

UNC DEPARTMENT OF MATHEMATICS

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**UNDERGRADUATE ADVISING**

# MATH MAJOR OVERVIEW

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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/](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}

# COURSE OVERVIEW

		Courses		
first tier	231	232	233	
second tier	383(L)	347	381	
	Diff Eq.	Lin. Alg.	Discrete	
third tier	523 - Complex Variables		521 - Adv. Calc I	
	524 - Elem. Diff. Eq. (F)		522 - Adv. Calc II (S)	
	528(L) - Math Methods I		533 - Elem. Theory Num. (S)	
	529(L) - Math Methods II(S)		534 - Elem. Modern Alg. (F)	
	553(L) - Math. Comp. Models Bio. (F)	535 - Probability	548 - Combinatorial Math.	
	564 - Math. Model. Life Sci. (S)		550 - Topology (S)	
	566 - Num. Analysis		551 - Euclid. Non. Euclid. (F) Geometries	
	594 - Nonlinear Dyn. (Rare)		577 - Lin. Algebra (F)	
		578 - Alg. Structures (S)		

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

# GRADUATE CLASSES

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- ▶ 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

Course	Area	Pre-Reqs
653, 656	Real and Complex Analysis	521, 522
661, 662	Scientific Computing	566
668, 669	Methods of Applied Math	528, 529
676, 677	Algebra	577, 578
680, 681	Geometry and Topology	550

# 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](mailto: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](mailto: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

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- ▶ 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](mailto: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](mailto: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