UNIVERSITY OF OREGON DEPARTMENT OF MATHEMATICS

2022-2023 GRADUATE STUDENT HANDBOOK

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CHAPTER 1. GENERAL INFORMATION FOR ALL GRADUATE STUDENTS

Introduction

This handbook details the Department policies and procedures for graduate study. Read it carefully and keep it as reference. You can also find this handbook online at http://math.uoregon.edu/graduate/handbook.

Other written resources essential to your academic success include:

- The UO Catalog. The main page is http://uocatalog.uoregon.edu It contains complete details for all academic programs at the UO. The Department degree requirements and math course descriptions can be found at http://uocatalog.uoregon.edu/arts_sciences/mathematics. The Graduate School portion of the catalog is at http://uocatalog.uoregon.edu/graduate.

- The Graduate School's website has academic and GE-related information, including degree requirements and crucial completion deadlines. http://gradschool.uoregon.edu.

- The Department website, http://math.uoregon.edu, has a wealth of pertinent information, from descriptions and syllabi for advanced courses, to seminar schedules and dissertation formatting advice.

The Department and the Graduate School each have specific requirements you must meet in order to complete your graduate degree. Many of these requirements involve paperwork that you must submit, often by a deadline. It is your responsibility to remain informed of the policies and procedures that affect you, and to meet deadlines in a timely fashion.

If you have any questions, ask the Graduate Coordinator, your advisor, the Assistant Department Head (for teaching-related/graduate employment concerns), or the Director of Graduate Studies.

Graduate Affairs Committee

The Graduate Affairs Committee is a departmental committee that deals with all matters concerning graduate students. It consists of several faculty members and three graduate students. The student members may exercise the same rights as the faculty except that they are not allowed to participate in decisions concerning individual students or examinations. Student members are regular voting members of the committee and may raise questions, initiate departmental legislation, etc. Should you feel that there is a problem concerning the graduate program, you may bring it to the attention of the committee via one of these three student members. The graduate student members are selected by the Department Head from a slate nominated by the graduate students.

2022-2023 Graduate Affairs Committee Membership

- **Director of Graduate Studies ("DGS")** – Victor Ostrik

- **Ph.D. Subcommittee** – Ostrik*, Xu, Young
- **Graduate Appointments** – Lin, Ostrik, Proudfoot*, Sinha, Xu
- **At Large** – Addington, Botvinnik, Brundan, Elias, Fredrickson, Hersh, Levin, Lin, Phillips, Polishchuk
- **Graduate Advising** – Dugger, Ostrik, Ralph, Warren
- **Student Representatives**** - Duca, Delfin, Kyla Pohl, Arya Yae

* Chairperson
** New student representatives are nominated and appointed by the end of each spring term

Full-Time Status

To maintain full-time status in the mathematics graduate program, you must register for a minimum of 9 credit hours per term while you are in the pre-Ph.D. program and 12 credits per term once you progress to the Ph.D. program. The courses in which you enroll must follow the program of study that you agree upon with your advisor. Department certification as to full-time status will conform to these rules. If you do not meet these guidelines, the Department will designate you as a part-time student.

On-Leave Status

If you need to take a term or more off from the program, but wish to maintain your status as a graduate student at the UO, the Graduate School requires that you apply for on-leave status. As a doctoral student you are entitled to take up to six terms on-leave. While on-leave you cannot use University of Oregon resources. Note that the University of Oregon requires that all degree requirements be completed within seven years. When you are on-leave, the seven-year clock continues ticking.

Please note that if you go on leave, the department will attempt to give you a graduate employee position when you return, but cannot guarantee such a position will be available.

The Advising Process

One of your first and most important responsibilities as a graduate student is to design an appropriate program of study. Until you advance to candidacy, you and your advisor will agree upon and submit a plan of study at the beginning of each term. During the first week of classes, you will fill out an advising form with your advisor, your advisor will sign it, and you will give it to the Graduate Coordinator. If your advisor is unavailable, then you may obtain the signature of the Director of Graduate Studies or of another faculty member.

New Students: New students can find information about advanced graduate courses on the Mathematics website at http://math.uoregon.edu/graduate/advanced22 and in the UO catalog, http://uocatalog.uoregon.edu/arts_sciences/ mathematics/ - courseinventory.

The Graduate Advising Subcommittee of the Graduate Affairs Committee is charged with advising all new graduate students in mathematics. Each student is assigned an official advisor who will serve in this capacity until the student forms a Ph.D. committee or leaves the program. Students will meet with their advisors at the beginning of every academic term. Before fall orientation, the Graduate Coordinator will send out a schedules of meetings between new students and their advisors. The meetings will be scheduled for Week 0 of fall term.

During the advising session you will complete a form that will show which courses are planned for your first term. Once you submit the program, ***your advisor must approve in writing any subsequent changes to that program***. (To document an approved change, your advisor must send an email to the Graduate Coordinator.) Changes made without written approval may result in loss of good-standing in the program.

You should also seek advice from fellow graduate students and from the professors who will be teaching the courses, especially since it is often hard to decide whether to take a course at the 500- or 600-level. A 500-level, or "Masters-level," course will have some undergraduates in the class, but will still be demanding. A 600-level, or "Ph.D. Preparation," sequence can be quite challenging, and is the standard preparation for one of the qualifying exams. As is elaborated below, if you take two or three 600-level sequences and receive high enough grades to satisfy the sequence requirement for qualification, then you would have to take the qualifying exams the following September. Most first-year students find it best to take at least one 500-level course to help fill in background and have a manageable overall schedule.

Returning Students: A returning student who has not yet advanced to candidacy (that is, passed oral exams) must meet with their advisor at the beginning of each academic term and submit a signed program of study form to the Graduate Coordinator by the end of the first week of classes. Once the program has been submitted, ***the student's advisor must approve in writing any subsequent changes to that program***. (To document an approved change, your advisor must send an email to the Graduate Coordinator.) Changes made without written approval may result in loss of good-standing in the program.

At any time you may request a change of advisors through the Director of Graduate Studies ("DGS"). This is quite a normal occurrence. Indeed, as the mathematical interests of the student become better focused, the initial advisor may not be the best faculty member for the job. Also, if an advisor is going to be away for an extended period (a term or longer), the advisor should inform the DGS of the absence so that a replacement can be nominated**.**

Grades

Grades for graduate students in the 500- and 600-level courses should be interpreted as follows:

A+	Truly outstanding work
A	Good Ph.D. or M.S./M.A. level work
A-	Clearly Ph.D. level work, but below average. Good at M.S./M.A. level
B+	Work which is at the lower margin of acceptable Ph.D. level work, but quite satisfactory at the M.S./M.A. level
B	Substandard at the Ph.D. level but satisfactory at the M.S./M.A. level
B-	Barely passing at the graduate level
C+ or below.	Unsatisfactory at the graduate level

Faculty teaching 600-level courses shall have the option to use different assessment procedures to grade students who have been admitted to the Ph.D. program (that is, passed qualifying exams) compared to students in the Master's/Pre-Ph.D. stage of the program.

Colloquia and Seminars

Colloquia are presented throughout the academic year for the entire math department; everyone is encouraged and generally expected to attend the colloquia. Seminars are given once or twice a week in each general branch of mathematics.

The Basic Notions seminar is intended to be of broad general interest to graduate students. Students typically find the Basic Notions seminar to be an excellent opportunity to get the flavor of some different areas of mathematics in a relaxed atmosphere.

The remaining seminars are by nature more specialized. However, attending a seminar in the field of your choice gives you a chance to see who is working in that area and what is happening there beyond the 600-level courses.

The Math Library

The Mathematics Library reading room is located in Fenton 218. The reading room contains some reference materials and Springer Lecture Notes, but most of the books and journals are located in the stacks behind the reading room. The library prefers to have journals remain in the library so that they are available for reference, but will allow a brief circulation period for copying articles.

CHAPTER 2. GRADUATE DEGREES

Degree Programs

A graduate student in mathematics enters one of several post-baccalaureate programs. In summary these programs are:

A. **Non-degree Program.** Students in this program have no immediate degree

objectives.

B. **Master's Program.** The objective of students in this program is a Master's degree. Students considering continuing for a Ph.D. should instead request enrollment in the Pre-Ph.D. Program.
C. **Pre-Ph.D. Program.** Students in this program are taking course work in preparation for the Qualifying Examination in order to be admitted to the Ph.D. program itself. Students spend one or two years in the Pre-Ph.D. Program, depending on prior background.
D. **Ph.D. Program.** Students are admitted to this program upon satisfaction of the Qualification Procedures. As outlined below, after admission to the Ph.D. Program students form a Ph.D. committee, fulfill the Language Requirement and begin preparation for the Preliminary Examination (also called "orals").
E. **Candidacy.** Students in the Ph.D. program are admitted to candidacy after satisfying the Language Requirement and passing the Preliminary Examination. The final defense of the Ph.D. thesis should take place by the end of the third year after the student is admitted to candidacy.

The degrees Master of Arts (M.A.), Master of Science (M.S.), and Doctor of Philosophy (Ph.D.) are all offered in mathematics. Specific departmental requirements for these degrees are discussed in the remainder of this chapter. General requirements of the University, including those pertaining to transferred credit, language, residence and time limits, are listed in the *Graduate School* section of the University of Oregon Catalog.

Regular Evaluations

Each graduate student in the Mathematics Department will be evaluated during or just after the spring quarter of each academic year to ensure that they are making satisfactory progress toward a graduate degree.

Regular Evaluations by Phases of Degree Program

- **Pre-Ph.D. Program:** The Ph.D. Subcommittee of the Graduate Affairs Committee will perform the evaluation of students who have not passed the qualifying exams, based on the coursework of the student in the current year and on faculty comments. Students will receive a brief email from the chair of the Graduate Affairs Committee at the end of the spring quarter.

- **Ph.D. Program, before advancement:** The evaluation of students who have qualified but not yet advanced to candidacy will also be performed by the Ph.D. Subcommittee, based on coursework and the submission of an “Orals Plan” as outlined below. Students who are making satisfactory progress will not typically receive any communication from the committee.

- **Ph.D. Program, past advancement**. The preliminary (oral) examination will replace the regular evaluation in the year in which a student advances to candidacy. In subsequent years, a student will be evaluated by the dissertation committee. The student will meet with the committee during the spring term and provide a brief oral and/or written description of progress toward completing a thesis[1]. By the end of the academic year, the committee will produce a written evaluation which will be shared with the student and submitted to the Graduate Coordinator for inclusion in the student's official records. This process is meant not only as a means of evaluation, but also as a forum for the committee members to provide career advice to the student.

Master of Arts and Master of Science Degrees in Mathematics

All mathematics courses to be applied to degree requirements, including associated reading courses, must be graded [2]. Grades of C+ or below are considered to be failing grades and may not be counted towards Master's degree requirements. The GE teaching seminar does not count towards the Master's degree, nor do any other 1-credit seminars such as the Colloquium, the Basic Notions seminar, etc.

To earn the Master's degree, you must fulfill the following course requirements and conditions, and meet with the chair of the Master's Degree Subcommittee ***before the end of the second week of the term the degree is to be received*** in order to verify that the requirements have been met.

A. Complete 45 graduate credit hours, subject to the following provisions:

1. At least 9 must comprise 600-level mathematics courses or seminars, excluding 605.
2. At ***most***, 15 may be *outside* the field of mathematics.
3. Your graduate course GPA must be at least 3.0.

B. Complete three of the sequences listed below, at least one of which is at the 600 level.

500-Level Sequences

1. Math 513, 514, 515 (Introduction to Analysis)
2. Math 531, 532, 533 (Intro to Topology & Intro to Differential Geometry)
3. Math 544, 545, 546 (Introduction to Abstract Algebra)

600-Level Sequences[3]

1. Math 647, 648, 649 (Abstract Algebra)

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1 While this handbook uses the terms "thesis" and "dissertation" interchangeably to indicate the final document of the Ph.D., the Graduate School makes a clear distinction between the terms. When referring to the Graduate School's website and publications, make sure to follow instructions for "dissertation". It uses "thesis" only for master's degrees.

2 Summer courses are the exception to this requirement; summer courses may ***only*** be taken with the grading option of pass/no pass.

3 Any combination such as 616/617/515 or 647/648/546 or 643/635/533 involving some 600-level courses but at least one 500 level course counts as a 500-level sequence.

2. Math 634, 635, 636 (Algebraic Topology)
3. Math 637, 638, 639 (Differential Geometry)
4. Math 616, 617, 618 (Real Analysis)
5. Math 616, 672, 673 (Theory of Probability)
6. Math 607, 607, 607 (Applied Mathematics)

In the unlikely event that none of these sequences are appropriate, you may request an individually tailored sequence from the Masters Subcommittee of the Graduate Affairs Committee.

C. Take a final written or oral examination, designed by the chair of the Master's Degree Subcommittee. The examination will be waived if your GPA for all mathematics courses carrying graduate credit is at least 3.25 (B+) and the GPA for all 600-level courses (including reading) is at least 3.00 (B).

Doctor of Philosophy

Requirements for Candidacy

The Ph.D. is a degree of quality, not to be conferred in routine fashion after the completion of any specific number of courses, or after attendance in graduate school for any specific number of years. It is reserved for candidates of high potential who have demonstrated not only a comprehensive understanding of mathematics but also a measure of creative talent.

Although requirements of time and credit are secondary, every candidate must satisfy the basic requirements of the Graduate School, namely, three years of full-time study beyond the bachelor's degree, one of which must be a year in residence at the University. Thus, three years of full-time study is a necessary but not a sufficient condition.

Every Ph.D. student must take three sets of examinations (the qualifying exams, the language exam, and the preliminary exam), have the thesis approved by the members of the dissertation committee, and formally defend the thesis orally. Waivers of any of these requirements will be available only under the most exceptional circumstances. If you wish to be considered for a waiver must petition the Director of Graduate Studies ***in writing***.

Stages of the Program

There are three principal stages for a student in the doctoral degree program.

- **Pre-Ph.D. Program.** This is the stage for students intending to enter the program who have yet not completed the qualifying procedure.
- **Ph.D. Program.** This is the stage for students who qualified for the Ph.D., and are completing the Language Requirement and preparing for the oral Preliminary Examination.
- **Candidacy.** Students are advanced to candidacy after satisfying the Language Requirement and passing the Preliminary Exam. At this stage, students are working primarily on research and their dissertations.

The Pre-Ph.D. Program

The pre-Ph.D. Program consists of one or two years of coursework, depending on the student's previous background. The primary objective is to complete the sequence requirements for qualification as detailed below (a minimum of two 600-level sequences and one sequence at the 500- or 600-level in a different area). In addition to completing the sequence requirements, students can consider taking reading courses or topics courses when appropriate. Students should keep in mind that, though the sequence requirements allow for the possibility of taking only two sequences at the 600-level, some Ph.D. advisors will expect their students to take three.

Each student must meet with their pre-Ph.D. advisor at the beginning of each term to discuss the student's planned coursework. At this meeting, the pre-Ph.D. advisor will sign the Graduate Student Advising Form, which must be turned in to the Graduate Coordinator by the end of the first week of the term. Any changes to this plan must be approved in writing by the pre-Ph.D. advisor or the chair of the Graduate Affairs Committee.

The Sequence Requirement

The sequence requirement is intended to ensure that all prospective Ph.D. students have a broad base of knowledge of mathematics as a whole. Each student is required to complete at least one sequence from three of the following four areas: analysis/probability, topology/geometry, algebra, and applied mathematics, subject to the following requirements:

- The sequences in at least two areas must be at the 600-level;
- All courses applied to this requirement must be completed with a grade of B or above;
- The average grade in each sequence applied to this requirement must be at least B+.

The allowed sequences for each of the three areas are as follows.

AREA 1: ANALYSIS/PROBABILITY.

- 513/514/515 Introduction to Analysis
- 616/617/618 Real Analysis
- 616/672/673 Theory of Probability

AREA 2: GEOMETRY/TOPOLOGY.

- 531/532/533 Introduction to Topology / Differential Geometry
- 634/635/636 Algebraic Topology
- 637/638/639 Differential Geometry

AREA 3: ALGEBRA.

- 544/545/546 Introduction to Abstract Algebra
- 647/648/649 Abstract Algebra

AREA 3: APPLIED MATHEMATICS.

- 607/607/607 Stochastic Processes / Statistical Learning / Machine Learning

Note that mixed-level sequences such as 616/617/515 may also be applied to this sequence requirement but ***count as 500-level sequences***. Failure to meet the sequence requirement by the end of the second year in the graduate program will ordinarily result in dismissal from the program, effective at the end of the spring term of the second year.

A student may petition the Ph.D. Subcommittee in writing for an exemption to a given sequence requirement. Such a petition may occur before the courses are taken, or it may occur after, if the student's grades fall short of the requirement. In such cases, the Ph.D. Subcommittee will have the options of denying the petition, waiving the requirement, or granting the student extra time to complete the requirement by a certain date.

The Qualifying Examinations

One of the requirements for advancing from the pre-PhD program to the PhD program is to pass qualifying exams in two different areas from the following list: Algebra, Analysis/Probability,[4] Applied Math, Geometry/Topology.[5] Qualifying exams will be administered every year, once in September (during Weeks -1 and 0) and once in December (typically in the last week). Each exam will be written and graded by a group of two faculty members, whose identities will be disclosed to the students in advance. Students will be asked to write only their student identification numbers on their exams, in order to preserve anonymity during the grading process. Each exam will be based primarily on the material covered in the corresponding course sequence that was offered the previous academic year. Sequences in Probability, Applied Math, and Differential Geometry are offered every other year, and the qualifying exams in these subjects will typically only be offered in the subsequent years.

After the exams are administered and graded, there will be a meeting of all tenure-line faculty members to discuss the exams and the student performances. The fall meeting will typically take place on Friday of Week 0, and the winter meeting will typically take place on Monday of Week 1. The purpose of the meeting will be to determine the cutoff score for passing each exam. Typically the graders will propose a range of possible cutoffs to be considered, and through discussion of the individual student performances and the exam itself the faculty narrow down that range to a precise cutoff score. As part of this discussion, considerations other than exam performance—such as the students' performance in courses (particularly courses related to the exam)—can enter into the discussion, with the goal of understanding the extent to which the

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[4] The Analysis/Probability area consists of two separate exams, one in analysis and one in probability. A student who wishes to complete an exam in the Analysis/Probability area can choose to take either one of these exams.

[5] The Geometry/Topology area also consists of two separate exams, one in differential geometry and one in algebraic topology, each with ten problems. These exams are administered simultaneously, and a student may choose any ten problems out of the total twenty to solve.

exam captured the spirit of the sequence requirement, or whether a student's coursework plus exam collectively meet the spirit of the requirement.

After the meeting, each student will be informed of their score along with the lowest passing score for that exam (assuming that at least one student passed). Graded qualifying exams will be kept in a student's file until that student advances to candidacy, after which they will be disposed of. While exams are kept, they will be considered part of a student's academic record. Students who wish to see a copy of their graded exam should speak with the Graduate Coordinator. Questions about the grading of the exam should be directed to the Director of Graduate Studies. In cases where a student feels that their exam has been misgraded, they can petition the PhD Committee for the grading to be reconsidered.

Students in their second or third years will only be allowed to take a qualifying exam if they have completed the 600-level sequence requirement in the corresponding course (or if they have successfully petitioned for an exemption to this requirement). First-year students are allowed to take qualifying exams in any area without restriction, though it is unusual for a student to pass a qualifying exam without first completing the relevant sequence at the University of Oregon. If a first-year student passes a qualifying exam, the corresponding 600-level sequence requirement will be automatically waived.

Progressing to the PhD Program

When a student completes the sequence requirement and passes the second qualifying exam, they will progress from the Pre-Ph.D. Program to the Ph.D. Program. If a student completes both qualifying exams immediately upon arrival, the third sequence requirement will be waived.

A student has until winter break of the third year to pass two qualifying exams. Failure to pass both exams by this time will result in dismissal from the graduate program at the end of the spring term of the third year.

The Ph.D. Program

Choosing an Advisor

Once you have been admitted to the Ph.D. Program, you should begin the process of finding a suitable Ph.D. advisor. Please see the web page https://math.uoregon.edu/grad-program/current-grad/phdadvising for a list of faculty members and their research interests. It is common practice to spend one or more terms taking reading courses from potential advisors before asking someone to become your official advisor.

Orals Plan

An "Orals Plan" is required by the end of the spring term in the academic year in which you are formally admitted to the Ph.D. program. The Orals Plan formally designates your choice of Ph.D. advisor, who will serve as chair of your Ph.D. committee. The Orals Plan is a short document that outlines your plan of study for the next year, lists materials for the language requirement (see below), and names three additional members for your Ph.D. committee. It is common practice, though not a requirement, to have one departmental member of your Ph.D.

committee from outside your specialty. Students often find that access to such a perspective helps improve the written and oral exposition of their thesis work.

For your convenience, an Orals Plan form is available on the math website.

Each student's dissertation committee is required to meet at least once a year in years after the student has advanced to candidacy. During this meeting, the student will provide a brief oral and/or written description of progress toward completing a dissertation. The committee will then produce a written evaluation which will be shared with the student and submitted to the Graduate Coordinator for inclusion in the student's official records by the end of the academic year. In addition, Ph.D. students are encouraged to report on their work and readings in appropriate seminars.

You will eventually be required to add a faculty member outside of the Math Department (called an "institutional representative") to your dissertation committee. The institutional representative is not required to attend any meetings other than the final dissertation defense.

Language Requirement

The department expects Ph.D. candidates to be able to read mathematical material in a second language selected from French, German, or Russian. The purpose of the foreign language requirement is that you learn to accurately decipher mathematics written in a foreign language.

It is expected that most students will aim to meet this language requirement during the year after passing the qualifying examination. At the very latest, you must satisfy the language requirement before you take the oral exam

To satisfy the Language Requirement, set up a meeting with a faculty member of your choice who works in the area of mathematics that you wish to specialize in. This is typically your Ph.D. advisor, or someone who you would like to ask to become your Ph.D. advisor if you have not yet found one.

During the meeting, you should get advice as to a suitable part of a paper or book written in French, German or Russian that would be mathematically valuable for you to study. You should also be interested in the material yourself -- if you are not or if your advisor does not come up with a suitable reference, try asking someone else to get a suggestion you like better.

You should then aim to read and digest the mathematics contained in the paper or book. The goal is to acquire the necessary skill to read the foreign language while at the same time learning some useful mathematics. You should meet again with the faculty member to discuss the mathematics after you are satisfied that you understand the material. When the faculty member has verified that you have successfully understood the material, they will sign the Language Exam Requirement Form. You can find the form on the math website, or pick up a copy from the Graduate Coordinator.

Preliminary Exam

The preliminary exam (informally known as "orals") is a 1-2 hour oral exam administered by four faculty members, one of whom is the student's PhD advisor. The purpose of the exam is a combination of the following:

• It is a check-in where the department verifies that the student-advisor relationship is working well, and where suggestions for changes can be made if necessary.

• It seeks to determine whether the student is ready to pursue a research project, by attempting to ascertain

1. Whether the student has been able to make the transition to learning research mathematics from original sources, and
2. Whether the student has been able to assimilate their understanding of a significant body of research-level mathematics to the point where they can navigate questions, explain their understanding, and problem-solve in the course of a discussion.

Since subfields of mathematics can differ significantly in terms of how much background and what kind of work is necessary for pursuing a PhD project, and these things can also differ between advisors (or projects) in the same subfield, the degree to which exams focus on each of the above points will vary quite a bit.

Timing

Each student must take the preliminary exam by the end of the academic year following the year in which they advanced from the pre-PhD program to the PhD program.

First Steps

The first step toward taking the preliminary exam is choosing an advisor, which each student must do by the end of the academic year in which they advance from the pre-PhD program to the PhD program. The student officially declares this choice by handing in their Orals Plan, which may be regarded as a first draft of the student's oral exam syllabus. There is a risk that the student will lose momentum over the summer, when regular meetings between the student and advisor may not be taking place, and creating the Orals Plan in the spring helps protect against this.

The Syllabus

A syllabus for the preliminary exam should be written by the student, in consultation with the student's PhD advisor. The syllabus may be organized as a list of mathematical topics or as a list of references, which can include papers, books, lecture notes, and courses. It must satisfy the following criteria:

(i) It must contain some non-expository material. That is, there must be material that can only be found in research papers or research-level monographs, rather than textbooks or lecture notes.

(ii) It must exhibit a certain amount of breadth, usually described as "not being narrowly limited to one or two specialized topics".

Conditions (i) and (ii) are there to help ensure the student has the skills to eventually be successful in their research. Successful researchers typically need to routinely absorb material from non-expository resources, and to be successful in a field one needs to have more than just one or two tools in one's "toolkit". To demonstrate condition (ii) it might be helpful for one portion of the syllabus to clearly outline what the topics are, since some faculty on the committee will be outsiders to the field.

Sample syllabi can be viewed on-line at https://math.uoregon.edu/grad-program/current-grad.

Once the syllabus is written, it must be approved by the four committee members and the Director of Graduate Studies. The question of what constitutes an appropriate length, breadth, and difficulty level is obviously subjective, and it is ultimately the job of the committee members and the Director of Graduate Studies to make sure that they find the syllabus acceptable. Approval is indicated by signing a form, which the student should submit to the Graduate Coordinator.

Sometimes committee members or the Director of Graduate Studies might object that a syllabus doesn't meet condition (i) or (ii). These objections are usually meant to be invitations to a discussion rather than a firm demand for a change, and students should be prepared for a back-and-forth discussion as part of the process of creating a final draft.

After the syllabus is approved, the student should find a date and two-hour time slot for the exam when four committee members are available, and notify the Graduate Coordinator, who can assist with scheduling a room. The exam must take place at least one month after the syllabus is approved. This requirement is in place to make sure that, if any committee members or the Director of Graduate Studies insists that extra material be added to the syllabus, the student will have time to learn that material. Note that even one month may not be enough, so it is a good idea for students to have their syllabi approved more than one month in advance. A good target is to get the syllabus approved two or three months before the exam.

Sometimes, after spending some time preparing for the exam, a student might decide to focus on certain material on the syllabus and leave off some of the other material. When this happens, the student must obtain approval for the change from the four committee members and the Director of Graduate Studies, who must agree that the modified syllabus still satisfies the requirements. Such a modification is permitted even if the exam date is less than one month away, but it should be obtained before the actual exam takes place.

The Exam

The format of the exam will vary, depending on the student and the faculty members involved. In some cases, a student might be invited to give an extended presentation on a particular topic on their syllabus, with questions to follow. Other exams might be much more faculty-directed.

These things vary depending on the accessibility of the field, the style of the advisor, the background of the student, and random variation. There is no expectation that every student's experience will be the same.

Each student should feel free to talk to their committee members (especially their advisor) before the exam about what to expect. No matter what the format, a student should be prepared to be asked about any of the material on their exam syllabus. On the other hand, it is very unlikely that all of the material on the syllabus will be covered in the actual exam.

At various points during the exam (typically including the beginning), the committee will send the student out of the room to discuss how to proceed. At some point, the committee will determine that the exam is over, and inform the student whether or not they have passed. A student who does not pass may petition for a second attempt, either with the same advisor or with a different advisor. Second attempts will be granted at the discretion of the PhD Committee.

Extra Time

Under ordinary circumstances, failure to pass the Preliminary Examination by the end of the second year in the Ph.D. Program will result in dismissal from the graduate program, effective at the end of the spring term. Exceptions may be made at the discretion of the Ph.D. Subcommittee. Such exceptions will usually occur only under one of the following two circumstances:

- If you fail the Preliminary Examination on your first attempt, you may petition in writing to take the exam a second time. If such a petition is granted, the PhD. Subcommittee will specify the details of when the second exam will take place. If you fail a second time, then you will be dismissed from the graduate program, effective at the end of the term in which you take the exam. Third attempts will not be granted.
- If you change advisors during your second year in the Ph.D. program, you may petition in writing for an extended timeline. If such a petition is granted, the PhD. Subcommittee will specify the details of when the exam will take place.

Candidacy

Once you have passed the Language Requirement and the Preliminary Examination, you have advanced to candidacy for the Ph.D. Degree. At this stage your major efforts should be devoted to completion of a thesis.

Ph.D. Committee Institutional Representative

The **Graduate School requires** you to have an institutional representative (a.k.a. "outside member") on your doctoral committee. Your committee must be fully appointed and approved by the Graduate School no fewer than 6 months prior to your defense date. You must have an institutional representative on your dissertation committee before the Graduate School can approve it, so it behooves you to take care of this as soon after advancement as you can.

Otherwise your timeline to degree completion could be delayed.

If, after the Graduate School approves your committee, the Institutional Representative is changed, your defense date timeline will be set back by three months. Any changes to committee membership must be submitted for approval to the Director of Graduate Studies and the Graduate School. However, changes in core membership do not affect the timeline.

Thesis[6]

A Ph.D. candidate must submit a thesis containing substantial original work in mathematics. A pdf copy of the thesis ***must be emailed to the Graduate Coordinator for distribution to the members of the examining committee no less than four weeks before the proposed time for the final oral presentation.***

The thesis must conform to the Graduate School's Style Manual for Theses and Dissertations. A template Latex file and formatting advice can be found on the departmental web page[7]. If you plan to include co-authored or previously published material in your dissertation, you must complete and submit the Content and Style Request Form by the end of the term prior to the term in which you plan to defend (see the Graduate School's website).

Students working toward a Ph.D. or professional doctorate must register for a minimum total of 18 hours in Dissertation (603); with department approval, up to 6 of 18 hours may be in Research (601). Credit for Dissertation and Research is recorded on a P/NP basis. Note that you must be registered for a minimum of three credits in the term prior to your defense and the term of your defense.

At the time of the doctoral defense, your committee will indicate whether it approves your dissertation. After a successful defense, you will upload your dissertation to the Graduate School via ProQuest/UMI. You also need to submit the signed Thesis/Dissertation Submission Form and Document Approval to the Graduate School by their published deadline.

Final Defense of Thesis

You are expected to complete the formal defense of your Ph.D. thesis by the end of your sixth year as a mathematics graduate student at the University of Oregon. The thesis defense will normally take place during the term in which the degree is to be awarded. In this defense, which shall be open to the public, the candidate will expound the major ideas and findings of the thesis and be questioned by the committee and interested parties.

Extra Time

Should you desire extra time to complete your dissertation, you must petition the Ph.D. Subcommittee of the Graduate Affairs Committee in writing. Your petition should include a summary of progress on your thesis, a discussion of what you expect to accomplish before you

[6] Please remember that while the Department uses the word thesis to refer to the final document of the Ph.D., the Graduate School uses only the term dissertation.

[7] http://math.uoregon.edu/dissertation-instructions

graduate, and a letter of support from your advisor. Petitions will be considered by the Ph.D. Subcommittee at two times during the year, once in October and once in April (after the graduate admissions process is complete). The granting of such additional time is the exception rather than the rule. If the petition is not granted and you do not defend your dissertation on time, you will be dismissed from the graduate program, effective at the end of the summer term. More time does not necessarily mean more funding; that is, it is possible that the committee will decide to grant you additional time in the graduate program but not recommend that you be reappointed as a GE.

Scheduling the Defense

You must schedule the defense and obtain Graduate School approval via the GradWeb online database. Start by arranging a time and date with your committee that is before the Graduate School's deadline. Then ask the Graduate Coordinator to reserve a room for your defense.

Once you have the date, time, and location set, you will file the "Application for Final Oral Defense" in GradWeb. Do this at least one month prior to the day you plan to defend. The Graduate School must approve your application at least three weeks prior to the proposed defense date.

Please refer to the Graduate School's website, http://gradschool.uoregon.edu/deadlines-doctoral, for the deadlines for the term in which you plan to graduate.

KEY REMINDERS:

- The Graduate School must approve your full doctoral committee, including the institutional representative, at least six months prior to the date you plan to defend.
- If the chair of your Ph.D. committee has to be changed, it MUST be done 6 months before the oral defense.
- If the Institutional Representative has to be changed, it MUST be done at least 3 months prior to the oral defense.
- You must be registered for at least 3 credit hours of MATH 603 Dissertation during the term you plan to graduate AND the term immediately prior.

Satisfactory Progress Towards Degree

Criteria for Satisfactory Progress in the Master's Program

- Complete a minimum of 9 credit hours per term of courses, reading courses, and/or thesis work appropriate for the degree
- Maintain a GPA of at least 3.0 each term
- Meet with your advisor prior to the start of every term to devise a program of study. This program of study must be stablished in writing. Any deviations from the program must be approved in writing by the advisor.

Criteria for Satisfactory Progress in the Pre-Ph.D. Program

- Complete a minimum of 9 credit hours per term of courses appropriate for the degree.
- Maintain a GPA of at least 3.0 each term.
- Meet with your advisor prior to the start of every term to devise a program of study. This program of study must be established in writing. Any deviations from the program must be approved in writing by the advisor or the chair of the Graduate Affairs Committee.
- Complete the Sequence Requirement detailed on page 8 by the end of the second year of the pre-Ph.D. program.
- Take and pass the written Qualifying Examinations by winter of the year following the completion of the Sequence Requirement.

Criteria for Satisfactory Progress in the Ph.D. Program

- Complete 12 credit hours per term of courses, reading courses, and/or thesis work appropriate for the degree.
- Maintain a GPA of at least 3.0 each term.
- If you have not yet advanced to candidacy, meet with your advisor prior to the start of every term to devise a program of study. This program of study must be established in writing. Any deviations from the program must be approved in writing by the advisor.
- Satisfy the Language Requirement and pass the Oral Comprehensive Exam ("Preliminary Exam") by June of the year after the academic year in which you were admitted to the Ph.D. program.
- Meet with your Ph.D. committee at least once a year after passing the preliminary exam. During the meeting, you must provide a brief oral and/or written description of progress toward completing the dissertation. The committee will produce a written evaluation and provide to you and to the Graduate Coordinator for your student file.
- Substantially complete all requirements for the Ph.D. within six years of beginning as a graduate student in the University of Oregon Department of Mathematics.

Sample Timelines

In general, the Ph.D. program (including the pre-Ph.D. portion) is designed to be completed in five or six years. We have a strong commitment to this timeframe, believing it to be (in most cases) in the best interest of the students. Of course exceptions occur, and occasionally students will stay in the program for seven years. But this is the exception rather than the rule.

There are also two separate issues to be aware of: there is the issue of being a student in good standing in the graduate program, and there is the issue of receiving a GE appointment. These issues do not go hand in hand. Students who are unable to complete their degree in six years might be in good standing and continue in the program for a seventh year, and they might also receive a GE appointment for that year---but the former does not guarantee the latter.

Here are two sample timelines:

Student #1:
September 2030: Begin program as a Pre-Ph.D. student.

September 2032: Take and pass Qualifying Exams.
June 2034 (at the latest): Pass Preliminary Examination; advance to candidacy.
June 2036: Give oral defense and graduate.

Student #2:
September 2030: Begin program as a Pre-Ph.D. student.
September 2031: Take and pass Qualifying Exam.
June 2033 (at the latest): Pass Preliminary Examination; advance to candidacy.
June 2035: Give oral defense and graduate.