WHO TO CONTACT WITH QUESTIONS

REGISTERING FOR MATH CLASSES?

Erin Willis
Undergraduate Student Services Manager
Phillips Hall 336
ewillis3@email.unc.edu

SATISFYING DEGREE REQUIREMENTS?

Academic Advising
https://advising.unc.edu/advisor/
Steele Building/Hardin Hub

COURSE CONTENT OR WHICH CLASS?

A math department advisor
(Erin Willis will put you in contact)
or the course instructor
(especially for special topics, MATH 590)
MATH MAJOR OVERVIEW

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

COMPLETE INFO: https://catalog.unc.edu/undergraduate/departments/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, 560, 564, 566, 661, 668, 383L-528L-529L}

For the general BS, MATH 590 will count as one of the over 500 courses automatically. For the applied BS, because 590 is not on the list of classes, it will not be automatically applied (also, some topics are not applied topics), you would need to contact the Director of Undergraduate Studies, to have 590 count towards the applied BS.
## COURSE OVERVIEW

<table>
<thead>
<tr>
<th>Courses</th>
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</thead>
<tbody>
<tr>
<td>first tier</td>
<td>231</td>
<td>232</td>
</tr>
<tr>
<td>second tier</td>
<td>383(L)</td>
<td>347</td>
</tr>
<tr>
<td></td>
<td>Diff Eq.</td>
<td>Lin. Alg.</td>
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<td>523 - Complex Variables</td>
<td>521 - Adv. CalcI</td>
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<td></td>
<td>524 - Elem. Diff. Eq. (F)</td>
<td>522 - Adv. Calc II (S)</td>
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<tr>
<td></td>
<td>528(L) - Math Methods I</td>
<td>533 - Elem. Theory Num. (F)</td>
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<tr>
<td></td>
<td>529(L) - Math Methods II(S)</td>
<td>534 - Elem. Modern Alg. (S)</td>
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<td></td>
<td>Models Bio. (F)</td>
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<tr>
<td></td>
<td>560 - Optimization (S)</td>
<td>550 - Topology (F)</td>
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<td></td>
<td>564 - Math Models in Life Sci (F)</td>
<td>551 - Euclid. Non. Euclid. (F)</td>
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<tr>
<td></td>
<td>566 - Num. Analysis</td>
<td>577 - Lin. Algebra (F)</td>
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<td></td>
<td>578 - Alg. Structures (S)</td>
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<td></td>
<td></td>
<td>590 – Special Topics</td>
</tr>
</tbody>
</table>

S - typically Spring only,  F - typically Fall only,  L - optional Lab component
COURSE CONFLICTS FOR AY 23-24

- During the Fall 2023 term, MATH 524 and MATH 566 will be offered at the same day/time. If you plan to take these two courses, next AY, you will need to take MATH 524 in Fall 2023 and MATH 566 in Spring 2024.

- During the Spring 2024 term, MATH 522 and MATH 548 will be offered at the same day/time. If you plan to take these two courses in the next AY, you will need to take MATH 548 in Fall 2023 and MATH 522 in Spring 2024.
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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</thead>
<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>
</tr>
<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>
</tr>
</tbody>
</table>
SUMMER CLASSES

- Select upper-level classes are offered over the summer in one, or both, summer sessions: [https://summer.unc.edu/](https://summer.unc.edu/)

- Typically Offered:
  - 381, 383(L), 347
  - 521
  - 528(L), 533, 535, 566
UNC Faculty Lead:

▸ **Math in Florence** (July 6 - August 3, 2023)
  
  MATH 381 – contact Professor Sawon – sawon@email.unc.edu

▸ **Math in Stockholm** (plans to return Summer 2025)
  
  MATH 381 – contact Professor Rose – davidrose@unc.edu

Longer Programs:

▸ **Budapest Semesters in Mathematics** (Spring, Summer, and Fall)

Other Partnerships for Math & Non-Math Courses:

▸ **National University of Singapore**
▸ **King’s College London**
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 require scores
DATA SCIENCE CLASSES

- **Suggested Math Classes**
  - Calculus sequence, MATH 381, 347
  - MATH 210 – Mathematical Tools for Data Science
  - MATH 560 - Optimization
  - MATH 566 – Intro to Numerical Analysis

- **Suggested Computer Science Classes**
  - COMP 210 – Data Structures
  - COMP 301 – Foundations of Programming
  - COMP 550 - Algorithms

- **Suggested Statistics Classes**
  - STOR 320 – Statistical computing
  - STOR 415 – Decision analytics/Optimization
  - STOR 455 - Methods of data analysis
  - MATH 535/STOR 435 – Probability

- **Even more options**
  - COMP 560, 562, 535, 581, 486
  - STOR 445, 556, 555
Popular Careers for Math Majors

- Actuary
- Analyst
- Data Scientist
- Mathematician
- Modeler
- Optimizer
- Statistician
- Computer Analyst
- University Professor

AMS Career Info

- American Mathematical Society

MAA Careers in Math

- Mathematical Association of America

Many other fields value an education in mathematics!!!
In the fall of 2022, 1183 students applied to full-time positions.

Top industries for full-time jobs:
- Investment & Portfolio Management: 22.2%
- Sales & Marketing: 25.4%
- Internet & Software: 26.4%
- Management Consulting: 10.8%
- Investment Banking: 17.1%

Data collected from Fall 2022.
TOP JOB FUNCTIONS
1. Business Analysts & Management Consultants
2. Software Developers & Engineers
3. Financial & Investment Analysts
4. Data Analysts
5. Investment Bankers & Financial Sales Agents

TOP EMPLOYERS
- Careers at USHA
- Epic
- Morgan Stanley
- Bayview Asset Management
- Goldman Sachs
- IBM
- Akuna Capital
- US Environmental Protection Agency

DATA COLLECTED BY UNIVERSITY CAREER SERVICES, 2022.
Hanes Hall, 204 E Cameron St, Chapel Hill, NC
careers.unc.edu
ucs@unc.edu
### WHERE MATH MAJORS GO (GRADUATE SCHOOL):

<table>
<thead>
<tr>
<th>NCSU (Data Analytics)</th>
<th>UNC-CH (Law)</th>
</tr>
</thead>
<tbody>
<tr>
<td>NCSU (Engineering)</td>
<td>University of Chicago (Computer Science)</td>
</tr>
<tr>
<td>UVA (Law)</td>
<td>Johns Hopkins (Astronomy and Astrophysics)</td>
</tr>
<tr>
<td>NCSU (Teaching)</td>
<td>UC-Irvine (Physics)</td>
</tr>
<tr>
<td>UNC-CH (Biostatistics)</td>
<td>Imperial College London (Financial Technology)</td>
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<tr>
<td>WUSTL (Business Analytics)</td>
<td>Columbia University (Statistics)</td>
</tr>
<tr>
<td>MIT (Social &amp; Engineering Systems)</td>
<td>UNC-CH (Computer Science)</td>
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<tr>
<td>Johns Hopkins (Biostatistics)</td>
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<td>UNC-CH (Teaching)</td>
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</table>
WHERE MATH MAJORS GO (CAREERS):

US Army (Engineer Officer)
Oliver Wyman (Analyst)
LabCorp (Data Analyst)
The Lawrenceville School (Mathematics Teaching Fellow)
CapTech Ventures (Associate Consultant)
Sequence (Consultant)

Spotify (Project Manager)
ERDC (Engineer)
R4 Capital (Financial Analyst)
Citadel Securities (Trader)
Graduate Research Assistant (UNC Biostats)
S&P Global (Trading Analytics Associate)
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**
  - Talks by professors, grad students, and undergrads and social events

- **MATH294 Problem Solving Seminar** - contact Prof Sawon sawon@email.unc.edu
  - **Virginia Tech** (TBD) and **Putnam** (1st Saturday in Dec) 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