returned to the applicant and may be a useful addition to employment applications.

Table 1: Nonexhaustive list of courses that may be used toward completion of requirements for the graduate certificate in SAS Programming and Data Analysis.

STA 5067 Advanced Data Management and Analysis with SAS
STA 5168 Statistics in Applications III
STA 5179 Applied Survival Analysis
STA 5198 Epidemiology for Statisticians
STA 5206 Analysis of Variance and Design of Experiments
STA 5207 Applied Regression Methods
STA 5238 Applied Logistic Regression
STA 5244 Clinical Trials
STA 5934 Longitudinal Data Analysis
STA 5666 Statistics for Quality and Productivity
STA 5707 Applied Multivariate Analysis
STA 5856 Time Series and Forecasting Methods
STA 5939 Introduction to Statistical Consulting

### 3 Combined Bachelor's / Master's Degrees.

For undergraduate statistics majors at FSU, the department offers combined Bachelor/Masters Degrees Programs in Statistics and Biostatistics. The MS in Statistics degree may be obtained through either the Applied Statistics (Section 4.2) or the Mathematical Statistics (Section 4.3) track. Additionally, the department offers a Masters in Statistics with major in Statistical Data Science (Section 4.4). The programs allow academically strong students to pursue an accelerated program that culminates in receiving a Master of Science Degree in five years.

#### 3.1 Prerequisites for the Combined Bachelors/Masters Degrees.

The prerequisites for enrollment in any of these programs:

Completion of at least 12 credits in mathematics and/or statistics as part of an undergraduate statistics major with a GPA of 3.2 or better.

Completion of at least 60 credits at FSU with an overall GPA of 3.0 or better.

Transfer students must have completed at least two semesters and 24 credits at FSU with an overall GPA of 3.0 or better.

### **3.2 Academic Requirements for the Combined Bachelors/Masters Degrees.**

Undergraduate students may apply as early as the second semester of their sophomore year. If accepted, to remain in the program, the student must:

Maintain an overall GPA of 3.0 and a GPA of 3.2 in statistics courses (4000 level or higher).

Take the GRE during their Junior year and receive a scores of at least 155 (Q – Quantitative Reasoning) and 146 (V – Verbal Reasoning).

Must apply to and be admitted to the graduate school in the first semester of their senior year. Students not accepted into the graduate school cannot continue in the program.

In all of the programs, the students must meet the graduate course requirements for the degree being sought: 36 credit hours for the MS in Statistics, 32 for the MS in Statistics with major in Statistical Data Science and 36 credit hours for the MS in Biostatistics. To meet these requirements, the student will have to take a sufficient number of graduate courses during their Junior and/or Senior year of undergraduate studies to be able to complete the additional courses in one year of graduate studies. Graduate courses taken at the undergraduate level count for both the undergraduate and the graduate degree up to a maximum of 15 credit hours.

Students in this program will be awarded the Bachelor of Science degree in Statistics when they meet the requirements of the degree at the end of their fourth year of study. They will be awarded the Master of Science degree upon meeting the requirements of this degree at the end of their fifth year of study.

**The student must take sufficient credits at the graduate level, above those taken at the undergraduate level, while enrolled as a graduate student to qualify for the degree being sought.**

Requirements for the MS degree in Statistics, Applied Statistics Track are presented in Table 2.

Requirements for the MS degree in Statistics, Mathematical Statistics Track are presented in Table 4

Requirements for the MS degree in Statistics with major Statistical Data Science are presented in Table 6.

Requirements for the MS program in Biostatistics are presented in Table 8.

## **4 Master of Science Degrees**

The Department of Statistics at FSU offers two MS degrees in Statistics: an MS in Statistics (36 Required Credit Hours) and an MS in Statistics with major in Statistical Data Science (32 Required credit hours).

The department also offers an MS degree in Biostatistics (36 Required Credit Hours). All MS degrees may be obtained through course work or a thesis option.

Additionally, there are two tracks available for obtaining an MS degree in Statistics: the applied statistics track and the mathematical statistics track.

1. The master degree in the applied statistics track is for a student preparing for a career as an applied statistician or as a statistical consultant at the MS level. This program emphasizes statistical computation, methodology, and consulting.
2. The master degree in the mathematical statistics track places an additional emphasis upon probability theory and statistical inference. This degree prepares graduates to function as statisticians at the MS level and is a preparatory program for pursuing the PhD degree in statistics.
3. The MS in Statistics with major in Statistical Data Science Major emphasizes hands-on training in the application of data management and statistical methods and the use of data management, computational, and analytic software geared toward producing highly employable masters degree students. In this program, students will obtain a background in applied statistical methods, and proficiency in the software packages SAS and R to solve data management and analysis problems for the most common scenarios facing data-driven decisions in government and industry.
4. The MS in biostatistics degree prepares students to apply statistical principles, processes, applications, and analytical methods to design, implement, and analyze health related studies including both experimental (clinical trials) and observational (epidemiological) studies.

All of the MS degrees provide a route to a career in statistics. Prospective students should note that the MS in statistics, mathematical statistics track and MS in biostatistics degrees provide the best preparation for continuation into the doctoral programs (PhD in statistics or biostatistics) in this department. A student who finishes the applied statistics program can continue into a PhD program upon completion of the core courses for the MS in mathematical statistics or the MS in biostatistics (as given in Tables 4 and 8) and passing the PhD qualifying exams.

The total academic credits required for graduation for each the statistics and biostatistics MS degrees is 36 credit hours. The MS in Statistical Data Science requires 32 credit hours. The minimum cumulative GPA in all courses is 3.0. No more than one course for the MS degrees (Mathematical Statistics, Applied Statistics, Biostatistics, and Statistical Data Science) may be taken S/U and all required courses must be taken for a letter grade.

For all of the degrees, programs of study are developed individually in consultation between students and their academic advisors. Each students program of study must also be approved by the students academic advisor and by the department chair. If a student has already taken a course listed as required, it need not be repeated. Instead, the student should substitute a more advanced course or an alternate course.

Students usually begin working toward this degree during the fall semester.

## 4.1 Elective and Outside Courses for all Masters Degrees

All courses listed on the graduate courses webpage (<http://www.stat.fsu.edu/Graduate-Program/Graduate-Course-List2>) will be accepted as elective courses, except STA5126, STA5172, STA5206, STA5207, STA5323, and STA5440 (these six courses were designed for graduate students in other departments and colleges).

With the approval of the graduate director, a student may take one 3 credit course from an outside department as an elective counted toward their degree.

## 4.2 Master of Science in Statistics, Applied Track, required course work.

Table 2 presents the required courses for receiving the MS degree in Statistics (for either option) and Table 3 presents a typical course sequence for this option.

Table 2: Required courses for MS in Statistics, Applied Statistics Track. All courses are 3 credit hours.

Course Number	Course Name
STA 5166	Statistics in Applications I
STA 5167	Statistics in Applications II
STA 5326	Distribution Theory and Inference
STA 5327	Statistical Inference
<b>At least two of the following courses</b>	
STA 5066	Data Management and Analysis with SAS
STA 5106	Computational Methods in Statistics I
STA 5168	Statistics in Applications III
STA 5856	Time Series and Forecasting Methods



Table 3: A typical course program for the MS in the Applied Statistics track.

Year 1		Year 2	
Fall	Spring	Fall	Spring
STA 5166	STA 5167	Elective	Elective
STA 5326	STA 5327	Elective	Elective
Required Course or Elective	Required Course or Elective	Elective	Elective

### 4.3 Master of Science in Statistics, Mathematical Statistics Track, required course work.

The Master of Science degree in the mathematical statistics track prepares a student for a professional career in industry or government, for a teaching career in a small college, or for further study toward the doctorate in statistics. The program emphasizes statistical theory, probability theory and mathematical analysis, as well as applied statistics.

Students selecting the mathematical statistics option have often completed the essentials of an undergraduate mathematics major. Normal entry to the program is in the fall semester. Students selecting this option without two semesters of advanced calculus (MAA 4226-7 or its equivalent) may require more than four semesters to complete their MS requirements. Table 4 presents the required courses for this track and Table 5 presents a typical course sequence for this option.

Table 4: Required courses for MS in Statistics, Mathematical Statistics Track. All courses are 3 credit hours.

Course Number	Course Name
STA 5106	Computational Methods in Statistics I
STA 5166	Statistics in Applications I
STA 5326	Distribution Theory and Inference
STA 5327	Statistical Inference

**At least two of the following courses**

STA 5167	Statistics in Applications II
STA 5707	Applied Multivariate Analysis
STA 6346	Advanced Probability and Inference I
STA 6448	Advanced Probability and Inference II

Table 5: A typical program of graduate study for students pursuing the MS degree, Mathematical Statistics Track. All courses are 3 credits.

Year 1		Year 2	
Fall	Spring	Fall	Spring
STA 5166	Required Course or Elective	STA 6346 or Elective	STA 6448 or Elective
STA 5326	STA 5327	Elective	Elective
STA 5106	Required Course or Elective	Elective	Elective

#### **4.4 Master of Science in Statistics with Major in Statistical Data Science, required course work.**

The Master of Science in Statistical Data Science emphasizes hands-on training in the application of statistical methods and the use of computational and analytic software geared toward producing highly employable masters degree students. In this program, students will obtain a background in applied statistical methods, and proficiency in the software packages SAS and R to solve data management and analysis problems for the most common scenarios facing data-driven decisions in government and industry. A SAS certificate adds to employability and may be obtained simultaneously. The degree may be completed in three semesters and requires 32 units. Table 6 presents the required courses for this major. Table 7 presents a typical course sequence for this major.

Table 6: Required Courses for the Master of Science Degree in Statistics with major in Statistical Data Science.

(3) STA 5166	Stat Apps I
(3) STA 5167	Stat Apps II
(3) STA 5066	Data Management and Analysis with SAS
(3) STA 5067	Advanced Data Management and Analysis with SAS
(3) STA 5106	Computational Methods in statistics I
(3) STA 5856	Time Series and Forecasting Methods
(3) STA 5635	Applied Machine Learning
(1) STA 5910*	Supervised Research: Professional Skills Seminar
(3) STA 5939	Introduction to Statistical Consulting (Capstone project)
Parenthetical number are credit hours.	
* Two semesters required.	

Table 7: A typical program of graduate study for students pursuing the MS degree the Master of Science Degree in Statistics with Major in Statistical Data Science\*

Semester 1	Semester 2	Semester 3
(3) STA 5166 Stat Apps I	(3) STA 5167 Stat Apps II	(3) Elective
(3) STA 5066 Data Management and Analysis with SAS	(3) STA 5067 Advanced Data Management and Analysis with SAS	(3) Elective
(3) STA 5106 Computational Methods in statistics I	(3) STA 5856 Time Series and Forecasting Methods	(3) STA 5635 Applied Machine Learning
(1) STA 5910 Supervised Research: Professional Skills Seminar	(1) STA 5910 Supervised Research: Professional Skills Seminar	(3) STA 5939 Introduction to Statistical Consulting (Capstone project)

\*The table provides only one possible sequence for taking the required courses.

Parenthetical numbers indicate credit hours.

## 4.5 Master of Science in Biostatistics.

The Master of Science in biostatistics prepares graduates for employment in private, academic and public sector research and health care settings. The degree emphasizes the application of statistical principles, processes, applications, and analytic methods to design, implement, and analyze health related studies including both experimental (clinical trials) and observational (epidemiological) studies. The degree requirements of 36 semester credit hours include coursework in biostatistics and statistical theory and methods. Table 8 presents the required courses for receiving this degree.

Table 8: Required courses for MS in Biostatistics. All courses are 3 credit hours.

Course Number	Course Name
STA 5166	Statistics in Applications I
STA 5167	Statistics in Applications II
STA 5326	Distribution Theory and Inference
STA 5327	Statistical Inference

**At least two of the following courses**

STA 5179	Applied Survival Analysis
STA 5198	Epidemiology for Statisticians
STA 5244	Fundamentals of Clinical Trials
STA 5066	Data Management and Analysis with SAS

Flexibility is allowed in selecting additional course work for the biostatistics degree. The final selection of courses will be determined by the student, their major professor.

Table 9: A typical program of graduate study for students pursuing the MS degree in Biostatistics. All courses are 3 credits.

Year 1		Year 2	
Fall	Spring	Fall	Spring
STA 5166	Required Course or Elective	Elective	Elective
STA 5326	STA 5327	Elective	Elective
STA 5106	Required Course or Elective	Elective	Elective

## 4.6 Master of Science in Statistics or Biostatistics, Thesis Option.

The thesis option requires writing a thesis and an oral defense before the thesis committee. For the thesis option, the student may replace two of the elective courses with thesis hours.

A student selecting the thesis option must meet the university requirements for thesis submission. These requirements include clearance and formatting, human subjects clearance (if appropriate), and meeting the deadline for the submission of the final version of the thesis to the graduate school. For a complete list of requirements, consult the degree requirement section of the university graduate bulletin ([http://registrar.fsu.edu/bulletin/grad/info/grad\\_degree.htm](http://registrar.fsu.edu/bulletin/grad/info/grad_degree.htm)).

## 5 Doctor of Philosophy Degrees

The Department of Statistics offers a PhD in Statistics and a PhD in Biostatistics. Course programs and exact degree requirements are determined individually for students through consultation with their supervisory committee. See the FSU Graduate Bulletin for the University's degree requirements, requirements for residence, time limits for the degree, and minimum dissertation hours ([http://registrar.fsu.edu/bulletin/grad/info/grad\\_degree.htm](http://registrar.fsu.edu/bulletin/grad/info/grad_degree.htm)).

### 5.1 Requirements for all doctoral students.

#### 5.1.1 Qualifying Examination

This written examination is offered at the beginning of each spring semester. It is normally taken at the beginning of the spring semester of the second academic year of work in the department. The examination is prepared, administered and graded by the graduate student awards and exams committee. This committee forwards student performance on the examination to the graduate director and department chair to be used in the students annual evaluation.

The examination will be graded as passed or failed. Students pursuing the PhD who receive a grade of "failed" may retake the examination in the following year. Copies of past qualifying exams are available.

The PhD qualifying exam is oriented toward problem solving. The exam consists of a list of questions grouped by topic. Students are asked to submit solutions to a given fixed number of questions chosen from this list. The material covered on the exam is taken from the courses listed in Table 10.

Table 10: Courses covering the material included on the PhD Preliminary Exam.

Course Number	Course Name
STA 5106	Computational Methods in Statistics I
STA 5166	Statistics in Application I
STA 5167	Statistics in Application II
STA 5326	Distribution Theory
STA 5327	Statistical Inference
STA 6346	Advanced Probability and Inference I

Students intending to take this exam must register for STA 8964 during the spring semester. A student should register only once for this examination (and the dissertation defense). If the examination is not completed, a grade of I will be assigned until the examination is concluded. Upon successful completion of the examination, a grade change will be submitted assigning a grade of P. Do not re-register for exams in which an I has been assigned.

### **5.1.2 Essay Examination**

After successful completion of the PhD qualifying examination, the student must begin to consider a suitable topic for a dissertation. As an intermediate step between the qualifying examination and the dissertation, PhD students are required to submit an essay that doubles as a proposal for a dissertation topic.

After consultation with the major professor, the student selects a topic and begins initial investigation of the topic to determine whether a thesis in the area is desired. Following this preliminary investigation, the student writes an essay that should contain 1. A literature review of the problem, stating what is known about it to date; 2. Some preliminary research results; 3. A plan for future research.

Additionally, all PhD students will take an exam based on their essay. This examination is conducted in two parts.

1. A 40-50 minute oral presentation of the students essay open to the entire Department of Statistics.
2. An oral examination by the students supervisory committee. This part of the examination will immediately follow the seminar presentation. It is “closed door” and is conducted orally by the student’s supervisory committee to determine success in formulating a research area and ability to do research in that area.

The essay should be written with these goals in mind. A copy of the essay should be sent to the department academic assistant and provided to the supervisory committee members at least three weeks before the essay examination.

### **5.1.3 Dissertation Defense**

The dissertation defense is the last department examination for a PhD candidate. This defense follows the same two-part procedure as the essay examination:

1. A 40-50 minute oral presentation of the student’s dissertation open to the entire Department of Statistics. All members of the university’s graduate faculty are invited to attend the seminar.
2. An oral examination. This closed-door part of the thesis defense immediately follows the presentation and is administered by the student’s supervisory committee.

Academic courtesy requires that the dissertation be submitted to each member of the supervisory committee and to the department chair at least four weeks prior to the date of the oral examination. Individual committee members may have their own requirements or policies regarding timing and it is the student’s responsibility to ensure that each committee member’s requirements are met and that each member has an adequate opportunity to read the dissertation. A copy of the dissertation should also be sent to the department academic assistant at least four weeks prior to the defense. Faculty interested in the topic may obtain a copy of the dissertation from the department academic assistant before the defense.

The defense must be completed at least four weeks prior to the date on which the degree is to be conferred. Consult the registrar’s office or webpage for deadline dates. Students must enroll in STA 8985 during the term in which they defend their dissertation.

## 5.2 Other Requirements

During the final semester of doctoral work, each PhD candidate must comply with a variety of university administrative requirements prior to obtaining the degree. The university also has specific requirements regarding the format for dissertations and abstracts. These requirements are issued by the Graduate School. Each candidate should become familiar with these requirements well in advance of their final semester's work.

All PhD students must take the department courses required for their degree, either the PhD in Statistics or the PhD in Biostatistics.

PhD students must take at least one course each semester for the first three years of study. Beyond the third year and after the departments required coursework has been completed, additional course work other than dissertation research will be determined by the student with the approval of their major professor and their dissertation committee.

All required coursework (as provided in the table of required courses for the degree being sought) except dissertation hours must be taken for a letter grade.

PhD students must demonstrate active involvement in the scholarly community through interaction with faculty and peers. This requirement may be met through participating in various scholarly activities including enrollment in courses, attendance at colloquium, utilization of the library, utilization of university computational facilities, engaging in collaborative study and research beyond the university campus, and attendance and presentations at professional conferences. **Note:** It is the students responsibility to document this involvement every year as part of their annual review.

## 5.3 Interdisciplinary Option

Students in either PhD program (Statistics or Biostatistics) may choose to pursue research in an interdisciplinary field of study. A student following the interdisciplinary option (IO) will typically take three graduate courses in an outside area related to the student's research area. No more than one of the three IO courses may be a DIS given by another department in the IO area of specialization.

## 5.4 Graduation Requirements

While engaged in dissertation research, students must register for the number of hours of dissertation (STA 6980) determined jointly with their major professor (not less than three semester hours) for at least two of the three semesters of the academic year. Students are required to take a minimum of two semester hours of dissertation every semester until they graduate.

In their final semester, students must apply for degree clearance in the first two weeks of the term. Clearance is contingent upon successful completion of your program of study, as filed with the department. Therefore, the program should at all times accurately reflect the coursework taken. The student will be required to account for any discrepancies.

Students not enrolled in the PhD program who plan to continue working towards a PhD degree after earning a masters must contact the academic program specialist in the department to discuss moving into the PhD program. Students already admitted into the PhD program but who would like to apply for the masters degree must also contact the academic program specialist in the department to have the degree program added to their record.

There are many graduation requirements set by the university. Consult the FSU Graduate Bulletin for a comprehensive list.

## **5.5 Transferring credits from another university, waiving required classes.**

The department follows the university's criteria for allowing transfer credits:

“Transfer of courses not counted toward a previous degree from another regionally accredited graduate school (or comparable international institution) is limited to six semester hours, and transfer of courses not counted toward a previous degree within Florida State University is limited to twelve semester hours, except when the departmental course requirement exceeds the thirty-two hour University-wide minimum requirement. In the latter case, additional transfer credit may be allowed to the extent of the additional required hours.”

The complete university criteria may be found at [http://registrar.fsu.edu/bulletin/grad/info/grad\\_degree.htm](http://registrar.fsu.edu/bulletin/grad/info/grad_degree.htm).

For those wishing to use courses from another university to meet the department's courses requirement, the student must obtain approval of the waiver from the instructor in our department who teaches the required course and the graduate director.

A form for applying for the waiver may be obtained from the Department Office.



## 5.6 PhD Degree in Statistics

Students in the PhD in Statistics degree program tailor their academic programs to be consistent with their individual career objectives. Programs can be designed to prepare graduates for careers in research and/or teaching, for careers emphasizing the application of statistics or for careers requiring the development of new statistical methodology.

Required courses for all students seeking the PhD in Statistics are given in Table 11

Table 11: Required courses for PhD in Statistics. All courses are 3 credit hours.

Course Number	Course Name
STA 5106	Computational Methods in Statistics I
STA 5107	Computational Methods in Statistics II
STA 5166	Statistics in Application I
STA 5167	Statistics in Application II
STA 5168	Statistics in Application III
STA 5326	Distribution Theory
STA 5327	Statistical Inference
STA 6346	Advanced Probability and Inference I
STA 6448	Advanced Probability and Inference II
<b>At least one of the Following Courses</b>	
STA 6468	Advanced Topics in Probability and Statistics
STA 5707	Applied Multivariate Analysis
STA 6709	Spatial Statistics

Students entering the program with equivalent work (as determined by the faculty) from other institutions will not be required to repeat it. However, in preparing a course program, students should keep in mind that they are required to pass the PhD qualifying examination as one step towards the degree.

Students entering the graduate program without any prior graduate work in statistics typically begin course work by studying toward the MS degree in mathematical statistics. Students are responsible for the material normally covered in the core course work of the MS in mathematical statistics degree.

Students are strongly encouraged to register for STA 6468, Advanced Topics in Probability and Statistics, whenever topics to be covered are related to the students areas of concentration.

The final selection of courses will be determined by the student and major professor and supervisory committee.

## 5.7 PhD Degree in Biostatistics

The Doctor of Philosophy Degree in Biostatistics prepares students for specialized careers in academia, industry, and government. Program graduates will find themselves sought after by employers in such varied areas as biotechnology, public health, pharmaceuticals, AIDS research, epidemiology, insurance, food

sciences, and agribusiness. With an aging US population, the development of new drugs, and advances in the understanding of biological functions at the level of individual genes and proteins, the need for more people trained to design studies and analyze data from these research areas continues to increase.

Required courses for the PhD in Biostatistics are presented in Table 12

Table 12: Required courses for PhD in Biostatistics. All courses are 3 credit hours.

Course Number	Course Name
STA 5106	Computational Methods in Statistics I
STA 5166	Statistics in Application I
STA 5167	Statistics in Application II
STA 5326	Distribution Theory
STA 5327	Statistical Inference
STA 5179	Applied Survival Analysis
STA 5934	Longitudinal Data Analysis
STA 6346	Advanced Probability and Inference I
STA 6448	Advanced Probability and Inference II
<b>At least one of the Following Courses</b>	
STA 5244	Fundamentals of Clinical Trials
STA 5198	Epidemiology for Statisticians
STA 5238	Applied Logistic Regression

Students pursuing a doctorate in biostatistics at FSU will be granted a significant amount of flexibility in courses taken while pursuing the PhD. The university requirements for credit hours may be found in the FSU Graduate Handbook, but students will usually take courses beyond this minimum. The department requires a minimum of 36 credit hours be taken for a letter grade. This requirement includes the required courses. All required courses must be taken for a letter grade.

Flexibility is allowed in selecting the additional course work for the biostatistics PhD. The final selection of courses will be determined by the student and major professor and supervisory committee.

## 6 Financial Support

The department provides financial support for many of its graduate students. The two main ways in which students are funded are through teaching assistantships and research assistantships.

### 6.1 Types of Support

Teaching assistantships are the most common type of support in the department. These are half-time appointments. Students are paid a salary in return for 20 hours of work each week during the fall and spring semesters. Limited teaching assistantships are available each summer. Teaching assistants may be called upon to perform a combination of the following duties:

1. Lecture in lower division statistics courses (STA 1XXX, 2XXX).
2. Teach recitation sections of low-level statistics courses.
3. Grade homework, projects, and exams for lower and upper level undergraduate and graduate level courses.
4. Assist FSU students at the Strozier Library statistics help desk.
5. Assist faculty with course-related tasks.
6. Assist faculty in the Statistical Consulting Center.

Assignment of graduate students to differing duties is based on department need and when possible, student preference.

There are several university requirements that must be met before a graduate student may teach. These requirements are set forth in the document, University-wide Standards for Teaching Assistants at Florida State University. This document is maintained by and available from the Office of Graduate Studies. Additionally, a TA must pass the departmental course “Teaching in the Discipline” before teaching.

Research assistantships are supported with funds from research contracts or grants, generally from agencies outside the university, held by department faculty. Students receiving such support assist faculty members with their research programs. Usually a student combines duties under this assistantship with their dissertation work, but the exact duties are established by the faculty member providing support.

In recognition of the differing degrees of responsibility of the above tasks, the amount of stipend provided to a student depends on the duties assigned. There are three levels of stipend in the department. The highest pay is reserved for students lecturing their own courses. The medium level is attained by those who teach recitation sections or work in the Statistical Consulting Center, and the third level is for the remaining students. Research assistant pay is determined by the faculty member supplying the salary.

Other avenues of support include competitive assistantships and fellowships available through the university. More general types of support include loans and grants and are administered through the university’s Office of Student Financial Aid. Additionally, opportunities for employment in other university units are often available.

## **6.2 Restrictions on Support**

Recipients of federal fellowships or traineeships or university fellowships must abide by the conditions of these awards. International graduate students must observe employment restrictions associated with visas issued. These regulations usually confine employment to appointments supportive of their field of study. Graduate students holding assistantships in the department or other units of the university must obtain permission for additional employment from the director of the project providing the assistantship, the faculty advisor or dissertation director, and the department chair. Any outside employment unrelated to the discipline or deemed to substantially lengthen the time to completion of the degree program may not be approved.

Holders of assistantships are required to register for at least nine hours each semester. Students are advised to consult the FSU Graduate Bulletin for the university policy regarding minimum enrollment requirements for assistantship holders and university residence requirements. Note that students not receiving support must also register for a minimum number of hours each term to meet university requirements.

The department expects all students to apply for the in-state residency tuition classification.

### **6.3 Requirements for Continued Department Support**

Students receiving department financial support must complete the following to continue to receive it:

1. Students whose primary language is not English must take and pass the SPEAK exam by the end of the spring semester of their first academic year.
2. Masters degree students who have not been accepted for continuing to the PhD degree will not receive financial support beyond their second year.
3. To receive department financial support, PhD degree students must:
  - (a) Pass the PhD written qualifying exam by the end of their third academic year.
  - (b) Write and defend their essay by the end of their fourth academic year (Section 2.3.4).
  - (c) Write and defend their thesis by the end of their fifth academic year (Section 2.3.5).

Students who do not meet these milestones may continue toward their degree, but with no department financial support.

The department chair makes the final decision on matters of continued support.

### **6.4 Tutoring for Payment**

The Department receives numerous requests for tutors in statistics. Graduate students in statistics may tutor for payment subject to the following policies and procedures:

Under no circumstances is anyone to tutor, for payment, a student taking a course he or she is teaching or assisting with. For example, a graduate student currently teaching STA 2023 may NOT tutor any student currently taking STA 2023, even if that student is in another section. The graduate student may tutor, however, a student in STA 2122.

Students may engage in tutoring only insofar that it does not detract from their graduate studies. Students on academic probation are not to tutor. Questions regarding these policies may be addressed to the chair.

Students wishing to tutor are requested to submit the following information to the department secretary: a list of courses they wish to tutor and where or how they can be contacted. The department will maintain a file on tutors giving the above information. When requests are received, the caller will be given the information in the tutor file. The department does not make recommendations.

Please remember that tutoring is suggested as a last resort for students having difficulties in their course work. All graduate student instructors in the department are expected to make sufficient time available for office hours for student help.

## **7 The Student Advisory Committee**

The Department of Statistics, through the Student Advisory Committee (SAC), participates in the university-wide program which promotes active involvement of students in academic decision-making. The SAC consists of one representative each from the first and second year classes, two advanced representatives, and two officers.

The main function of the committee is to act as a liaison between faculty and students. By making themselves available for comments from both groups, the committee promotes effective communications and student awareness of department policies. A member of the SAC attends department faculty meetings. Some past inputs from SAC to the faculty have been to request new courses and invite specific guest speakers to department colloquia.

In addition, the SAC sponsors social/recreational events and enters teams in various intramural programs available on campus.

SAC members are elected each spring term by the graduate students. A member of the incoming class is chosen to be the SAC representative with their term beginning in the following fall term.

## **8 Department Colloquia**

The department colloquium is a lecture-discussion series on research and applications in topics of interest to members of the department. Colloquia are presented by faculty members, graduate students and visitors to the department. Attendance at colloquium is expected of all faculty and graduate students in the department. Suggestions for colloquium presentations are always welcomed, and should be passed to the faculty through the SAC.

The department has an annual speaker competition for graduate students, the Anna and Yongyuan Li presentation award. The student who is judged by the faculty of the awards committee to have made the best presentation for the academic year is given the award.