

Math Opportunities on Campus

DIVERSITY IN MATH:



Los Ingenieros

<http://www.ucsbosingenieros.org>

Out in Science, Technology, Engineering and Mathematics, UCSB

<http://ostem-ucsb.weebly.com>

Society for Advancement of Chicanos and Native Americans in Science (SACNAS)

<http://ucsbacnas.org>

ACADEMIC PROMOTION AND OUTREACH:

Math Club

Find us on Facebook!

Actuarial Association

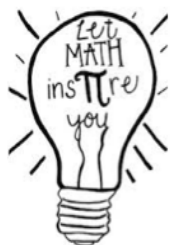
<http://www.pstat.ucsb.edu/instruction/actuary/club.html>

MESA

<https://oep.ucsb.edu/programs/mesa/>

La Escuelita

<http://laescuelitaofucsb.webs.com>



RESEARCH:

Math Research Fields and Centers

<http://www.math.ucsb.edu/research>

CSEP

<https://csep.cnsi.ucsb.edu/>

Women in Science and Engineering

<http://www.wise.ucsb.edu/>

SIMS – for incoming freshman

<http://sims-csep.cnsi.ucsb.edu>

GENERAL ON-CAMPUS RESOURCES:

EOP

<http://eop.sa.ucsb.edu>

Transfer Student Center

www.transfercenter.ucsb.edu

Education Abroad Program

uc.eap.ucop.edu

Center for Spatial Studies

spatial.ucsb.edu

Career Services

<http://career.sa.ucsb.edu>

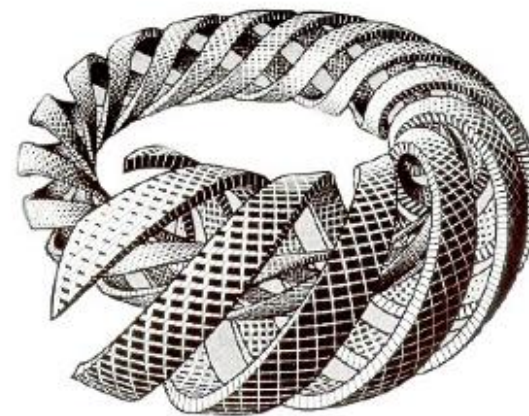


For information about other clubs on campus go to:

<http://osl.sa.ucsb.edu/OrgList>

Department of Mathematics

University of California, Santa Barbara



A Guide to Our Majors

Requirements, Descriptions, and Possible Career Tracks

How to Determine the Right Major for You

PLEASE NOTE:

While this pamphlet is a good general guide, it is not a replacement for the General Catalog or for academic advising in our office.

The Mathematics Minors

Why Minor in Math?

A minor in mathematics is ideal if you want to continue your mathematical education, but prefer to commit to a major (or double major) in a different subject. A Mathematics minor shows proof of a well-rounded education that will make you more competitive in the job market. There are two possible tracks to achieve a minor in mathematics: Minor in High School Teaching and Minor in Mathematics.

Minor Preparation

Students must complete Math 2AB or 3AB, Math 4AB and Math 8 (introduction to proofs). Some upper division courses require Math 6AB, so make sure you check the prerequisites for the upper division courses that interest you.

Upper Division

Minor in Mathematics: Students must complete 24 upper-division units in mathematics to complete the minor. This track allows you the freedom to choose from any of our courses, as long as you meet the pre-requisites.

Minor in Mathematics for High School Teaching: Students must complete 24 upper-division units in mathematics or statistics. This minor has several required upper-division courses to aid in the understanding and preparation of high school mathematics education and content.

Minor in Science and Mathematics Education: This minor is through the *Education Department*, requiring 19 upper-division education units. All of our math majors have the opportunity to gear their studies towards fulfilling this minor. You can overlap up to 5 units between a minor and major, so one of the upper division education courses required for the minor can be used as an upper division math elective.

Choosing a Major

It is common for our students to choose a track when they are ready to begin their upper-division course work in their junior year. Many students may start their pre-major on one track and later choose a different one. For example, our introductory course on proofs is ideal to distinguish a passion for pure math from a passion for applied math, which might help a student decide between the BS in Mathematics and the BS in Mathematical Sciences. If you are not sure which direction you want to take when you start at UCSB, take the opportunity to think about what aspects of your pre-major courses you enjoy. The peer advisors, located at 6607 South Hall, can also be of help in deciding which path is right for you.

Opportunities for Academic Distinction

The **Mochizuki Memorial Award** is presented in memory of Professor Horace Mochizuki, a renowned group theorist who was a member of the UCSB faculty from 1965 to 1989. One Mochizuki award is given to a graduating senior each year.

The **Wilder Awards** are given in memory of Professor Raymond L. Wilder, a distinguished topologist who was a member of the Department of Mathematics from 1972 to 1982. They are given to graduating seniors and first-year graduate students.

The **Ostrow-Bruckner scholarship** is an application based scholarship given to Junior standing L&S and CCS Math students who maintain a 3.5 Major GPA and show financial need.

The **Adil Yaqub scholarship** is dedicated to former UCSB Professor Adil Yaqub who served as faculty for over 50 years. This scholarship is given to graduating Seniors majoring in Math and planning to pursue a credential to teach Math at the k-12 level.

The **Honors Program** in Mathematics can also be completed to earn Distinction in the Major at graduation, please refer to the website here <http://duels.ucsb.edu/honors>

Bachelor of Science- Mathematics

You will find this major especially suitable if you wish to study at a rigorous level. As opposed to a computational approach that deals with numerical calculations, this pure math degree deals in the abstract. There is a strong emphasis on understanding theory.

Preparation for the Major

The Mathematics Department uses a pre-major to ensure adequate preparation for this and all other math degrees. You must achieve at least a 2.5 GPA in Calculus I-III, linear algebra, differential equations and an introductory course on proofs. One physics and one computer sciences course is also required, though they will not count toward your GPA requirement.

Upper Division

Students must complete 52 units of upper-division coursework including but not limited to linear algebra, real analysis, complex analysis, and abstract algebra; this is a fairly regimented curriculum.

Possible Career Paths

While you are by no means required to take this major to qualify for graduate studies, it will provide you with excellent preparation for graduate work due to its emphasis on mathematical theory. This track also provides excellent preparation for law school, MBA programs and med school, as students develop extensive skills in critical thinking and logic. Many government organizations recruit mathematicians for work in cryptology and mathematical modeling.

Bachelor of Science- Applied Mathematics

This major focuses on applying math to real world situations. This is a hands-on major, which focuses on how to solve real-world mathematical quandaries, particularly those with applications to the physical sciences and engineering. If you enjoy working with numbers and equations, this could be the major for you.

Preparation for the major

The Mathematics Department uses a pre-major to ensure adequate preparation for this and all other math degrees. You must achieve at least a 2.5 GPA in Calculus I-III, linear algebra, differential equations and an introductory course on proofs. One physics and one computer sciences course are also required, which while not factoring into the 2.5 GPA requirement, are given heavy consideration due to the relevancy to future coursework in this major.

Upper Division

Students must complete 52 units of upper-division coursework including but not limited to linear algebra, real, complex, and numerical analysis and differential geometry; this is a fairly regimented curriculum.

Possible Career Paths

Mathematicians can work in a variety of fields because of their highly developed problem solving skills. With this degree you could work in cryptology, engineering, or systems analysis. Students interested in this major can learn about the possible career options at www.siam.org/careers.

Bachelor of Science- Financial Mathematics and Statistics

This major is ideal for you if you are interested in the role that mathematics plays in the financial market. It is a joint major between the Mathematics Department and the Department of Statistics and Applied Probability, so you can utilize both departments' resources as you complete your degree.

Preparation for the Major

Students must achieve at least a 2.5 GPA in Calculus I-III, linear algebra, differential equations, an introductory course on proofs, microeconomics, and macroeconomics. Students must also take a beginning computer science course, Econ 10A and PSTAT 10, which will not be factored into the 2.5 GPA.

Upper Division

Students must complete 56 units of upper-division coursework. While there is a heavy emphasis on math, you will choose the proportion of mathematics, economics, and statistics courses you prefer to have represented in your coursework. The major is less geared towards economics enthusiasts and is more suitable for those interested in mathematical finance.

Possible Career Paths

This is a very focused degree to prepare you for MA or Ph.D. programs in financial mathematics. Companies need support to program models and run simulations, so it is important to have a strong background in programming. Other career choices possible after completion of this major include commercial banking, corporate finance, financial planning, insurance, investment banking, money management and real estate.

Bachelor of Arts- Mathematics

This major has two possible emphases; Liberal Arts and High School Teaching. This major, while still helping to cultivate a student's logical thinking skills, has more leeway in the courses required, allowing the student to either double major or plan a more tailored study path.

Preparation for the Major

Students must complete Math 3AB, Math 4AB and Math 8 (introduction to proofs). Some upper division courses require Math 6AB, so make sure you check the prerequisites for the upper division courses that interest you. Completion of a physics course and a computer science course are also required, but these courses will not factor into the 2.5 GPA requirement.

Upper Division/ Possible Career Paths

Both concentrations of this major require 40 upper-division units.

Concentration I: Liberal Arts- This emphasis provides a liberal arts education in pure mathematics. The upper division portion of this course allows you to choose 3 sequences of upper division courses that you wish to take, as opposed to the other majors which have more structured requirements. This allows you to create a more personally tailored mathematical, academic experience.

Concentration II: High School Teaching- This emphasis introduces students to the material they would be responsible for teaching in High School. It examines the historical context of mathematics, covers a broad range of concepts, and touches upon applications to familiar theorems. Although this major is designed for students who wish to become teachers, students also have the ability to pursue other opportunities in the education field like research, textbook and test writing, policy developing, and much more.