MATH MAJOR OVERVIEW

THESE ARE NOT THE COMPLETE REQUIREMENTS, BUT AN OVERVIEW OF MATH COURSES AT HIGHER LEVEL

COMPLETE INFO: HTTPS://MATH.UNC.EDU/UNDERGRADUATE/MAJORING-IN-MATHEMATICS/

- BA Mathematics
  - 381, 383, 347 or 577, 521, + 3 above 500

- BS Mathematics
  - 381, 383, 347 or 577, 521, + 5 above 500
  - one from \{522, 523, 528, 566\} one from \{533, 534, 548, 578\}

- BS Mathematics (Applied Option)
  - 381, 383, 347 or 577, 521, + 5 above 500
  - 5 from \{522, 523, 524, 528, 529, 535, 548, 564, 566, 661, 668, 383L-528L-529L\}
| Courses |
|---------|---------|---------|
| first tier | 231 | 232 | 233 |
| second tier | 383(L) | 347 | 381 |
|           | Diff Eq. | Lin. Alg. | Discrete |
|           | 524 - Elem. Diff. Eq. (F) | 523 - Elem. Theory Num. (S) | 533 - Elem. Modern Alg. (F) |
|           | 528(L) - Math Methods I | 534 - Elem. Modern Alg. (F) | 535 - Probability |
|           | 529(L) - Math Methods II (S) | 548 - Combinatorial Math. |
|           | 553(L) - Math. Comp. Models Bio. (F) | 550 - Topology (S) |
|           | 564 - Math. Model. Life Sci. (S) | 577 - Lin. Algebra (F) |
|           | 566 - Num. Analysis | 578 - Alg. Structures (S) |
|           | 594 - Nonlinear Dyn. (Rare) |  |  |

S - typically Spring only,  F - typically Fall only,  L - optional Lab component
GRADUATE CLASSES

- Permission of the instructor is required
- Must have completed the undergraduate version
- Beneficial when applying to graduate school, both in terms of the actual application and in helping to narrow down interests

<table>
<thead>
<tr>
<th>Course</th>
<th>Area</th>
<th>Pre-Reqs</th>
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<tbody>
<tr>
<td>653, 656</td>
<td>Real and Complex Analysis</td>
<td>521, 522</td>
</tr>
<tr>
<td>661, 662</td>
<td>Scientific Computing</td>
<td>566</td>
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<tr>
<td>668, 669</td>
<td>Methods of Applied Math</td>
<td>528, 529</td>
</tr>
<tr>
<td>676, 677</td>
<td>Algebra</td>
<td>577, 578</td>
</tr>
<tr>
<td>680, 681</td>
<td>Geometry and Topology</td>
<td>550</td>
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SUMMER CLASSES

- Select upper level classes are offered over the summer in one, or both, summer sessions

- Typically Offered:
  - 381, 383(L), 547
  - 521
  - 528(L), 533, 535, 566

- Study Abroad courses taught by UNC math professors
  - Summer 2021 Deadline is February 10th
  - 381 in Florence (NEW) – contact Prof Sawon sawon@email.unc.edu
UNC BEST – Teaching High School Mathematics

- Baccalaureate Education in Science and Teaching
- Earn degree and obtain licensure as a NC high school mathematics teacher in four years

- Additional requirements:
  - MATH 410 - pedagogy course
  - EDUC 689, 532, 615
  - EDUC 601, 593 - student teaching and seminar

- Deadlines:
  - Spring 2021: October 13, 2020
  - Fall 2021: April 13, 2021

- Contact Miranda Thomas mdthomas@email.unc.edu
CONSIDERING GRADUATE SCHOOL

- GRE Math Subject Test required for many programs
  - calculus 50%, algebra 25% (linear, abstract, number theory), additional 25% (real analysis, discrete math, combinatorics, topology, geometry, probability, complex variables, numerical analysis)

- Within Mathematics programs, many have different “flavors” (pure, applied, math biology…) so suggested courses to prepare vary
  - Solid foundation in analysis, linear algebra, and differential equations
  - Courses to prepare for GRE, if program requires score
CAREERS

- CareerCast Job Ratings from 2019
  - 1. Data Scientist
  - 2. Statistician
  - 3. University Professor
  - 8. Mathematician

- AMS Career Info
  - American Mathematical Society

- MAA Careers in Math
  - Mathematical Association of America

- Other fields value an education in mathematics
OPPORTUNITIES FOR UNDERGRADUATES

- **Honors Thesis**
  - Part of the requirement for Graduation with Honors

- **Directed Reading Program**
  - Pairs undergrad with grad student for semester-long independent study

- **Association for Women in Mathematics**
  - Foster a sense of community and promote diversity within mathematics

- **Carolina Math Club** or contact Nick Tapp-Hughes nic98@live.unc.edu
  - Talks by professors, grad students, and undergrads and social events

- **MATH294 Problem solving seminar** - contact Prof Sawon sawon@email.unc.edu
  - Virginia Tech (postponed 2020) and Putnam (Feb 20, 2021) competitions

- **Undergraduate Learning Assistant**
  - Volunteer, credit, or work study to assist in undergraduate classes

- **Peer tutor at the Learning Center**
  - Earn 3 hours of EE credit (EDUC 387), then potential to get hired