

Doctoral Program in Measurement & Statistics

The requirements for the doctoral degree in M&S are slightly less structured than those for the master's degree. This enables students who enter the program with varying backgrounds and degrees of knowledge to tailor their own program to their needs. PhD students who do not hold a Master's degree in M&S are encouraged to take the required course work to ensure that they acquire a suitable foundation. The principal requirements are:

- Completing required coursework
- Passing the quantifying examination
- Passing the preliminary examination
- Passing the dissertation prospectus
- Passing the dissertation defense

In order to be eligible for conferral of a degree, the university requires that your cumulative grade point average be at least 3.0 in formal graduate courses. No course hours with a grade below "C-" will be credited on the graduate degree; all grades in graduate courses except those for which grades of "S" or "U" are given or those conferred under the provision for repeating a course will be included in computation of the average. In addition you are expected to earn a grade of B or better in all M&S required and core graduate courses. Grades earned at another institution cannot be used to improve a Grade Point Average (GPA) or eliminate a quality point deficiency at Florida State University.

If you have a Master's degree in a related field or have graduate work from an accredited university, you may want to consult your Faculty Advisor about waiving some courses that are required for the Ph.D. program.

In addition to the coursework and dissertation, doctoral students are expected to meet the scholarly engagement requirement of Florida State University. This involves showing engagement with research and scholarship outside of the classroom in a variety of ways. These are described below.

Doctoral Scholarly Engagement Requirement

The FSU Graduate Bulletin states: "The purpose of the Scholarly Engagement requirement is to ensure that doctoral students are active participants in the scholarly community. To meet the Scholarly Engagement requirement, doctoral students should interact with faculty and peers in ways that may include enrolling in courses; attending seminars, symposia, and conferences; engaging in collaborative study and research beyond the university campus; and utilizing the library, laboratories, and other facilities provided by the university. The goal is to prepare students to be scholars who can independently acquire, evaluate, and extend knowledge, as well as develop themselves as effective communicators and disseminators of knowledge."

(FSU Graduate Bulletin 2018-2019, page 76)

Doctoral students in Measurement and Statistics can meet the Scholarly Engagement requirement by fulfilling either items 1 and 2, OR items 1 and 3, shown below.

- (1) Doctoral students should attend the bi-weekly M&S colloquia meeting unless an excused absence is provided. Excused absences include documented illness, deaths in the immediate family and other documented crises, call to active military duty or jury duty, religious holy days, and official University activities.
- (2) Doctoral students in the first two years of study should attend a professional conference (e.g., American Educational Research Association, American Psychological Association, American Statistical Association, or Florida Educational Research Association) that is related to their program of study. Doctoral students in their third year of study and beyond should give one or more presentation(s) related to their program of study, such as being an (co)-author in a professional conference.
- (3) Doctoral students should be involved in preparing, submitting, or publishing research paper(s) to scholarly outlets (e.g., journals, books) as authors or coauthors.

Each doctoral student will be evaluated for their engagement activities at the end of each academic year during the Annual Evaluation; see Chapter 4 in this handbook.

Coursework

Students majoring in Measurement and Statistics must take nine credit hours per semester to have full-time status. Graduate level courses in the M&S program are numbered in the 5400's under EDF. Students are encouraged to take relevant courses offered by the Statistics Department, as well as Educational Leadership and Policy Studies, Economics, and Psychology. Students are also encouraged to participate in directed individual studies and seminars, and become involved in a personal program of research.

Required Courses

EDF 5400	Descriptive/Inferential Statistics Applications (4 hrs)
EDF 5401	General Linear Models Applications (4 hrs)
EDF 5402	Advanced Topics in ANOVA (3 hrs)
EDF 5406	Multivariate Analysis Applications (3 hrs)
EDF 5409	Causal Modeling (3 hrs)
EDF 5431	Classroom Assessment (3 hrs)
EDF 5432	Measurement Theory I (3 hrs)
EDF 5434	Measurement Theory II (3 hrs)
EDF 5435	Theory of Scaling and Equating (3 hrs)
EDF 5448	Scale/Instrument Development (3 hrs)
EDF 5481	Methods of Educational Research (3 hrs)
EDF 5916	Research Proposal Writing (1 hr extra with EDF 5481)
EDP 5935	Topics in Educational Psychology (3 hrs)
EDF 7418	Multilevel Modeling (3 hrs)

EDF 6980 Dissertation (24 hrs)

Recommended Courses

EDF 5404 Bayesian Data Analysis (3 hrs)
EDF 5484 ED Data Analysis (3 hrs)
EDF 6057 Large-scale Assessment (3 hrs)
EDF 6482 Experimental/Quasi Experimental Design (3 hrs)
EDF 7489 Meta-Analysis (3 hrs)
EDF 6937 Advanced Meta-Analysis (3 hrs)
EDF 6937 Advanced Structural Equation Modeling (3 hrs)
EDF 6937 Bayesian IRT (3 hrs)
EDF 6937 Bayesian Network (3 hrs)
EDF 6937 Longitudinal Data Analysis (3 hrs)
EDF 6937 Measurement Invariance Analysis (3 hrs)
EDF 6937 Mediation and Moderation (3 hrs)
EDF 6937 Missing Data Analysis (3 hrs)
EDF 6937 Multidimensional IRT (3 hrs)
EDF 6937 Survey Research (3 hrs)

Recommended Courses from Statistics Department

STA 5106 Computational Methods in Statistics I (3 hrs)
STA 5207 Applied Regression Methods (3 hrs)
STA 5238 Applied Logistic Regression (3 hrs)
STA 5325 Mathematical Statistics (3 hrs)
STA 5323 Introduction to Mathematical Statistics (3 hrs)
STA 5326 Distribution Theory & Inference (3 hrs)
STA 5440 Introductory Probability I (3 hrs)
STA 5507 Applied Nonparametric Statistics (3 hrs)
STA 5707 Applied Multivariate Analysis (3 hrs)

Take Two Courses from one of the Following Programs

These courses chosen must represent an area of application of measurement and statistics, and not merely be methodological courses.

- Program Evaluation
- Learning & Cognition (excluding already required courses)
- Instructional Systems and Learning Technologies
- Psychology

Directed Independent Studies (DIS)

DIS or directed independent studies classes allow students to pursue research projects under the supervision of a faculty member. In the semester during which the student passes the Preliminary Exam (before the deadline; normally in the mid of the semester), the DIS credits can be converted to Dissertation hours.

Major Advisor

Your advisor is the person who signs your paperwork and works with you to help you make decisions during your time at FSU. Upon admission to the doctoral program, you will be assigned a major advisor who will assist you in selecting courses and planning your study. The student and faculty advisor jointly develop the program of studies that best combines the student's experience, areas of interest, and career goals. The major advisor will supervise your research. You may change your major advisor at any time, but we strongly suggest who directs the remainder of your program of study and supervises your dissertation research. When you change the major advisor, consider both your research interests and the faculty members' expertise, time, and availability to take students.

Supervisory Committee and Program of Study

The supervisory committee should be formed within the first semester. When selecting members of the supervisory committee, the student needs to discuss with and have the consent of the major professor and the department chair. The supervisory committee must consist of a minimum of four (4) members of the faculty who have Graduate Faculty Status, one of whom is the university representative of the faculty. The university representative is drawn from outside the student's department. For interdisciplinary programs the university representative is drawn from outside the student's department and degree program. The university representative must be a tenured member of the faculty with Graduate Faculty Status and should be free of conflicts of interest with other members of the supervisory committee.

The selection of a supervisory committee should reflect the proper composition of expertise needed to direct the student's dissertation with particular attention to the selected dissertation topic. The student should make the selection of the supervisory committee with the assistance of the major professor.

If the student wishes to revise the supervisory committee at any time after a program of study is submitted, a COE Graduate Supervisory Committee Revision form must be submitted to The Office of Academic Services and Intern Support (OASIS). The form can be found at <https://education.fsu.edu/student-resources/student-academic-services-oasis>.

Recommended Timetable

A suggested roadmap to a Ph.D. Degree in M&S:

Year 1: Enroll in core courses; Begin supervised research; Complete and turn in a Program of Study in the second term; Take Qualifying Exam.

Year 2: Enroll in advanced courses, complete disciplinary specialization, and take Preliminary exam.

Year 3 (and up): Begin dissertation research; Prepare dissertation prospectus; Conduct dissertation research; defend final dissertation.

Qualifying and Preliminary Exams

Qualifying Exam

The FSU Graduate Bulletin states: “The student who has been admitted to work toward the doctoral degree may, before the end of the second semester of post-baccalaureate study, be required to take a departmentally administered diagnostic examination. It will be designed to appraise the student’s ability to pursue the PhD degree in the field and to facilitate counseling in the development of the student’s program of studies.” (FSU Graduate Bulletin 2018-2019, page 76)

Every student admitted to a doctoral program within the College of Education must, before the end of the second semester, complete a departmentally administered diagnostic exam. Students should consult with the major professor to schedule the exam. The results must be submitted by the department to OASIS.

The purpose of the Qualifying Exam is to ensure student can write about statistical issues. In addition the exam is a formative assessment to assist with advising. Students must demonstrate competence in

- EDF 5400 Descriptive/Inferential Statistics Applications
- EDF 5401 General Linear Models Applications
- EDF 5402 Advanced Topics in ANOVA
- EDF 5481 Methods of Educational Research

During the second semester in the degree program, you need to find an existing dataset and propose some research questions and appropriate statistical analysis addressing these research questions. Dataset and research questions need to be approved by your major advisor. You need to write a document of about 6-8 pages long plus necessary tables, figures, and references. The document should be submitted to your major advisor two weeks before the end of the semester. Your major advisor will then coordinate with your committee to schedule an oral exam. At the oral exam, you must also provide:

- Qualifying Review Form (<https://education.fsu.edu/student-resources/student-academic-services-oasis>)
- Current vita, including a tentative statement of career plans
- Program of Study
- Description of area of research interests

The description of research interests is often fairly general since this is an early exam, but to the extent possible you should include a rationale for your research interests and an overview of the methodology to be used or studied.

Preliminary Exam

The FSU Graduate Bulletin states: “Satisfactory completion of a preliminary examination shall be required for admission to candidacy for the PhD degree. No student may register for dissertation hours prior to the point in the semester in which the preliminary examination was passed [*]. An admission to candidacy form must be completed and filed in the Office of the University Registrar prior to registration for dissertation hours. After completion of the admission to candidacy process, the student may retroactively add dissertation hours for that semester in which the preliminary examination was completed [**]. Retroactive changes are only permitted if the preliminary examination is passed by the end of the seventh week of the semester. For term specific deadline dates, please refer to the “Academic Calendar” in the Registration Guide.

The preliminary examination is designed to test scholarly competence and knowledge and to afford the examiners the basis for constructive recommendations concerning the student’s subsequent formal or informal study. The form and content of this examination will be determined by the department, college, school, or examining committee (typically, but not necessarily the same composition as the supervisory committee) administering the degree program. Prior to the examination, the student’s examining committee will determine whether the student 1) has a 3.0 average, and 2) has progressed sufficiently in the study of the discipline and its research tools to begin independent research in the area of the proposed dissertation.

The chair of the major department, the academic dean, and the Dean of The Graduate School may attend any session of the supervisory or examining committee as nonvoting members. A member may be appointed to the examining committee at the discretion of the academic dean or Dean of The Graduate School or on recommendation of the major professor. Normally, the examining committee will be identical with the supervisory committee.

The examining committee will report the outcome of the examination to the academic dean: passed, failed, additional work to be completed, or to be re-examined; the report following the reexamination must indicate the student either passed or failed [***]. The results of the examination will be reported to the Office of the University Registrar for inclusion in the student’s permanent record.” (FSU Graduate Bulletin 2018-2019, page 77)

**Students must register for preliminary examination. If a student registered for the preliminary exam in a previous semester and received an incomplete (“I”), he/she MUST drop the course and register for it again in the term in which the requirement is completed.*

***If a student passes the preliminary exam within the first 7 weeks of the semester (prorated in summer), the student will be allowed to swap DIS hours in that semester for an equal number of dissertation hours.*

****Results of the preliminary exam must be provided to OASIS by the department via the “Doctoral Preliminary Exam Results Form” along with an “Admission to Candidacy Form”. The forms can be found at <https://education.fsu.edu/student-resources/student-academic-services-oasis>.*

The Preliminary Exam is for Ph.D. students who have passed the Qualifying exam and completed (or nearly completed) the required course work. The key goal of the exam is to evaluate whether you possess the background knowledge needed to perform independent research in M&S. This exam assesses whether you are ready for writing the dissertation and can express ideas clearly. You must demonstrate competence in

- EDF 5400 Descriptive/Inferential Statistics Applications
- EDF 5401 General Linear Models Applications
- EDF 5402 Advanced Topics in ANOVA
- EDF 5406 Multivariate Analysis Applications
- EDF 5409 Causal Modeling
- EDF 5431 Classroom Assessment
- EDF 5432 Measurement Theory I
- EDF 5434 Measurement Theory II
- EDF 5435 Theory of Scaling and Equating
- EDF 5448 Scale/Instrument Development
- EDF 5481 Methods of Education Research + EDF5916 Research proposal writing
- EDF 7418 Hierarchical Linear Models

The Preliminary Exam involves written and oral portions.

- A written closed-book component involving a series of questions is taken on Tuesday and Thursday (Tuesday for Measurement and Thursday for Statistics) from 9:00am to 1:00pm of the week of the exam.
- A written open-book take-home component, with questions in both Statistics and Measurement to be answered in a week. The questions are given on the Tuesday of the week following the written closed-book components. Questions often are single, multi-part items that require you to describe in detail tactics to be used to solve problems or perform tasks similar to those found in the field. However exams with several separate shorter items may also be given. An appropriate response will typically be 8 to 10 double-spaced typed pages.

The oral portion is scheduled about 2-3 weeks after the written exam, and is attended by members of your committee or provisional committee (if the final committee has not been formed). The oral exam is used to discuss and evaluate issues addressed by the written portions.

Evaluation Procedure and Grades

For both the Qualifying and Preliminary exams, written answers are reviewed by your committee or provisional committee (if the final committee has not been formed). Evaluations are made based on your performance on both the written and oral portions. At the end of the oral exam, the faculty discuss your performance and a pass/fail decision is made. You are then immediately notified. A Pass/Fail grade will be noted on the Qualifying Review Form for Qualifying exam. An official Pass/Fail grade will be recorded in your transcript for Preliminary Exam. You need to bring the Preliminary Exam Results Form to the defense meeting (available at [https://education.fsu.edu/student-resources/student-academic-services-oasis](https://education.fsu.edu/student-resources/student-academic-services-oasis;);). Upon passing the Preliminary Exam, you are officially admitted to Candidacy, for which the Admission to Candidacy Form should be filled (http://registrar.fsu.edu/services/images/admiss_to_candidacy.pdf)

Retake Policy

If you fail any exam may take it during the next semester that the exam is offered. Any student who fails an exam twice will be terminated from their degree program.

Admission to Candidacy

The FSU Graduate Bulletin states: “A student who has passed the preliminary examination and has been certified by the Office of the University Registrar (with an admission to candidacy form) is considered a candidate for the doctoral degree and is eligible to register for dissertation credits.

A student must be admitted to candidacy at least six months prior to the granting of the degree. The purpose of this requirement is to ensure a minimal lapse of time for effective work on the dissertation after acquisition of the basic competence and after delineation of the problem and method of attack. More realistically, the student should expect to spend a year or more of work on the dissertation.” (FSU Graduate Bulletin 2018-2019, page 77)

Doctoral Prospectus

The FSU Graduate Bulletin states: “After passing the preliminary examination, the student may be required by the department to submit to the major professor, supervisory committee, and departmental chair a prospectus on a research project suitable for a doctoral dissertation. Students are reminded to seek Institutional Review Board (IRB) and/or Animal Care and Use Committee (IACUC) approval prior to commencing any research involving human or animal subjects. The student’s name must appear on the IRB approval and/or application form as a PI or co- PI for the period of time when the student’s research was conducted. Students must be listed on an ACUC protocol in order to conduct any animal research. Failure to be listed or obtain the required approvals may result in the dissertation being permanently embargoed and unpublishable in any form.” (FSU Graduate Bulletin 2018-2019, page 77)

College of Education prospectus content and clearance procedure information can be viewed at <https://education.fsu.edu/student-resources/student-academic-services-oasis/for-graduate-students>. Students should consult with their major professor regarding program specific prospectus requirements.

Measurement and Statistics students must make sure that both

- 1) the document is ready well before the defense date, and
- 2) the defense date is scheduled well in advance.

BEFORE scheduling a defense, the document should be approved by the major professor. Faculty will only approve a document for defense when they think it has a reasonable probability of passing the committee without too many changes. Students should not “rush” or insist on holding a defense because of personal reasons or impending deadlines if the document is not ready. Students should keep in regular touch with their advisor about draft documents and give documents to their advisor with sufficient time for review before scheduling any defense.

Upon prospectus approval, the student must submit a Prospectus Clearance Form, prospectus title page, prospectus signature page, a copy of the prospectus in PDF format, the University Representative Evaluation Form and an IRB Verification Form to OASIS. The prospectus approval form and IRB Verification form can be found at <https://education.fsu.edu/student-resources/student-academic-services-oasis/for-graduate-students>. Because many of these forms also require approval of the Department Chair, they should be turned in to the Department Office

In addition to the other University requirements, EPLS requires that students verify that each document is free from plagiarism by

- 1) submitting it to Turnitin ® and
- 2) working with their advisor to ensure compliance with university rules and ethical considerations.

After working with the advisor and making needed revisions, the student can then share their originality report with the EPLS Department chair. Two Turnitin portals (one for thesis/dissertation documents and another for checking for inadvertent plagiarism in any other work products) can be found in the EPLS Students Canvas group.

The Prospectus Clearance Form must be approved by the Academic Dean at least four months prior to the defense of the dissertation.

Dissertation

The FSU Graduate Bulletin states: “A dissertation must be completed on some topic connected with the major field of study. To be acceptable it must be an achievement in original research constituting a significant contribution to knowledge and represent a substantial scholarly effort on the part of the student.

It is the responsibility of the major professor to supervise the preparation of the prospectus and the dissertation. The manuscript must be prepared according to the style and form prescribed by the department and must conform to the University requirements regarding format. Before writing the dissertation, the student should become familiar with the University’s manuscript formatting and clearance requirements. For more information, please see the “Manuscript Clearance” section in The Graduate School’s Canvas site. The dissertation should be in the hands of the major professor and the examining committee at least four weeks before the date of the oral examination. At the same time, the dissertation should be submitted electronically to the University manuscript clearance advisor in The Graduate School so that the clearance advisor can provide the student with a critique of the manuscript with respect to Graduate School formatting requirements. Directions for electronically submitting a dissertation are in the “Manuscript Clearance” submenu in The Graduate School’s Canvas site.

A student who has completed the required coursework, passed the Preliminary Examination and submitted an Admission to Candidacy form to the Office of the Registrar [*], and continues to use campus facilities and/or receives faculty supervision, but has not made a final dissertation submission shall include in the required full-time load a minimum of two credit hours of dissertation per semester, including Summer term, until completion of the degree. Those with underload permission must register for at least two credit hours of dissertation per semester (or term). Underloads must be approved by the student’s academic dean [*]. Before registering for dissertation hours, the student must consult the major professor as to the proportion of time to be devoted to dissertation work.

In accordance with the Residence requirement the minimum number of dissertation hours for completion of a doctoral degree shall be twenty-four credit hours.

For more specific information on final-semester registration, see the section Registration for Final Term.

As a condition of undertaking a dissertation program, the student agrees that the completed dissertation will be archived in the University Libraries system. The student will make the electronic dissertation available for review by other scholars and the general public by selecting an access condition provided by The Graduate School.” (*FSU Graduate Bulletin 2018-2019, page 77*) *Via OASIS for College of Education students

For your defense of the final dissertation, you must provide the committee with your document 4 weeks prior to the meeting date and advertise the defense meeting (visit the Graduate School's website for required forms). Except in extraordinary circumstances, revised versions of the document will not be accepted during the period between the turn-in deadline and the defense. If a document is not ready in time, the defense will be rescheduled. Before sending your document to the committee, however, you must have checked your document for plagiarism using the Turnitin portal on the Educational Psychology and Learning Systems Students Canvas site AND have your advisor's approval. You will also need to register for the 0 credit hour dissertation defense (EDF 8985) in the semester in which you plan to defend your dissertation.

The oral examining committee will certify in writing to the academic dean [*] of the major department the results of the examination: passed, failed, or to be reexamined. The report of results following a re-examination must indicate the student either passed or failed. To receive a passing grade, the written dissertation must be in final form or require only minor revisions at the time of the defense. A grade of PASS for the defense of dissertation requires at least a majority approval of the committee. Individual departments may impose stricter requirements for what constitutes a grade of PASS. Departments and other degree-granting programs must publicize their policy on this issue in their Graduate Student Handbook and in the relevant section of the Graduate Bulletin. If the student passes, each member must sign the Manuscript Signature Form to substantiate the results of the defense. It is the responsibility of the major professor to submit this completed form either directly to the manuscript clearance advisor [*] or to the appropriate college or departmental office for subsequent delivery to the manuscript clearance advisor in The Graduate School. A written critique of the conduct of the examination in defense of the dissertation should be submitted by the University representative from the graduate faculty to the appropriate academic dean [*] and the Dean of The Graduate School within one week after the date of defense. The degree cannot be awarded until both forms have been received by The Graduate School and the final version of the manuscript has been submitted to and approved by the manuscript clearance advisor.

After approval by the oral examining committee, the student should electronically submit the final version of the dissertation to the manuscript clearance advisor [*]. The final version of the dissertation must be approved by the University manuscript clearance advisor in The Graduate School within sixty days after the defense date or the student must be re-examined. If the student wishes UMI/PQIL (ProQuest) to register the copyright, an additional fee must be paid. Consult the Registration Guide for the manuscript submission and forms deadline dates. These dates also are posted in The Graduate School's Canvas site GradSpace under the "Manuscript Clearance" submenu." (FSU Graduate Bulletin 2018-2019, page 77-78)

Please carefully follow the Graduate School's deadlines for defense meetings, final document submission, and graduation application (you must apply for graduation in the first 2 weeks of the semester you wish to graduate!), etc. so that your plans to graduate are not impeded.

Important Note on Doctoral Credit Hours

Once you have completed your coursework and been admitted to doctoral candidacy by passing the Preliminary Exam (completion of required coursework and Preliminary Exam usually occur simultaneously), the University requires that you enroll each semester for two hours of dissertation credit. If you do not do so, after two semesters your status is deactivated and you must undergo a cumbersome process for readmission!

Additionally, in order to be eligible for conferral of a degree, the university requires that your cumulative grade point average be at least 3.0 in formal graduate courses. No course hours with a grade below "C-" will be credited on the graduate degree; all grades in graduate courses except those for which grades of "S" or "U" are given or those conferred under the provision for repeating a course will be included in computation of the average.