

## Introduction to program

Welcome to the UNL Department of Statistics! This document provides a description of important academic aspects of our program. While much of the material covered here is given in the student handbook, the handbook is written in a way that only provides “facts” of about the program rather than providing explanations of expectations. My document here provides this information along with tips for success.

## Graduate School at the University of Nebraska

The University of Nebraska is a system of four universities:

- University of Nebraska-Lincoln (UNL)
- University of Nebraska at Omaha (UNO)
- University of Nebraska Medical Center (UNMC; located in Omaha except for the College of Dentistry which is located on East Campus at UNL)
- University of Nebraska at Kearney (UNK)

Students can take courses at any university with relative ease. Examples associated with our department include:

- A few of our students have taken courses in the Departments of Biostatistics and Epidemiology at UNMC through on-campus or distance learning methods.
- PhD students in the UNMC Department of Biostatistics are required to take some courses here and these are offered through distance learning methods.
- UNO offers some Masters-level applied statistics courses through its Department of Mathematics and College of Information Science & Technology.

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Sub-Committee. The Advisor can also recommend members to include on a Supervisory Committee for the student. If an Advisor is not chosen, the Advisement Sub-Committee becomes the student's Supervisory Committee.

PhD students are required to find a new Advisor and then form a Supervisory Committee with recommendations given by this Advisor. This Advisor needs to be identified within one month of passing the PhD Qualifying Exam.

## MS Degree

Most students will obtain a Masters degree in Statistics prior to a PhD in Statistics. As described in the Graduate Catalog (<https://catalog.unl.edu/graduate-professional/graduate/degrees/masters>), there are three options for these degrees:

- I. 30 credit hours including a thesis
- II. 36 credit hours including a minor
- III. 36 credit hours without a thesis or minor

Most student choose Option III with almost all remaining students choosing Option II. Very few students choose Option I.

The required courses for a MS Degree are shown by their course number in Table 1. Overall, there are 21 credit hours that are required for all MS students and each course must be completed with a grade of B- or higher. If this high of a grade level is not achieved, the student's Supervisory Committee will decide whether the course needs to be re-taken.

There is room for at least 15 credit hours of elective graduate-level courses. These courses can be taken from our department, another UNL department (e.g., for a minor), or from another university within the University of Nebraska system. It is strongly recommended that you receive approval from your Advisor for any electives. This is because all courses that will

There is one “Graduate School” that spans the four campuses. The Office of Graduate Studies at UNL in Seaton Hall is UNL's connection to it. You will likely visit there a number of times while at UNL to complete various steps for your degree (e.g., turn in “program of study” forms). Their website provides a nice summary of “Steps to Degree Completion” at <http://www.unl.edu/gradstudies/current/degrees>.

The Office of Graduate Studies also provides the Graduate Catalog at <https://catalog.unl.edu/graduate-professional/graduate>. This document gives policies and procedures associated with graduate school at UNL. The various policies given in this document is what the Department of Statistics abides by for its Masters of Science (MS) and Doctorate of Philosophy (PhD) programs. I strongly recommend examining this document! I frequently need to refer to it myself!

Interestingly, the Graduate Catalog does not provide specific program requirements for departments. This information is included in student handbooks which are available from each department.

## Advisement and Supervisory Committee

The faculty of the Advisement Sub-Committee of the Graduate Committee serves as the temporary advisors for all new students. Also, questions are welcome during our STAT 810 class time too!

If a MS student identifies a faculty member whose interests are similar to their own, it is in the student's best interests to choose that faculty member as a permanent Advisor. For example, if you have an interest in statistics education, then there are a few faculty members here who are greatly involved in the area and perform research in it. These faculty would likely be able to guide a student through our program and toward future employment better than a temporary Advisor from the Advisement

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Table 1: MS Degree typical timeline.

Year	Semester	Activities
1	Fall	STAT 810: Alpha Seminar STAT 821: Statistical Methods I STAT 850: Computing Tools for Statisticians STAT 882: Mathematical Statistics I STAT 892*: TA Prep
	Spring	STAT 822: Statistical Methods II STAT 883: Mathematical Statistics II Elective Form Supervisory Committee
2	Fall	STAT 823: Statistical Methods III STAT 825: Principles of Statistical Consulting and Interdisciplinary Collaboration Elective
	Spring	Electives MS Comprehensive Exam

\*Required course for TAs only

be applied to your degree will be put on your Memorandum of Courses (<https://www.unl.edu/gradstudies/academics/degrees/masters#memorandum>). This Advisor (along with the Supervisory Committee) needs to approve all courses that are part of your degree program.

All students are also required to pass the MS Comprehensive Exam. Students may choose one of three types of exams available:

- A. Oral explanation of the STAT 825 project: This is used with Option II. or III. for a MS degree. Students will present a

poster of their STAT 825 project as part of STAT Day in March or April of their second year. The purpose of this presentation is for faculty to assess a student's ability to correctly perform a statistical analysis and to be able to communicate the results as one would do in a job setting. An Examining Committee will ask each student questions about their project with these constructs in mind. This committee will give a Pass/Incomplete/No Pass grade. Students who receive an Incomplete grade will be given an opportunity to present their project again to the Committee within 4 weeks after STAT Day; this Committee will give a final Pass/No Pass grade.

- B. PhD Qualifying Exam: This is used with Option II. or III. for a MS degree. The purpose is to assess a student's preparedness for the PhD program. The exam will be given in January prior to the beginning of the spring semester. The content of the exam is described in the PhD section of these notes.
- C. Oral defense of a thesis: This is used with Option I. for a MS degree only. A presentation of the research will be given in an open forum (e.g., a seminar advertised to the campus) and followed by an oral defense conducted by the student's Supervisory Committee. This Committee gives a Pass/No Pass grade.

For a MS student who may be interested in a PhD, we recommend taking the PhD Qualifying Exam in January of their second year. If the exam is passed, the student's MS Comprehensive Exam requirements are completed. If the PhD Qualifying Exam is not passed, we recommend completing the Type A. exam even if the student plans to re-take the PhD Qualifying Exam.

Table 2: PhD Degree typical timeline for students continuing on for a PhD after a MS Degree at UNL.

Year	Semester	Activities
1	Fall	STAT 950: Computational Statistics I STAT 984**: Asymptotics and Applications Elective Form Supervisory Committee
	Spring	STAT 980: Advanced Probability Theory STAT 900-level course Elective
2	Fall	STAT 982: Advanced Inference STAT 900-level course STAT 999: Doctoral Dissertation
	Spring	STAT 983: Statistical Learning STAT 999: Doctoral Dissertation PhD Comprehensive Exam Elective
3	Fall	STAT 999: Doctoral Dissertation
	Spring	STAT 999: Doctoral Dissertation Final Oral Exam

\*\*Students may substitute STAT 981: Advanced Probability Measures

## PhD Degree

The PhD Degree requires 90 credit hours. These 90 credit hours are typically fulfilled in the following manner:

- 1/3 of the credits from a MS Degree
- 1/3 of the credits from STAT 999 as part of the student's dissertation
- 1/3 of the credits from additional coursework, including required PhD-level courses

The required courses for a PhD Degree are shown by their course number in Table 2. For those students completing a MS Degree at UNL, some of these courses, such as STAT 950, can be taken during their second year of their MS program. Also, for those students with a MS Degree not from UNL, adjustments can be made to the timeline (see the student handbook). Overall, there are 21 credit hours (15 credits from specific courses and 6 additional from 900-level elective courses, excluding STAT 999) that are required for all PhD students and each course must be completed with a grade of B- or higher. If this high of a grade level is not achieved, the student's Supervisory Committee will decide whether the course needs to be re-taken.

All students are also required to pass three exams given outside of a class structure. These exams are:

- PhD Qualifying Exam: This is a written exam over the MS core courses that assess preparedness for the PhD program. Students are allowed to take the exam if they have a GPA of at least 3.5 in their MS and PhD core courses so far, where a grade of B- or higher is needed in each course as well. The exam is given in early January and in late May each year. A Pass/No Pass grade for the exam is decided upon by the PhD Qualifying Exam Committee. Students have two attempts to

receive a Pass grade; a third attempt can be granted by a majority vote of the Department's faculty if extreme circumstances prevented a student from achieving a Pass.

- PhD Comprehensive Exam: This exam involves a dissertation proposal that is presented in an open forum. After the presentation, an oral defense is conducted by the student's Supervisory Committee. This Committee will give a Pass/No Pass grade. A portion of this exam needs to be in a written format to satisfy the requirements in the Graduate Catalog. The exact written requirement will be decided upon by the Supervisory Committee. Commonly, this will consist of chapter drafts from a dissertation or handouts for the presentation. In addition to the dissertation proposal, the Supervisory Committee may incorporate other requirements for the exam.
- Final Oral Exam: This is the dissertation defense. For this exam, students present their dissertation research to the university in an open forum. After the presentation, an oral defense is conducted by the student's Supervisory Committee. This committee gives a Pass/No Pass grade.

## Advice

- How many hours per week should one spend on coursework?
  - Full-time student status is 9 credit hours  $\approx$  40-hour work week
  - If one also has a TA/RA at 0.49 FTE, this equates to 19.6 hours per week in addition to coursework.
  - When I was a student and a TA, I usually averaged at least 60 hours per week.
- Make connections with other students!

- Form study groups - For my own MS required courses, I was part of a group of four students. We would first each attempt to complete all of the homework problems on our own. We would then get together to discuss the problems and attempt to solve those that we were unable to answer. Most importantly, an individual would never turn in an answer to a homework problem for which they did not understand how to do even if another group member was able to solve it.
- Talk to students who have been here longer than you
- Participate in the Statistics Graduate Student Association (STAT GSA)
- Begin working on homework when it is assigned rather than waiting until later
- Take advantage of faculty office hours
- Pay close attention to
  - Office of Graduate Studies deadlines - <http://www.unl.edu/gradstudies/current/degrees/masters> and <http://www.unl.edu/gradstudies/current/degrees/doctoral>. While our departmental secretaries will often send e-mail reminders, keeping track of these deadlines is the responsibility of the student.
  - UNL academic calendar at <http://registrar.unl.edu/academic-calendar>. For example, course registration dates for the next semester are available there.
- For those considering going on for a PhD:
  - As a rule of thumb, students who get almost all A's in the MS required courses, especially the theory-based courses like STAT 882 and 883, should excel as a PhD student. The reason is because PhD theory courses depend on having a

- good background in the required MS courses. Students who get mostly B's in MS required courses (especially the theory-based courses) should not go on for a PhD. Students who have a mix of A's and B's can have success at the PhD level, but I see these students struggle more often.
- Make preparation for the PhD Qualifying Exam your top priority. For example, this involves constructing very good study materials during a course that can be used later when you are studying for the PhD Qualifying Exam. For example, I would outline all of the notes that I took in class and supplement the outline with material from textbooks. I was ready for any exam when I understood everything in these notes.
- Overall, I studied approximately 200 hours for my PhD Qualifying Exam over a 3.5 week period prior to an early January exam (I received my MS and PhD at Kansas State University and the test was over five required courses). Looking back, I would have preferred to start studying earlier, but I did pass on my first attempt. A key to taking exams like this is to study enough the first time.