

PhD Handbook for School of Mathematical and Statistical Sciences (SoMSS)

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1 Introduction to SoMSS

The School of Mathematical and Statistical Sciences (SoMSS) in The College of Liberal Arts and Sciences at Arizona State University (ASU) offers advanced academic programs leading to the Doctor of Philosophy (PhD) degree. The PhD programs in SoMSS aim to prepare students for conducting independent research in mathematics while ensuring deep knowledge in the area of specialization and a breadth of knowledge in various areas of mathematics. The programs require core and elective coursework, qualifying courses or exams, a Comprehensive Exam, a prospectus proposal, a written dissertation, and an oral defense of the dissertation. The PhD degree is offered to exceptional students who have completed a Bachelor's or Master's degree in mathematics, or a closely related field. SoMSS has four PhD programs:

- Mathematics
- Applied Mathematics
- Statistics
- Mathematics Education,

Sections 2 - 4 and section 6 apply to all programs whereas the specifics of each Ph.D. program are discussed in sections 5.2 - 5.5.

1.1 Who does what at SoMSS

Parts of the administrative structure of SoMSS that are most relevant to PhD students:

Name	Position	Email	Phone
Donatella Danielli	School Director	DDanielli@asu.edu	(480)965-5892
Sharon Crook	Associate Director for Graduate Programs	sharon.crook@asu.edu	(480)965-3953
Joelle Park	Graduate Program coordinator	jrpark4@asu.edu	(480)965-3953
Jennie Burel	Graduate Program coordinator	Jennie.Burel@asu.edu	(480)965-3953
Beth Fiacco	Travel funds	fiacco@asu.edu	(480)965-0488
Renate Mittelmann	Computers	renate@asu.edu	(480)965-0096
Katie Kolossa	TA Training	kolossa@asu.edu	(480)965-6437

2 Objective of the handbook

The purpose of this handbook is to provide guidance and information related to admission, degree requirements, and general policies and procedures. Please note that in some cases you will find differences between the Graduate College Policies and Procedures and the SoMSS program requirements. In these cases, SoMSS has established higher standards. Students must satisfy both sets of requirements. Please note that policies and procedures are occasionally amended to improve the program. Changes will be communicated to students through email, which is our primary form of communication. We will also post any updates to this handbook on our website <http://math.asu.edu>.

3 Student responsibility

All students are expected to become familiar with university and program policies and procedures and abide by the terms set forth. Information is available online. Most importantly you should visit the following websites:

- The Graduate College - <http://graduate.asu.edu>
- Graduate College Policies and Procedures - <https://graduate.asu.edu/policies-procedures>
- The SoMSS Graduate Degree Programs - <https://math.asu.edu/degrees/grad>

4 Admission and eligibility

Admission to a SoMSS PhD program requires a Bachelor's or Master's degree in math or a closely related field from an accredited institution. Students are encouraged to contact grad.math@asu.edu for more information.

4.1 Eligibility

Prior to applying to all SoMSS PhD programs, students are required to have taken courses in linear algebra (equivalent to ASU's MAT 342 or 343) and advanced calculus (equivalent to ASU's MAT 371).

4.2 Application

All students are required to submit an application and all required supporting materials with the Office of Graduate Admission and pay the required fee in order to have their application properly processed.

4.3 GRE scores

The School of Mathematical and Statistical Sciences no longer requires Graduate Record Examination (GRE) scores for admission to graduate programs.

4.4 English proficiency

The University requires all international applicants whose native language is not English to provide proof of English proficiency. The English language requirement cannot be waived. Acceptable proof is as follows (tests must not be older than two years):

- Test of English as a Foreign Language (TOEFL) score of at least 550 (PBT) or 80 (iBT). ASU's institutional code is 4007. ASU only accepts electronic copies of the TOEFL score report.
- International English Language Testing System (IELTS) overall band score of at least 6.5. No institutional code is needed.
- Pearson Test of English (PTE) score of at least 60.
- Duolingo English Test score of at least 105.

Exemption

You may qualify for an exemption from this requirement by one of the following options:

1. You successfully complete the highest level at the Global Launch Intensive English Program with grades of B or better
OR
2. You have attended in person a regionally accredited college or university in the United States and meet ONE of the following conditions:

- earned a Bachelor’s degree or higher in residence from a regionally accredited college/university in the US (Official Transcripts Required), or
- completed at least 12 credit hours of graduate course work with a cumulative GPA of 3.00 on a 4.00 scale or higher from a regionally accredited college/university in the US (Official Transcripts required), or
- completed at least 90 credit hours of undergraduate course work with a cumulative GPA of 3.00 on a 4.00 scale or higher from a regionally accredited college/university in the US (Official Transcripts required), or
- completed the American English and Culture Program (ACEP) Advanced Level II with grades of ‘B’ or better along with the recommendation of the Director of AIECP.

All students whose native language is not English and who wish to apply for a Teaching Assistant (TA) position are required to pass an examination that certifies their skill in speaking English called the Speaking Proficiency English Assessment Kit (SPEAK) test. Tests are administered at ASU; additional information may be found at <https://globallaunch.asu.edu/learn-english/other-services/international-teaching-assistant>.

Non-native English speakers who graduated from a US High School are exempt from this examination. For anyone applying for support as a TA by the School of Mathematical and Statistical Sciences, a minimum Test of English as a Foreign Language (TOEFL) score of 100 (IBT) is required.

4.5 Personal statement

The application must include a personal statement of no more than two pages. The statement should: 1) explain professional goals and reasons for desiring to enroll in the Ph.D. program; 2) describe any research experiences; 3) indicate personal research interests; and 4) if possible, identify one or more ASU SoMSS faculty with matching research interests.

4.6 Letters of recommendation

SoMSS requires three (3) letters of recommendation, at least one of which must come from a former professor of the applicant. There is no standard

form for letters of recommendation. Our current application process allows students to submit the letters of recommendation electronically by indicating the names and the emails of the recommender. In turn, the Office of Graduate Admission sends an email to the recommender alerting him or her to go online and submit a recommendation. Students are encouraged to obtain letters from people who know them well, such as teachers, professional associates and supervisors, and should ask the recommenders to comment on the student's academic, emotional, intellectual, and professional development.

4.7 GPA requirement

Students applying directly from an undergraduate program must have a minimum GPA of 3.0 (on a 4.0 scale) overall and in Mathematics courses. Students who are applying following a Master's degree must have a minimum GPA of 3.0 for the last degree awarded.

4.8 Writing sample for Mathematics Education PhD

The Mathematics Education Ph.D. program requires a 10-page minimum writing sample. This requirement does not apply to any other SoMSS Ph.D. program.

4.9 Transcripts

Official transcripts of all prior University and College coursework are required.

4.10 Application evaluation

Several factors are taken into consideration when evaluating an application: cumulative GPA, major, institution, personal statement, letters of recommendation, official transcripts, and performance in advanced math courses and (if applicable) the quality of the provided writing sample.

4.11 Notice of admission

SoMSS submits its recommendation of admission to the Office of Graduate Admission and the final decision is delivered in writing by the Office of Grad-

uate Admission. Students may check their application status on MyASU (<https://webapp4.asu.edu/myasu/>).

Upon starting a PhD program, each student is assigned a Mentor (who does not need to be the student's eventual Dissertation Advisor). The student should meet immediately with the mentor and continue to meet regularly each semester for advice concerning courses or other program requirements. When the student chooses a Dissertation Advisor, the advisor takes over this role. At that point, the Dissertation Advisor (or advisor) becomes the main mentor, but many students enjoy continuing to meet with their assigned mentor throughout their time in the program.

4.12 Pre-admission credits and transfer credit

Credit for course work taken from an accredited institution can be awarded in the following situations:

1. A student who has earned a Master's degree in Mathematics or related fields at another accredited institution can receive a blanket transfer of thirty credit hours.
2. 0-12 credit hours of graduate-level courses can be transferred. Those courses must come from a program that did not lead to a completed degree. I.e. they cannot come from a completed Master program nor from an Undergraduate degree. Such pre-admission credits must have been taken within three years of admission to the ASU degree program to be accepted.
3. ASU (only) Undergraduate students can transfer up to 12 hours of graduate classes, if they have been reserved for graduate studies and have not been counted for the Undergraduate degree.
4. The equivalent of a grade of B (at ASU) or higher should have been earned on every transferred course. A course with a grade of 'Pass', 'Credit', or 'Satisfactory' is not acceptable for transfer.

A student who wishes to transfer credits from another institution should contact the SoMSS graduate coordinator to initiate the transfer credit process.

4.13 Transfer between programs

Students who want to change programs within SoMSS, from a Master's to a Ph.D., from a Ph.D. to a Master's or from one Ph.D. program specialization to another should talk to a Graduate Program coordinator. They must submit a new application with the Graduate College. Admission to the new program can be denied. Such transfers should be requested early in the program since in general a student is allowed to use only twelve credits from the original program in the new program.

5 Doctoral degree requirements

5.1 Overview

The SoMSS PhD programs aim to prepare students to conduct independent research while ensuring deep knowledge in the area of specialization and a breadth of knowledge in pure mathematics, applied mathematics, statistics, or mathematics education. To achieve its aim, the PhD programs have multiple requirements. This section outlines the requirements as well as the procedures that need to be followed to satisfy these requirements.

Degree requirements for a PhD include a minimum of 84 semester hours beyond the Bachelor's degree and deficiency courses. Thirty credit hours taken during the Master's degree can be applied to a PhD degree, provided that coursework is approved as applicable to the doctoral degree.

In consultation with his or her advisor, the student must submit a plan of study (iPOS) in the second year of their degree program. The iPOS must be approved by the student's advisor, the SoMSS Graduate Associate Director, and the Graduate College.

A student at any time has to make *Satisfactory Academic Progress*, as defined on page 11 of the Graduate Policies and Procedures Manual. In particular the iPOS GPA, the Cumulative ASU GPA and the Overall Graduate GPA must be at least 3.0 (on a four point scale with A=4.0).

SoMSS has four PhD programs:

- Mathematics
- Applied Mathematics

- Statistics
- Mathematics Education

which will be described separately in the following subsections.

5.2 Mathematics Ph.D Program

The Mathematics PhD program has four distinct groups of specialization:

- Analysis
- Discrete Math
- Geometry/Topology
- Number Theory,

which have mostly the same program requirements, except for minor variations in the way that exams are run (see below).

The Mathematics PhD program has five major milestones:

1. Plan of Study
2. Qualifying Exams
3. Comprehensive Exam
4. Dissertation Prospectus
5. Dissertation Defense,

which are described in the following subsections.

Sample timetable for Mathematics PhD students:

- Year 1
- Prepare for qualifiers.
 - Identify a tentative dissertation advisor.
 - Create a plan of study.
 - Pass both qualifiers by May of year 1.
- Year 2
- Confirm your dissertation advisor.
 - Choose four more dissertation committee members.
 - Update the plan of study before taking the Comprehensive Exam.
 - Plan/pass your Comprehensive Exam.
- Year 3
- Pass the Comprehensive Exam if not yet completed.
 - Choose a dissertation topic, and work on research.

- Year 4
- Write the Prospectus.
 - Complete the Prospectus Exam.
 - Continue the dissertation research.
- Year 5
- Finish research, and write dissertation.
 - Defend dissertation in semester 10.

5.2.1 Additional admission requirements

The general admission requirements outlined in section 4 apply. Additional eligibility requirements include competitiveness in an applicant pool as evidenced by coursework in linear algebra (equivalent to ASU course MAT 342 or MAT 343) and advanced calculus (equivalent to ASU course MAT 371).

5.2.2 Course requirements

The required courses are determined by the path that a student takes to pass the Qualifying Exam (see next section) and the Comprehensive Exams. Thus the required Core (3 credit hours) course is

- MAT 501 Geometry and Topology of Manifolds I (3) or
- MAT 516 Graph Theory I (3) or
- MAT 543 Abstract Algebra I (3) or
- MAT 570 Real Analysis I (3).

At least one semester of MAT 591 Seminar (3) is also required. Remaining course work may consist of a wide variety of elective classes that may be related to Qualifier exams and to the Comprehensive Exams to be determined in consultation with the advisor and the Dissertation Committee. Research hours (MAT 792 Research) are added as needed.

The culminating experience will be a Ph.D. dissertation which requires 12 credit hours of MAT 799 Dissertation.

5.2.3 Qualifying Exams

Mathematics PhD students must have passed two Qualifying Exams by the end of the second year. Each exam is based upon a 2-semester sequence of courses, taken in the first year, in a fundamental area of graduate-level math.

The qualifier sequences are aligned with with the four mathematical topics, and there is some variation in the policies for the four Qualifying Exams:

Analysis: The exam is on Real Analysis, consists of a single 4-hour exam on MAT 570–571, and is given in May and again in August if needed.

Discrete Mathematics: The exam is on Combinatorics and Graph Theory, consists of two 3-hour parts, with the first part on MAT 512 given in January, the second part on MAT 513 given in May, and both parts given in August if needed.

Geometry/Topology: The exam is on Geometry and Topology, consists of a single 4-hour exam on MAT 501–502, and is given in May and again in August if needed.

Number Theory: The exam is on Abstract Algebra, consists of two 3-hour parts, the first part on MAT 543 and the second part on MAT 544, and is given in May and again in August in needed. Both parts have to be taken in the same exam session.

It is possible to take a Qualifying Exam without registering for the course. The Qualifying Exams are normally taken in May of the first year of the program (preceded by a part in January for Discrete Mathematics), and a student who does not pass the exams by this time is placed on probation. While on probation, the student may retake the exams in August at the start of the second year, and then one more time in May (preceded by a part in January for Discrete Mathematics) of the second year. If a student has not passed the Qualifying Exams by May of the second year, SoMSS will recommend that the student be dismissed from the PhD program.

In preparation for each Qualifying Exam, the Graduate Associate Director will appoint a Qualifying Exam committee, normally consisting of two or three faculty and chaired by the faculty who taught the qualifying sequence most recently. The exam committee writes an exam following the syllabus on file with the SoMSS graduate office. Each exam committee member grades

the whole exam, then the exam committee meets to determine the result, which can be PhD Pass, Master's Pass, or Fail.

Every Mathematics PhD student must get a PhD Pass on the Qualifying Exam. If an exam is broken into two parts, there is a separate result for each part, and then the student must get a PhD pass on both parts. The chair of the exam committee communicates the result to the Graduate Associate Director. The results are subject to approval by the SoMSS Graduate Committee.

If an exam is broken into two parts, a student who gets a PhD Pass on one part but not on the other only needs to retake one part.

5.2.4 Plan of study

In consultation with his or her advisor, the student must submit a plan of study (iPOS) in the first year of their degree program. The iPOS must be approved by the student's advisor, the SoMSS Associate Director for Graduate Programs, and the Graduate College.

The iPOS is a record that shows the breadth and depth of a student's study. Once a student and the advisor agree on the courses relevant for this goal and have listed them, the only other requirement for the iPOS is to have 12 hours of dissertation credit (MAT 799) after the prospectus. A seminar may be taken for 3 credit hours, provided that the student gives at least one lecture. To make up any discrepancy between the total hours and the required 84 credit hours research credits may be used.

Students do not need to list every course or credit on the iPOS. They may list up to 3 credits for seminar courses on the iPOS.

5.2.5 Comprehensive Exam

Most students will take the written Comprehensive Exam in May of the second year. Students must pass the written Comprehensive Exam before the beginning of the fourth year. By passing the Comprehensive Exam, the student demonstrates mastery of the knowledge required to conduct research in his or her specialization area.

- The Comprehensive Exam is based upon material that includes the content of at least two 500-level courses, chosen with the advice of the student's dissertation committee. In particular, the student must

choose a dissertation advisor and four other dissertation committee members before scheduling the Comprehensive Exam.

- The courses must be beyond the level of the qualifier courses. The topics on the exam should be relevant to the student's dissertation research area.
- The exam should be graded as a single unit if possible. The length of the exam is four hours, two for each of the courses.
- An exam will be scheduled by the student and the student's advisor. The scheduling of the exam must be approved by the Associate Director of Graduate Programs at least 2 months before the exam is taken.
- A detailed syllabus for the exam will be made available at least 2 months before the exam is taken. The syllabus must be approved by the Dissertation Committee and the Graduate Committee.
- The exam is written and graded by a committee consisting of at least two faculty.
- The faculty writing the exam should be present at the time of the exam if possible but if not, must be available by zoom or email to answer questions.
- At least one of the courses should be a MAT course that is either in the catalog or a special topics course that is regularly offered. The second course could be, for example, a reading course based on material relevant for the student's research.
- Although the Comprehensive Exam can be taken any semester following the one during which the Qualifying Exam is passed, the student must attempt the Comprehensive Exam during the third year, and must pass it before the beginning of the fourth year. If the student does not pass it on the first try, one retake is allowed, no sooner than three months after the first attempt. The retake is normally over the complete exam. If the Comprehensive Exam is not passed by the beginning of the fourth year, the student is dismissed from the PhD program.
- Special cases are subject to the approval of the Graduate Committee.

In preparation for the Comprehensive Exam, the Associate Director for Graduate Programs will appoint a Comprehensive Exam committee, normally consisting of two or three faculty. The Exam Committee writes an exam following an approved syllabus on file with the SoMSS Graduate Office. Each Exam Committee member grades the exam, then the Exam Committee meets to determine the result, which can be Pass at PhD level, Pass at Master's level, or Fail. The PhD requires a PhD level pass. The reason for including the Master's level pass is for students who may want to use this exam to obtain a Master's in Passing. If an exam is broken into two parts, there is a separate result for each part, and then the student must get a pass on both parts. The Chair of the Exam Committee communicates the result to the Associate Director for Graduate Programs. The results are subject to approval by the Graduate Committee.

5.2.6 Dissertation Committee

Since the Comprehensive Exam must be approved by the Dissertation Committee, before scheduling the exam the student must choose a Dissertation Advisor and four other members of a Dissertation Committee. The Dissertation Advisor is chosen first, and then the other committee members are chosen in consultation with the Dissertation Advisor.

The Dissertation Advisor must have the right to chair Mathematics PhD committees and will serve as the chair of the Dissertation Committee. The list of faculty with the right to chair can be found on Graduate College's faculty website: <https://graduateapps.asu.edu/graduate-faculty/degree/G9>.

Membership in the SoMSS Dissertation Committee is a privilege that is extended to tenure track faculty members of ASU as well as to other individuals as described in the following membership rules.

Members: A Mathematics PhD Dissertation Committee must have at least 5 members.

SoMSS Graduate Faculty members: Members of the Graduate Faculty can serve on a Mathematics PhD dissertation committee. This includes both tenure track faculty from other units as well as other faculty (research faculty for example) who are members of the SoMSS Graduate Faculty.

Co-Chair: For a faculty member to serve as co-chair of a Mathematics PhD Dissertation Committee, the faculty member must be a member of the SoMSS Graduate Faculty with right to Co-Chair or be approved by the SoMSS Associate Director for Graduate Programs.

External members: Individuals who are not affiliated with ASU can serve on a SoMSS PhD Dissertation Committee subject to approval by the SoMSS Associate Director for Graduate Programs.

See Appendix A for Absent Committee Member Procedures.

5.2.7 Dissertation Prospectus Exam

The Dissertation Prospectus Exam has two components: written and oral. Students must write the Prospectus document and pass the oral exam by the end of the 8th semester. While the Comprehensive Exam shows that the student has the necessary knowledge to conduct research in a specialization area, the Dissertation Prospectus demonstrates mastery of the methods needed to identify, formulate, and plan research.

The written Prospectus must contain:

1. A statement of the proposed research and why it is important.
2. An overview of the relevant literature.
3. A description of the student's competence to conduct the proposed research.
4. Any evidence of initial results in the scope of the dissertation research.
5. A discussion of how the research will be approached.
6. A projected time-table and outline of the dissertation.

It is the student's responsibility to schedule the oral exam, and the student must distribute the written Prospectus to the Dissertation Committee at least one week prior to the oral exam. The Dissertation Advisor may require the student to distribute the Prospectus two weeks in advance, giving the advisor an opportunity to collect questions from the Dissertation Committee, which are then given to the student one week before the Prospectus Exam;

in this case the committee is of course still free to ask other questions at the exam. During the oral exam, the student first presents the Prospectus, after which the Dissertation Committee questions the student orally.

Although the Prospectus Exam can be taken any semester following the one during which the Comprehensive Exam is passed, the student must pass it by May of the 8th semester.

If the Dissertation Committee deems the student's Prospectus to be unsatisfactory, the student may request one more opportunity to submit a Prospectus. Failure of the Prospectus is considered final unless the Dissertation Committee, the Director of the academic unit recommend, and the Dean of the Graduate College approve a second attempt. If a petition is approved, the student must submit the new Prospectus within six months after the first Prospectus Exam was held. If the academic unit does not grant the student a second attempt, or if the student fails to pass the second attempt, the Graduate College may dismiss the student from the degree program.

See Appendix A for Absent Committee Member Procedures.

5.2.8 Dissertation Defense

The dissertation is the culmination of the doctoral program. By writing and defending a dissertation the student demonstrates readiness to conduct independent research in a specialization area.

There will be a public oral defense following the completion of the dissertation. It is the student's responsibility to schedule the Dissertation Defense, and the student must distribute the dissertation to the Dissertation Committee and to an external reviewer at least four weeks prior to the Defense. The reviewer is determined by the Chair of the Dissertation Committee in consultation with the Associate Director for Graduate Programs. The Chair of the committee informs the Dissertation Committee of the results of the external review.

During the defense, the student first presents the dissertation, after which the Dissertation Committee questions the student orally. When this questioning is finished, the student is excused from the room, and the committee discusses the dissertation and the student's performance on the defense, and determines the result, which can be Pass, Pass with minor revision, Pass with major revision, or Fail. If the result is pass with revision, the student has one year to present the final approved document, maintaining continuous enrollment. If the result is fail, the student may request one more opportunity to

submit a dissertation and pass the Defense. The student must wait until the next semester or summer session before making the second and final attempt, and the student must make this second attempt within one year after the first attempt.

See Appendix A for Absent Committee Member Procedures.

5.2.9 Masters in Passing

Students in the Mathematics PhD program that have satisfied certain milestones can apply for a Masters in Passing (MIP). Student must apply for graduation for the MIP to be awarded. The degree awarded will be an MA in Mathematics. Before applying for the awarding of the MIP:

- students must have an updated and approved iPOS for the PhD program, and
- they must have successfully completed the requirements for an MA in Mathematics. See MA in Mathematics.

5.3 Applied Mathematics

The Applied Math PhD program has five major milestones:

1. Core Courses
2. Plan of Study
3. Comprehensive Exam
4. Dissertation Prospectus
5. Dissertation Defense,

which are described in the following subsections.

Sample timetable for Applied Mathematics PhD students:

- Year 1
- Take all six core courses.
 - Select a tentative Dissertation Advisor.
 - File a program of study (iPOS).
- Year 2
- Finalize choice of Dissertation Advisor.
 - Choose four more Dissertation Committee members.
 - Update the program of study.
 - Take the Comprehensive Exam.
- Year 3
- Finish coursework.
 - Choose a dissertation topic.
 - Pass the Comprehensive Exam if not yet completed.
- Year 4
- Write Prospectus document.
 - Pass the oral Prospectus Exam by the end of semester 8.
 - Do dissertation research.
- Year 5
- Finish research and write dissertation.
 - Defend dissertation in semester 10.

5.3.1 Additional admission requirements

The general admission requirements outlined in section 4 apply. Additional eligibility requirements include:

- be competitive in an applicant pool as evidenced by coursework in linear algebra (equivalent to ASU course MAT 342 or MAT 343) and advanced calculus (equivalent to ASU course MAT 371);
- have scientific programming skills (desirable).

5.3.2 Course requirements

APM 505 Applied Linear Algebra is a required core course. Four out of the following five applied math (APM) courses are also required. It is strongly recommended that all five courses be taken. Odd (even) numbered courses will always be offered in Fall (Spring) semesters. Students should plan to take them in their first year.

- APM 501 Differential Equations I - ordinary differential equations
- APM 502 Differential Equations II - partial differential equations
- APM 503 Applied Analysis
- APM 504 Applied Probability and Stochastic Processes
- APM 506 Computational Methods

Students may be given a second year to complete this coursework with approval from the Associate Director of Graduate Programs.

5.3.3 Qualifying Exams

Completion of five of the six core courses (APM 501 - 506) with an overall GPA of 3.33 and no grade less than B-. serves in place of Qualifying Exams for the degree.

5.3.4 Plan of study

See the description of the iPOS in Subsection 5.2.4. 12 hours of dissertation credits (APM 799) are required after the Prospectus Exam is passed.

5.3.5 Comprehensive Exam

Students must pass a written Comprehensive Exam before the beginning of the fourth year. By passing the Comprehensive Exam, the student demonstrates mastery of the knowledge required to conduct research in his or her specialization area.

- The written Comprehensive Exam is based upon material that includes the content of at least two 500-level courses, chosen with the advice of the student's Dissertation Committee. In particular, the student must choose a Dissertation Advisor and at least two other Dissertation Committee members before scheduling the exam.
- The courses must be beyond the level of the qualifier courses. The exam topics should be relevant to the student's dissertation research area.
- The exam will be offered during the Finals week of the Spring semester and also one week before the start of the Fall semester in August. A student should attempt the exam by the beginning of the 5th semester and must have passed the exam by the end of the 6th semester.
- A detailed syllabus for the exam will be made available at least 2 months before the exam is taken. The syllabus must be approved by the Dissertation Committee and the Associate Director for Graduate Programs.
- The exam is written and graded by a committee appointed by the Associate Director for Graduate Programs and consisting of at least two faculty members.
- The exam committee meets to determine the result, which can be Pass or Fail, and communicates the result to the Associate Director for Graduate Programs. The results are subject to approval by the Graduate Committee.
- The faculty writing the exam should be present at the time of the exam if possible, but if not, must be available by zoom or email to answer questions.
- Special cases are subject to the approval of the Graduate Committee.

5.3.6 The Dissertation Committee

The rules presented for the Mathematics PhD in section 5.2.6 apply, *mutatis mutandis*, to the Applied Mathematics PhD program. The list of faculty with the right to chair an Applied Mathematics PhD committee can be found here.

5.3.7 Dissertation Prospectus Exam

The rules presented for the Mathematics PhD in section 5.2.7 apply.

5.3.8 Dissertation Defense

The rules presented for the Mathematics PhD in section 5.2.8 apply.

5.3.9 Masters in Passing

Students in the Applied Mathematics PhD program that have satisfied certain milestones can apply for a Masters in Passing (MIP). Student must apply for graduation for the MIP to be awarded. The degree awarded will be an MA in Applied Mathematics. Before they can apply for the awarding of the MIP

- Students must file an approved iPOS for the PhD program.
- They must have successfully completed five of the Applied Mathematics core courses (APM 501- 506) with a minimum GPA of 3.0.
- They must have passed a written Comprehensive Exam at the Masters level. The exam may be based on a sequence of two courses from APM 501- 506. Different sequences may be substituted with the approval of the Graduate Committee.
- The total minimum credit hour requirement is 30 credit hours with a 3.0 GPA.

5.4 Statistics

Milestones in the Statistics PhD program consist of

1. Required Courses
2. Qualifying Exam
3. Plan of Study
4. Comprehensive Exam
5. Dissertation Prospectus
6. Dissertation Defense

Details are provided in the next subsections.

Sample timetable for Statistics PhD students:

- Year 1
- Take required courses STP 501, 502, 530 and 531, plus electives.
 - File a program of study (iPOS).
 - Take the Qualifier Exam in May.
 - Learn about research interests of faculty.
 - Choose a tentative Dissertation Advisor.
- Year 2
- Take required courses STP 526, 527 and APM 503/504 or MAT 570/571, plus electives.
 - Finalize Dissertation Advisor.
 - Choose a Comprehensive Exam Chair and Committee.
 - Update the program of study before the Comprehensive Exam.
 - Write a Comprehensive Exam proposal
- Year 3
- Finish course work.
 - Pass the comprehensive exam in the fifth semester.
 - Select a dissertation topic and committee.
 - Pass the Dissertation Prospectus Exam.

- Year 4
- Pass the Dissertation Prospectus Exam if not yet completed.
 - Do dissertation research.
- Year 5
- Finish research and write dissertation.
 - Defend dissertation in semester 10.

5.4.1 Additional admission requirements

The general admission requirements outlined in section 4 apply. Additional eligibility requirements include: Completion of the following courses is required (ASU equivalents in parentheses). Applicants who lack any of these prerequisite courses must normally complete the prerequisites before being considered for admission.

- calculus (MAT 270, 271 and 272)
- an upper-level proof-oriented calculus course (MAT 371)
- linear algebra (MAT 342 or MAT 343)
- computer programming (CSE 100)
- introductory applied statistics (STP 420)

5.4.2 Course requirements

The required core course is STP 526 Theory of Statistical Linear Models. In addition the following courses are required:

- STP 501: Theory of Statistics I: Distribution Theory
- STP 502: Theory of Statistics II: Inference
- STP 527: Statistical Large Sample Theory
- STP 530: Applied Regression Analysis or IEE 578 Regression Analysis
- STP 531: Applied Analysis of Variance or IEE 572 Design Engineering Experiments

5.4.3 Qualifying Exams

PhD students in Statistics must earn a PhD Pass on a qualifying exam that is based on the courses STP 501 and STP 502. This exam is offered twice a year in May and in January, just before the beginning of the spring semester. Precise dates are announced ahead of time.

To make satisfactory progress, students must take this exam in May of their first year. A student who does not receive a PhD Pass on the first attempt can retake the exam in January of their second year. If the second attempt also does not result in a PhD Pass, SoMSS will recommend that the student be dismissed from the PhD program. A student can appeal such a decision, and, if successful, can be given the opportunity to take the exam a third time in May of the second year.

At each offering, the exams are graded by two selected faculty members. Recommendations for the outcome (PhD Pass, MS Pass, or Fail) are made by the members of an appointed Statistics Examination Committee. After an opportunity for discussion, the entire statistics faculty votes to decide the outcome. In order for a student to earn a PhD Pass, more than 50% of the votes must be in favor of that outcome. If this criterion is not met, but more than 50% of the votes are in favor of a PhD Pass or MS Pass, then the outcome is an MS Pass. If this criterion is also not met, then the outcome is a Fail.

While a PhD student must earn a PhD Pass, an MS Pass can have value towards a Statistics Masters in Passing (MIP) provided that other requirements for the Statistics MS degree are met.

5.4.4 Plan of study

The description for the iPOS in Section 5.2.4 applies also for Statistics PhD students, but with the following change: students take STP 799 rather than MAT 799 for dissertation credit.

5.4.5 Comprehensive Exam

The PhD program in Statistics seeks to train students as independent researchers and practitioners in statistics. The first stage of the program is to impart a foundation in the classical theory and practice of statistics including the Qualifier Exam over such material. The Comprehensive Exam is a transition point towards increased independence for the students. A

student is expected to examine current trends in a specific area of statistics and to present a succinctly written summary and analysis of specific academic works as well as a plan on how this research could be extended in meaningful ways. This exercise is meant to move the student's training from foundational coursework to research that will be expected for the Dissertation Prospectus and dissertation research. All Statistics PhD students must pass the statistics Comprehensive Exam. A student should take this exam starting at the end of fourth semester, and submit the written exam the last Monday in May. The exam begins six weeks prior to this due date. Students must have selected a Comprehensive Exam Committee (CEC) Chair (or Chairs) and CEC members before taking the exam. The Chair of CEC must be a faculty from SoMSS, and the committee should consist of at least three members, including the Chair(s). Typically, the members of the CEC will be a subset of faculty that will eventually be members of the student's Dissertation Committee. The following list provides details about the Comprehensive Exam:

- The exam consists of a written document. The CEC is to be established during the student's fourth semester, and the exam is due on the last Monday of May, beginning six weeks prior to this due date.
- The outcome of the exam is Pass, Conditional Pass, or Fail.
- A student who fails the exam has an opportunity to redo the exam in the summer. The due data for the final written document should be the Monday before school starts for the Fall semester. The second attempt can be on the same topic as the first attempt.
- The CEC can give a conditional pass with a stipulation of the condition. For example, the CEC could stipulate that the student re-edit the written document to correct technical errors or writing deficiencies. Any such conditions must be resolved by the Monday before school starts for the Fall semester.
- In order to take the exam, a student is required to first obtain a PhD pass on the STP Qualifying Exam and complete the required coursework. These requirements should be completed by the time of the exam submission at the end of May. However, since preparations for the exam must start during the fourth semester, a student will typically not have completed all of the courses by the beginning of the exam.

A summary of the exam process can be found in Appendix B.

5.4.6 The Dissertation Committee

All of the Dissertation Committee policies as expressed in Section 5.2.6 apply also for the Statistics PhD program, with the exception that the Comprehensive Examination Committee (CEC) rather than the Dissertation Committee (DC) is in charge of the Comprehensive Exam. Typically, the chair of the CEC will also become the Chair of the DC, while members of the CEC will also become members of the DC.

The list of faculty with the right to chair a Statistics PhD committee can be found here.

5.4.7 Dissertation Prospectus Exam

The rules presented for the Mathematics PhD in Section 5.2.7 apply.

5.4.8 Dissertation Defense

The rules presented for the Mathematics PhD in Section 5.2.8 apply, except that there is no requirement for an “external reviewer”.

5.4.9 Masters in Passing

Students in the Statistics PhD program that have satisfied certain milestones can apply for a Master’s in Passing (MIP). Student must apply for graduation for the MIP to be awarded. The degree awarded will be an MS in Statistics. Before they can apply for the awarding of the MIP

- Students must file an approved iPOS for the PhD program.
- They must have successfully completed a written Comprehensive Exam based on (STP 501, 502).

5.5 Mathematics Education

The Mathematics Education PhD program has five major milestones:

1. Core Courses
2. Plan of Study
3. Comprehensive Exam
4. Dissertation Prospectus
5. Dissertation Defense,

which are described in the following subsections.

Sample timetable for Mathematics Education PhD students:

- Year 1
- Research in Undergraduate Mathematics Education (RUME) I and II (Qualifying Exam courses).
 - Begin satisfying requirement for four graduate level courses from mathematics, applied mathematics, or statistics (Qualifying Exam courses).
 - File the program of study (iPOS).
 - Choose tentative Dissertation Advisor.
- Year 2
- Complete RUME III and IV.
 - Finalize Dissertation Advisor in semester 3 if this has not been done already.
 - Choose four more Dissertation Committee members.
 - Update the program of study.
 - Begin electives from mathematics, cognitive science, psychology, educational technology, philosophy, research, etc. (12-15 hours)
 - Pass Comprehensive Exam if ready.
- Year 3
- Complete RUME III and IV if not offered during year 2.
 - Finish coursework and start research.
 - Choose a dissertation topic.
 - Pass Comprehensive Exam by August after Year 3.

- Year 4
- Do dissertation research.
 - Write Prospectus and pass Prospectus Exam by the end of semester 8.
- Year 5
- Finish research and write dissertation.
 - Defend dissertation in semester 10.

5.5.1 Additional admission requirements

The general admission requirements outlined in section 4 apply.

5.5.2 Course requirements

Students are required to complete a sequence of four courses over two years in Mathematics Education: Research in Undergraduate Mathematics Education (RUME I, MTE 501; RUME II, MTE 502; RUME III, MTE 503 and RUME IV, MTE 504). In addition, students take four graduate level courses from mathematics, applied mathematics, or statistics. Acceptable graduate level mathematics courses are

- Applied Mathematics
 - APM 501 Differential Equations I (ODEs)
 - APM 502 Differential Equations II (PDEs)
 - APM 503 Applied Analysis
 - APM 504 Applied Probability and Stochastic Processes
 - APM 505 Applied Linear Algebra
 - APM 506 Computational Methods
- Mathematics
 - MAT 512 Introduction to Combinatorics
 - MAT 513 Graph Theory
 - MAT 516 Graph Theory I
 - MAT 517 Graph Theory II
 - MAT 543 Algebra I
 - MAT 544 Algebra II
 - MAT 570 Real Analysis I
 - MAT 571 Real Analysis II
- Statistics

- STP 501 Theory of Statistics 1
- STP 502 Theory of Statistics 2
- STP 526 Theory of Statistical Linear Models
- STP 527 Statistical Large Sample Theory
- STP 530 Applied Regression Analysis
- STP 531 Applied Analysis of Variance
- STP 532 Applied Nonparametric Statistics
- STP 533 Applied Multivariable Analysis
- STP 535 Applied Sampling Methodology

Four to five graduate-level (500 and above) elective courses from mathematics, cognitive science, psychology, educational technology, philosophy, research, etc. should be taken as approved by the advisor. All PhD graduate students should sign up for at least 3 hours of seminars (MTE 591).

5.5.3 Qualifying exams

The finals in RUME I and RUME II serve as Qualifying exams. They should be attempted in year 1 and must be passed by the beginning of semester 5. Attaining at least a B in each of the four required graduate-level mathematics courses is also a condition for passing the Qualifying Exams requirement.

5.5.4 Plan of study

See the description of the iPOS in Subsection 5.2.4. 12 hours of dissertation credit (MTE 799) are required after the Prospectus Exam is passed.

5.5.5 Comprehensive Exam

Students must pass a written and oral Comprehensive Exam after completing RUME IV and within the person's first three years in the program. By passing the Comprehensive Exam, the student demonstrates mastery of the knowledge required to conduct research in his or her specialization area. Details are:

- The student's advisor writes the first draft of the 4-5 question exam and circulates this exam to the student's other committee members for editing and approval.
- The student has 2 weeks to complete the written part of the exam.

- The oral part of the exam is scheduled at least 2 weeks after the written exam is submitted to the student's committee members. The oral exam involves the student's committee members posing questions related to the student's responses on the written exam.
- The student may receive a pass, conditional pass, or fail. The exam grade is determined by a vote of the student's committee.
 - The student receives a pass if all (or all but one) committee members vote to pass.
 - The student receives a fail if more than 1/3 of the exam is judged to be unsatisfactory by all (or all but one) committee member.
 - The student receives a conditional pass if at least 2/3 of the exam is completed satisfactorily (at most 1/3 of the exam needs to be rewritten). In the event of such a conditional pass, the student has two weeks to rewrite only the part of the exam that was deemed to be unsatisfactory by more than one committee member. After the student rewrites the part of the exam that was judged to be unsatisfactory, the student has a second oral exam that focuses on the students' revised responses. The student then receives a pass if all (or all but one) committee member votes to pass. Otherwise, the student receives a fail.
 - If the student fails the comprehensive examination, the committee may vote to allow the student to retake a new comprehensive exam within six months of the original comprehensive exam defense date. A third attempt is not permitted and permission to re-take the exam is not guaranteed. Failure to pass the comprehensive exam results in the student being dismissed from the program.

5.5.6 The Dissertation Committee

The rules presented for the Mathematics PhD in section 5.2.6 apply, *mutatis mutandis*, to the Mathematics Education PhD program. The list of faculty with the right to chair a Mathematics Education Ph.D committee can be found here.

5.5.7 Dissertation Prospectus Exam

The rules presented for the Mathematics PhD in section 5.2.7 apply.

5.5.8 Dissertation defense

The rules presented for the Mathematics PhD in section 5.2.8 apply.

5.5.9 Masters in Passing

Students in the Mathematics Education PhD program that have satisfied certain milestones can apply for a Masters in Passing (MIP). Student must apply for graduation for the MIP to be awarded. The degree awarded will be an MA in Mathematics Education. Before they can apply for the awarding of the MIP

- Students must file an approved iPOS for the PhD program.
- They must have successfully completed MTE 501 - 504 (RUME I - IV) with a minimum GPA of 3.0.
- They must have passed two MAT, APM, STP courses from the list in Sec.5.5.2 with a minimum 3.0 GPA.
- They must have passed the Comprehensive Exam (see Sec. 5.5.5).
- The total minimum credit hour requirement is 30 credit hours with a 3.0 GPA.

6 General information, policies and procedures

6.1 Costs (tuition & fees)

The costs of enrollment can be obtained from ASU Financial Aid and Scholarship Services. Tuition and fees are subject to annual approval by the Arizona Board of Regents. Use the Tuition Estimator to calculate estimated total cost of attendance. For questions about tuition and fees, please contact the Student Accounts Office. For questions about financial aid and cost of attendance, please contact Student Financial Assistance.

6.2 Grievances and appeals

Students who are enrolled in a College of Liberal Arts and Sciences (The College) course and believe they have been unfairly or improperly graded are assured of just treatment and fair consideration. Any such grievance must be started within the regular semester immediately following the course at issue, whether the student is enrolled in the university or not.

There are two stages to the grade grievance process, the informal process and the formal process. Each contains a series of steps. The steps must be followed by any student seeking to appeal a grade. This process does not address academic integrity allegations, faculty misconduct or discrimination.

Refer to the The College of Liberal Arts and Sciences Academic Grievance Policy for more information and specific processes.

6.3 Continuous enrollment

Once admitted to a PhD program, students must be registered for a minimum of one credit hour during all phases of their graduate education, including the term in which they graduate. This includes periods when students are engaged in ASU-funded research, conducting a Dissertation Prospectus Exam, working on or defending theses or dissertations, taking examinations, or in any other way utilizing university resources, facilities, or faculty time. Exceptions are discussed in section 6.4.

Registration for every fall semester and spring semester is required. Summer registration is required for students taking examinations, conducting a Dissertation Prospectus Exam, defending theses or dissertations, or graduating from the degree program during a summer term.

To maintain continuous enrollment the credit hour(s) must:

- Appear on the student's Plan of Study, OR
- Be for research (592, 792), thesis (599), dissertation (799), or continuing registration (795), OR
- Be for a graduate-level course.

Grades of 'W' and/or 'X' are not considered valid registration for continuous enrollment purposes. 'W' grades are received when students officially withdraw from a course after the drop/add period. 'X' grades are

received for audit courses. Additionally, students completing work for a course in which they received a grade of 'I' must maintain continuous enrollment as defined previously. Graduate students have one year to complete work for an incomplete grade; if the work is not completed and the grade changed within one year, the 'I' grade becomes permanent. Additional information regarding incomplete grades can be found at <http://asu.edu/aad/manuals/ssm/ssm203-09.html>.

6.4 Voluntary withdrawal from ASU

If a student wishes to withdraw from their graduate degree program and the university, they must complete the Voluntary Withdrawal form. Students must separately complete the appropriate forms with the University Registrar to withdraw from their courses. International students should contact the International Student and Scholars Center (ISSC) before submitting a *Voluntary Withdrawal form*, as it most likely will affect their visa status.

Voluntary withdrawal from a graduate degree program

If a student wishes to transition from one graduate degree program to another graduate degree program, the student should complete the Voluntary Withdrawal form. The student should not take this action until they have been admitted to the other graduate degree program.

Other types of withdrawal

There are appropriate circumstances when students may need to withdraw from the university (i.e. medical withdrawal, compassionate leave). The policies for such withdrawals are the same for both undergraduate and graduate students. Types of withdrawals and procedures can be found at: <https://students.asu.edu/drop-add>. For course withdrawals contact the University Registrar's Office.

6.5 Leave of absence policies

Graduate students planning to discontinue registration for a semester or more must submit a Request to Maintain Continuous Enrollment form. This request must be submitted and approved before the anticipated semester of non-registration. Students may request to maintain continuous enrollment

without course registration for a maximum of two semesters during their entire program.

Having an approved Request to Maintain Continuous Enrollment by the Graduate College will enable students to re-enter their program without re-applying to the university. Students who do not register for a fall or spring semester without an approved Request are considered withdrawn from the university under the assumption that they have decided to discontinue their program. Students removed for this reason may reapply for admission to resume their degree program; the application will be considered along with all other new applications to the degree program.

A student with a Graduate College approved Request to Maintain Continuous Enrollment is not required to pay tuition and/or fees, but in turn is not permitted to place any demands on university faculty or use any university resources. These resources include university libraries, laboratories, recreation facilities or faculty time.

6.6 Maximum time limit

Doctoral students must complete all program requirements within a ten-year period, or five years after passing the Comprehensive Exam, whichever comes first. The ten-year period starts with the semester and year of admission to the doctoral program. Graduate courses taken prior to admission that are included on the Plan of Study must have been completed within three years of the semester and year of admission to the program (previously awarded Master's degrees used on the Plan of Study are exempt).

Any exception must be approved by the Dissertation Committee and the Graduate College. The Graduate College may withdraw students who are unable to complete all degree requirements and graduate within the allowed maximum time limits.

6.7 Registration requirements for research assistants (RA) and teaching assistants (TA)

Students awarded an assistantship within SoMMS are required to be registered for at least 6 credit hours each semester. Audit credit hours do not count towards the 6 credit hours.

A Teaching Assistant or Research Assistant typically is considered to have a workload of 50 percent Full Time Equivalency (FTE). These TAs/RAs do

not pay tuition during the semester or summer session of their employment. In addition, the university pays the individual health insurance premium for those TAs and RAs.

TAs/RAs working 25–49 percent FTE receive a 50 percent remission of tuition for the semester or summer session of their employment.

Any TA/RA offer does not cover additional fees beyond tuition.

More details on regulations pertaining specifically to TAs and RAs can be found in the Graduate College TA/RA Handbook.

6.8 Policy for maintaining academic satisfactory progress

Each semester, the SoMSS PhD program reviews students' files for satisfactory progress towards completion of the degree. All students who do not meet one of the four categories are placed on probation or dismissed from the program:

1. Satisfactory progress;
 2. Academic Probation;
 3. Progress probation;
 4. Dismissal from the PhD program.
1. **Satisfactory progress** means that a student does not have any academic or progress probationary issues. In addition to the probationary rules, satisfactory progress includes discussion with the advisor each semester.
 2. **Academic probation**
SoMSS PhD students must maintain a minimum of 3.00 GPA on both the iPOS and Graduate GPAs. If either GPA falls below 3.00, the student must develop, with their advisor, an academic performance improvement plan that includes the conditions and timeframes for making satisfactory academic progress in their degree program. The student is considered to be on academic probation until the conditions specified in the academic performance improvement plan are met and both GPAs are above 3.00.
 3. **Progress probation** pertains to any of the following issues:

- Failure to pass the Qualifier Exam.
- Failure to pass the Comprehensive Exam.
- Failure to attempt the Comprehensive Exam by the end of third year.
- Failure to pass the Dissertation Prospectus Exam.
- Failure to remain continuously enrolled.

4. Dismissal from a SoMSS PhD program:

A PhD student may be dismissed from program for any of the reasons listed below:

- (a) Cumulative or semester GPA is less than 3.0 for two consecutive semesters. (A student with such a GPA will be put on probation after the first semester.)
- (b) Failure to meet a requirement specified for the PhD degree, including not making satisfactory progress toward the completion of the degree.

A student will be recommended for dismissal from a SoMSS PhD program for failure to meet the probationary conditions imposed in the semester mentioned in the probationary letter.

- The student will receive a letter from the SoMSS PhD program explaining the reasons for the dismissal. The student will have 5 calendar days from the date of the letter to appeal the decision. If the student decides to appeal, the SoMSS Graduate Committee will review the case and will make the necessary recommendation. The Associate Director for Graduate Programs, on behalf of the Graduate Committee, will provide a written explanation of the outcome.
- If the outcome is favorable, the student will have to meet all the outlined requirements at the end of the specified period. The student will be required to sign an agreement acknowledging the recommendations and the consequences if the agreements are not met.

- If the graduate committee recommends that the appeal is not granted in favor of the student, the Associate Director for Graduate Programs, on behalf of the graduate committee, will recommend to the Dean of Academic Affairs that the student be dismissed from the SoMSS PhD program.
- The student will then have the opportunity to appeal to the The College' Standards Committee, which reviews the student's case and makes the final ruling to the Associate Dean and the SoMSS Associate Director for Graduate Programs.
- If the appeal is not granted in favor of the student, the Dean of Academic and Student Affairs will recommend to the Graduate College that the student be dismissed from the SoMSS PhD program.

6.9 Filing for graduation

During the final semester, a student must file an application for graduation with the Graduation Office of the Registrar on My ASU. The student's approved final plan of study (iPOS) must be on file with the Graduate College before the student can apply for graduation.

6.10 Academic integrity

The highest standards of academic integrity are expected of all graduate students, both in the academic coursework and in their related research activities. The failure of any graduate student to meet these standards may result in serious consequences including suspension or expulsion from the university and/or other sanctions as specified in the academic integrity policies of individual schools as well as the university.

Violations of academic integrity include, but are not limited to: cheating, fabrication, tampering, plagiarism, or aiding and/or facilitating such activities. At the graduate level, it is expected that students are familiar with these issues and each student must take personal responsibility in their work. In addition, graduate students are expected to follow university guidelines related to the Student Code of Conduct. University policies related to academic integrity and code of conduct are available in the Office of Student Life, or at <https://graduate.asu.edu/current-students/>

[policies-forms-and-deadlines/academic-integrity](#).

6.11 Student chapters of professional societies

Our graduate students are involved in many professional societies. Most branches of math have professional societies associated with them. Participation in professional societies is an excellent road to career and interest group connections. Student membership typically costs less than \$30 and includes many benefits—for example, discounts at meetings and including a monthly magazine. The American Mathematical Society (AMS), the Association for Women in Mathematics (AWM), the Mathematical Association of America (MAA), and the Society for Applied Mathematics (SIAM) are particularly relevant.

6.12 Student Support Services

6.12.1 Healthcare & Insurance

All students, whether they have health insurance or not, are eligible to use ASU Health Services. Graduate students must be enrolled in a graduate degree or certificate program and registered for at least three credit hours or one dissertation/thesis hour.

Visit ASU Health Services for additional information and instructions regarding Student Health Coverage Options, Eligibility & Enrollment.

International students will automatically be enrolled in the student health plan upon registration for class.

For students with an RA/TA appointment, refer to the **Benefits** section of the TA/RA Handbook for additional health insurance information.

All students are required to meet the measles, mumps, and rubella (MMR) immunization requirement before class registration. You will see a MMR Immunization hold in the **Priority Tasks** module in My ASU until your MMR information is received and verified. Read additional information about MMR and other immunization information at ASU Health Services.

6.12.2 Student Accessibility and Inclusive Learning Services (SAILS)

SAILS provides support and access to students with disabilities for programs and services, consultation and guidance for faculty and staff, and training

and engagement opportunities to increase awareness and ensure accessibility. Services include testing accommodations, note taking services, on-campus transportation, and more. Students new to ASU must log into SAILS to get started with registering. Contact SAILS to determine eligibility and submit required documentation.

6.12.3 Veteran’s Resources

ASU has a robust veteran student services center. The Tillman Center offers advising, assistance with GI benefits, military transfer credit and other services. The Tillman Center is staffed almost entirely by veterans who relate to the challenges that new students experience and provide support in navigating complex governmental systems.

6.12.4 Counseling Services

Students are eligible for personal counseling services at ASU. ASU Counseling Services offers confidential, time-limited, counseling and crisis services for students experiencing emotional concerns, problems in adjusting, and other factors that affect their ability to achieve their academic and personal goals. They will talk with you, help you identify solutions or support, and connect you with those services at ASU or in the community.

6.12.5 Title IX

ASU is committed to providing an environment free from discrimination based on sex and provides a number of resources and services to assist students, faculty and staff in addressing issues involving sex discrimination, including sexual violence. The university’s full statement and policies related to Title IX are available online.

6.12.6 International Students Support

The International Students and Scholars Center (ISSC) at ASU helps international students understand the legalities and requirements of academic and employment-based programs. It deals with all questions regarding visa and lawful status as an international student in the US as well as many other questions pertaining to life at ASU as an international student.

6.12.7 Wellness and Wellbeing

A one-page guide to Financial, Social, Emotional, and Physical Health and Wellness Resources for ASU Graduate Students, developed by the GPSA .

Proven ways to help graduate students better care for themselves under the increasing demands of graduate school 10 Best Practices in Graduate Student Wellbeing

6.12.8 ASU Libraries

Students have access to the Hayden Library, the main library on campus, as well as the Noble Science Library and online article databases. Hayden Library also provides free creative equipment and tools through My ASU and manages the ASU Digital Repository.

6.12.9 Writing Centers

ASU Writing Centers offer a dynamic, supportive learning environment for currently enrolled ASU undergraduate and graduate students at any stage of the writing process. Tutors from a wide range of majors help students hone writing skills and gain confidence in their writing. In-person and on-line tutoring is available.

6.12.10 Career Services

Your online hub to find internships and jobs, schedule career advising appointments, discover events and more.

Appendices

A Absent committee member procedure

The following rules apply to both the prospectus exam and the dissertation defense. While it is desirable that all members of a student's dissertation committee be available, there are situations (e.g. faculty travel, faculty emergencies and/or faculty leave) that may necessitate proceeding with one

or more committee member(s) absent. SoMSS has established the following policies and procedures for such cases.

1. At most one member of the committee may be substituted or not physically present.
2. A minimum of 50% of the student's official committee must be physically present with the student. If at least 50% of the committee cannot be physically present, the exam/defense must be rescheduled.
3. The Chair or (one co-Chair) must be physically present. If this is not possible, the exam/defense must be rescheduled. The student cannot submit a committee change after the defense is scheduled to create co-Chairs in the case of an absent Chair.
4. A committee co-Chair or member who cannot be physically present may participate in one of three ways. These options are listed in the order of preference:
 - (a) The absent committee member videoconferences into the location, and the location must have the necessary equipment to accommodate video/teleconference materials.
 - (b) The absent committee member teleconferences into the location, (and the student must provide a copy of their document and any other supporting presentation materials to the committee member at least 5 working days in advance of the exam/defense.)
 - (c) The absent committee member provides a substitute to be physically present (approved by the committee chair and the head of the academic unit). The substitute must be someone who is approved to serve on graduate dissertation committees for that program. The absent committee member should provide the substitute questions, in writing, to be asked at the exam/defense. The substitute, although respecting the opinions expressed by the regular committee, must be free to use his/her judgment in voting on whether the student passes or fails. The substitute should sign the absent committee member's name, and add his/her initials directly after the signature.

If the videoconference or teleconference option is selected, the absent member must email the committee chair or co-chair to state that member voted to pass or fail the student and authorize that the chair sign their name on the form. The committee chair or co-chair should sign the name of the absent individual on the form and then add his/her initials directly after the signature.

If a committee member will be absent from the prospectus exam, the student or committee chair/co-chair must notify the Graduate Associate Director before or at the time of scheduling the exam. If the student is notified of an absence after scheduling the exam, the student must contact the Graduate Associate Director prior to the exam, so he/she finds a substitute.

For the dissertation defense, if a committee member will be absent, the student or committee chair/co-chair must notify Graduate College before or at the time of scheduling the defense. If the student is notified of an absence after scheduling the defense, the student must contact Graduate College prior to the defense date.

B Summary of the Statistics PhD Comprehensive Exam

- A student coordinates with their CEC chair to prepare for the exam. The student must produce a written document analyzing a specific work in a selected area of research. The student, together with the Chair of the CEC should select one paper which the student would then analyze and discuss in the written document. It is expected that the student will need to refer to related sources in order to fully comprehend the selected papers. The written document should capture the overall intellectual contribution of the paper and present research opportunities that could be pursued based on the selected works.
- The exam begins six weeks before the due date of the exam. Based on the paper selected by the student working with the CEC chair, the committee will submit in writing a combination of questions and tasks to be completed by the student for the exam.
- At three weeks after the start of the exam, the student should consult with the CEC chair. The student should discuss progress toward com-

pleting the questions/tasks given at the beginning of the exam. The CEC chair may adjust the questions/tasks based on this consultation, and any updates to those questions/tasks should be submitted to the student in writing.

- By the last Monday in May following a student's fourth semester, the written document is submitted to the CEC. The typed document, including figures but excluding bibliography, should be no more than 15 pages, single-spaced, in 11 point or larger font, and with one-inch margins on all sides. The student may seek help from the ASU Writing Center to improve the composition of the written report. Clarification can be sought from the CEC chair, but the detailed work of the written document should be completed by the student.
- Once the written exam has been submitted, the CEC should within one week discuss the student's performance and decide whether the student receives a Pass, Conditional Pass, or Fail. In the case of a Conditional Pass, the CEC stipulates the condition.
- A student fails if a majority of the CEC vote to fail the student with any tie to be broken by the CEC chair. If this condition does not hold, but there are at least two CEC members who do not support a pass, then the student should receive a Conditional Pass.

C Archived Handbooks

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