Welcome to the UCI Math Department New Student Orientation!

Presented by:
- Dr. Christopher Davis
- Dr. Yifeng Yu

Possible guest stars: Dr. Alessandra Pantano, Dr. Zhiqin Lu

September 26, 2023
Outline

- Introduction to the Math Major
- Tips for Success
- How to get Involved
Who are you?

- Math major?
- Undecided?
- Freshman?
- Transfer student?

The UCI Department of Math has approximately:
- 750 undergraduates
- 120 graduate students
- 45 permanent faculty
Why be a Math Major?

What’s the most useful skill you learn?

The ability to reason precisely and logically

Corollary 1: Proof writing is important for all of you!

Corollary 2: Math 13 is probably the most critical class for your success as a math major
Seven Tracks in the Math Major

- Pure Mathematics
- Data Science
- Math Finance
- Applied and Computational Math
- Math Biology
- Math Education
- Math Education/Secondary Teacher Certification
Tracks in the Math Major

- You typically apply in your sophomore or junior year
- No application necessary for the Pure Math Major (the default)
- Some courses should be taken in your sophomore year at the latest
Which track is right for which career?

(Hint: There’s no right answer!)

Work in AI? Data Science or Applied and Computational Math

Be an Actuary? Math Finance

Work at a Medical Research Lab? Math Biology

Be a Math Teacher? Math Education

Pure Math Major offers the most freedom to choose electives
How do classes work?

Usually...

• 5 meetings per week: 3 lectures and 2 discussion sections each week
• 1 (cumulative) final exam: 35-40% of the course grade
• 1 or 2 midterms
• Weekly homework (not always graded)
• Quizzes (almost each week)
What’s the point of Homework?

- Helps you know what the professor thinks is important
- Practice (it’s crucial)
- Keeps you on pace with the class
Study tips 1

- The midterms and finals are testing understanding.
- To succeed in your classes, memorization is not enough.
- Repetition is not an effective study method.
- Repetition might help you remember that the derivative of $\cos(x)$ is $-\sin(x)$. But it won’t help you understand what the derivative means.
- Instead: Try to make flash cards, rewrite theorems in your own words, write your own practice questions, ask why hypotheses are necessary, try to find examples.
- For online courses: Do the computations yourself and take notes while watching the videos.

INTERMEDIATE VALUE THEOREM.

If $f$ is a function that is continuous over the interval $[a, b]$ and $m$ is some number between $f(a)$ and $f(b)$, then there exists a number $c$ between $a$ and $b$ such that $f(c) = m$. 
Study tips 2

- UCI is on the quarter system, so the **pace is very fast**. Don’t fall behind!
- **Go to office hours.** If you’re concerned about your grade, talk to the professor and TA early, not after the final exam.
- Expect to **read the textbook.** Not everything will make sense in lecture the first time you hear it.
- Pay special attention to **definitions,** make sure you understand them. Find examples.
- Most people learn better reading from a physical book than from a screen.
Getting the most out of your college experience
Tips if you want to start Math Research

- No easy path, especially as freshmen
- Math 199 (sometimes it’s research, often it’s directed reading)
- Get to know your professors: Attend office hours! Ask questions! (LORs)
- In your junior year: check out Summer REUs, Research Experiences for Undergraduates (all over the United States)
- Interested in math and bio research? Take Math 113 and apply to MathBioU in the summer between your junior and your senior year
Meet more majors and get involved!

Undergraduate Math Committee

Math CEO

UCI Actuarial Society

Math Finance Club at UCI

Data @ UCI
Undergraduate Mathematics Committee (UMC)

UCI's hub for math enthusiasts to collaborate, learn, and grow.

Our Mission
Undergraduate Mathematics Committee’s mission is to foster and sustain an inclusive community for all undergraduates interested in pursuing mathematics at University of California, Irvine.

Linktree
Data @ UCI

A community for Anteaters to explore the world of data and their place in it.

Our Past Events

- Careers in Data Science Panel
- Python and Data Analysis Workshop
- Game Night Social
UCI Actuarial Society

- Meetings: 6pm on Wednesdays
- Email: actuarialsociety@uci.edu
  Instagram: @actuarialsocietyatuci
- Sign-up to mailing list: https://forms.gle/FSg71dkZhmtEQhvww8
- Website: https://sites.uci.edu/actuarialsociety/
- Linkedin; Facebook page; Discord
MATH FINANCE CLUB

- Meetings: *Not currently scheduled*

- Instead: They run a **Quarterly Stock Trading Competition (QSTC)** where students from all departments are welcome to join a stock market simulation game and compete for a prize.

- Contact: mathfinanceclub@uci.edu
- Website: coming soon

Linked In page: https://www.linkedin.com/groups/13695883/
Facebook page: https://www.facebook.com/groups/712446895841182/
MENTORING OPPORTUNITY @ UCI THIS FALL '23
UCI MATH CEO

Help Your Community! Mentor Middle School Students here at UCI

HELP
LATINX YOUTH
LEARN MORE
ABOUT COLLEGE

MAKE FRIENDS
AT UCI

GAIN
TEACHING
EXPERIENCE
(HERE AT UCI)

PROMOTE
REASONING &
PERSEVERANCE

GET KIDS
INTERESTED
IN STEM

EARN UNITS
OR
FIELDWORK
HOURS

WEEKLY COACHING
AT UCI, ALP 2500
MONDAYS 2-3:50 PM

- OCT 2, 4, 9, 16, 23, 30
- NOV 6, 13, 20, 27
- DEC 4

WEEKLY MENTORING SESSIONS WITH YOUTH
AT UCI, ISB 1310, ALP 2500 & NS2 1201
WEDNESDAYS 2-3:50 PM

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QUESTIONS: MATHCEO@MATH.UCLEDU

JOIN: WWW.MATH.UCLEDU/MATHCEO/JOIN
Join UCI Math Explorers!

Math in Action!

Weekly Meetings Tuesdays, 3:30 pm to 5:00 pm!
In person at Valley HS or online at UCI (ALP 1110)

Interested? Contact us at: mathca@uci.edu
Or check out our website: https://sites.ps.uci.edu/mathca

Mentor at Local High Schools!
Earn fieldwork hours and gain on-hand experience teaching at a free after-school program. Make friends with HS students and share your college experiences.

New activities every quarter!
Explore novel and interactive math with UCI students and faculty. Develop activities interest you and learn how to build student enthusiasm for math and STEM.

Cryptography
How are messages kept secure? How do people break codes? Learn about the puzzles behind security!

Generative Art
Express your creative side, draw fractals, discover visual patterns in nature and architecture.

Sign up at QR code or
https://forms.gle/awaq7K7YNu6pUHGv9
Math Major Welcome Day

Math Org Presentation

Come learn about the different math affiliated orgs on campus!

Wednesday 9/27
3:30 PM - 5 PM
ISEB 1200
Resources

• Instructor and TA office hours

• Physical Sciences Student Affairs Office
  • Email: pssazot@uci.edu
  • Or contact via live chat (link in lower right):
    https://ps.uci.edu/undergraduates

• Department of Mathematics
  • Email: mathinfo@math.uci.edu
Department of Mathematics website:
https://www.math.uci.edu/undergraduate

Frequently Asked Questions (FAQ):
https://www.math.uci.edu/undergrad-courses/course-registration-and-placement-information

Prerequisite Video Webpage:
https://www.math.uci.edu/~prerequisite-videos

Course suggested schedules:
https://www.math.uci.edu/courses-instruction/course-syllabi
Thank You!
What questions do you have for us?