Introduction to UW Graduate Program in Mathematics

by
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Welcome to our Department!

• Large group (30) of excellent entering students (26 PhD, 4 Master’s)
• We’re here to help each of you be successful
• Ask questions!
• Friday night at the theater
• Individual meetings (sign-up sheet will soon be on my office door C-442 Padelford)
Outline

PART I: Introduction - handouts - courses - grades
  – PhD & Master’s Degrees
  – Handouts
  – Courses
  – Grades

Part II: Advice-Typical Schedules
  – Advice
  – Typical Master’s schedule
  – Typical PhD schedule
PhD & Master’s Degrees

- Master’s:
  - professional degree
  - important part of our program
  - may lead to admission into PhD program

- PhD
  - primarily a research degree
  - Apply for a MS degree sometime during the end of year 2 or in year 3 of the program

This is not supposed to be a competitive environment:

- You all have excellent credentials
  - We admitted you because we think you can succeed in our program
  - We want to keep everyone, and help everyone to succeed if we can

- You will need to work hard, and adjust to a demanding program
- Most important thing: enjoy yourselves!
  - Why else go into mathematics?
Handouts and resources

- Preliminary advisor/quarterly plan
  - advisor must sign
- Registration memo and guidelines
  - load: 3 courses & Current Topics Seminar
  - need at least 10 credits!
- Quarterly plan
- Current Topics Seminar
- Info on the web/email
  - READ AND RESPOND TO E-MAIL!!!
  - All communications go to your Math Dept email address, so make sure this works
- Concerns about instruction
- Normal progress
  - PhD (see web pages)
  - Master’s (see web pages)
Courses

- Master’s program
  - 400-level
    - essentials:
      - algebra (402-3-4),
      - analysis (424-5-6),
      - complex (427-8),
      - Topology/Geometry (441-2-3)
    - others:
      - dynamical systems (435),
      - Optimization,
      - etc.
  - 500-level
    - more demanding

- PhD Program
  - 402-3-4, 424-5-6, 427 prerequisites
  - Types of course:
    - Core
    - Standard Topics
    - Special Topics
    - Reading
    - Dissertation
Core courses

- Algebra 504-5-6
- Reals 524-5-6
- Complex 534-5-6
- Manifolds 544-5-6
- Linear Analysis 554-5-6

NOTES:
- a Prelim Exam pass can substitute for a “core course”
- the “3.8-rule”
Topics courses:

• Standard topics courses
  – algebraic geometry 507-8
  – optimization 514-5-6
  – probability 521-2-3
  – geometric structures 547-8-9
  – PDEs 557-8-9
  – algebraic topology 564-5-6

• Special topics courses
  – 581-2-3 (aut-win-spr)

• Reading (600):
  – In general, not a good idea in first year.
Advice/what to expect

• Workload and time management
  – 3 courses x 5 cr x 3hr/cr = 45 hrs/week
  – TA = 20 hrs/week
  – TOTAL: 65 hr/week

NOTE:
As a student, your primary responsibilities are to your courses; but teaching is important, and we take it very seriously.

• Pace is fast:
  – do not fall behind,
  – do HW on time
  – talk to Professors, fellow students, work in groups

• Lectures are at graduate level
  – you have to fill in more detail than in undergrad courses.

• Use the first year to fill in gaps in knowledge
  – A firm foundation can take you a long way
  – It is very difficult to fill in gaps later on in your career!
  – Go to the Colloquia and Seminars in your areas of interest. It is OK if you do not understand a significant portion of a research talk.

• Give and get feedback from your instructors

• Disasters WILL happen:
  – Talk to people: your advisor, Professors, GPA (Brooke), GPC (me), professional counselors, etc.
  – Make adjustments if necessary
    • drop down to corresponding 400-level course if need be
    • “write-off” a course (let us know about it!)
Advice/what to expect

• Grades in core courses:
  – 3.8 or higher GREAT!
    • try to get as many “3.8”s as you can; but don’t be discouraged if you get <3.8 (that’s a high bar)
  – 3.4-3.6 = Satisfactory performance
  – 3.0-3.2 = indicates less than ideal performance
  – less than 3.0 = “not doing graduate level work”

• Grading often easier in non-core courses
  – grades below 3.0 rare—but CAN happen (and this indicates a very poor performance)!
Normal Progress

• Detailed description on the Graduate Study web site

• For the first year, this means taking three 500-level courses (including two core courses, possibly waived via prelim) plus Current Topic

• Goal: pass two prelims (or one “3.8” course pass and one prelim) by this time next year
Prelim exams

• Reals, Complex, Algebra, Linear, Manifolds
• Given every September before classes start
• 4 hours, eight problems, four correct solutions is a pass
• Strategies, courses, variations
• Oral prelim option
## Typical Schedule: Master’s

<table>
<thead>
<tr>
<th>Year 1</th>
<th>2 x 400-level 1 x 500-level (start with 4, drop one?)</th>
<th>Spring: look for Master’s advisor, maybe apply for PhD program (if doing very well)</th>
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| Year 2 | 3 x 500-level Work toward thesis                     | Aut(early!): Pick master’s advisor  
Spr: Apply to PhD program (if desired) |
# Typical PhD Schedule

<table>
<thead>
<tr>
<th>Year</th>
<th>Courses</th>
<th>Seminars</th>
<th>Requirements</th>
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<tbody>
<tr>
<td><strong>Year 1</strong></td>
<td>3 x 500-level (&gt;= 2 core)</td>
<td>Current Topics Seminar</td>
<td>2 prelims by end of summer</td>
</tr>
<tr>
<td><strong>Year 2</strong></td>
<td>2-3 500-level 2 standard / special topics courses</td>
<td>Find advisor &amp; research area SEMINARS Reading in spring</td>
<td>Pass 3&lt;sup&gt;rd&lt;/sup&gt; prelim &amp; 1&lt;sup&gt;st&lt;/sup&gt; language by end of summer (if not already)</td>
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<tr>
<td><strong>Year 3</strong></td>
<td>Special topics seminars</td>
<td>End of Win: must have declared PhD advisor, Continue reading, Start/Continue research</td>
<td>2&lt;sup&gt;nd&lt;/sup&gt; language by end of summer (if not already)</td>
</tr>
<tr>
<td><strong>Year 4</strong></td>
<td>1-2 courses/qtr Seminars</td>
<td>Continue research (form committee 3 months prior to general exam)</td>
<td>By end of Winter: pass general exam</td>
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<tr>
<td><strong>Years 5-6</strong></td>
<td>1 course/qtr Seminars</td>
<td>Research</td>
<td>Pass Final Exam (Thesis Defense)</td>
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