



Spring 2019

## ACADEMIC CALENDAR

### APR 17-19, 22-26

Academic advising for continuing and readmitted students for the summer session and the fall semester.

### APR 22-MAY 3

Registration for the summer session and the fall semester for continuing and readmitted students.

### MAY 10

Last class day & OTE deadline.

### MAY 15-18, 20-21

Spring semester final examinations.

## UPCOMING SUMMER & FALL REGISTRATION

Visit Ronda Hall, Janna Adkins, Jiho Kim, and Dr. Jennifer Austin prior to the crunch-time of registration advising (Apr 17-19, 22-26) for one-on-one time with your advisor! Stop by the Math, Physics, and Astronomy advising office in RLM 4.101 or call 512-471-0900 to schedule an advising appointment. Students who are assigned to Ronda, Janna, or Jiho may schedule an appointment [here](#).

### Course Schedules

<https://registrar.utexas.edu/schedules>

### Mathematics Courses & Prerequisites

<http://catalog.utexas.edu/undergraduate/natural-sciences/courses/mathematics/>

## Highlighted Mathematics Courses Offered Fall 2019

**M362M** There will be two sections of M362M Introduction to Stochastic Processes both MWF at 9 am (53090) and 10 am (53095).

**M371E** Learning Assistant Experience in Mathematics is offered M 5-8 pm (53115). If you are interested in this course please contact the Mathematics Graduate Program Administrator [Jenny Kondo](#).

**M375T** Introduction to Quantum Information Science will be offered MW 3:30-5 pm (53170).

**M375T** Foundations, Functions, and Regression Models course will be offered TTh at 9:30 am (53165).

**M378P** Decision Analytics will be offered TTh at 9:30 am (53190). This new course has been approved to count toward Applied Statistical Modeling Certificate.

### Q: Do mathematics conference courses count towards my math degree?

A: Mathematics conference courses that are pre-approved by Dr. Austin will count towards your math degree.

### Q: How do I satisfy the Math in Context degree requirement?

A: Dr. Austin is willing to consider any course in any college on campus that is an upper division course and uses mathematics above calculus. Have you found an interesting course? Meet with Dr. Austin, bring the syllabus, and she will decide if the course will satisfy your Math in Context degree requirement. The courses listed on the degree plan under the Math in Context degree requirement automatically count, but you may need Dr. Austin to secure the seat in the non-mathematics courses for you.

## NETWORKING

There are various organizations with which you might like to connect while you are a math major here at UT. There is a general [Mathematics](#) open Facebook group within UT Austin. The [UT Math Club](#) is an active group of undergraduate math majors who meet to discuss and share their wisdom as they navigate through being a UT math major, apply for and participate in summer research opportunities, and head towards graduate school. We have recently created a [UT Mathematics LinkedIn](#) group which we encourage all of you to join!

[The UT chapter of Association for Women in Mathematics \(AWM\)](#)

[UT Actuarial Science Club \(ASC\)](#)

[UT Mathematics and Science Teachers of Tomorrow \(MASTT\)](#)

[UT chapter of the Society of Industrial & Applied Mathematics \(SIAM\)](#)

[Gamma Iota Sigma](#) is a new Risk Management, Insurance, and Actuarial Science fraternity.

*Be sure to check out the [list of resources](#) that Dr. Austin has compiled for math majors.*

## JOB PREPARATION

Take full advantage of [CNS Career Services](#) while you are a student. This is a great resource for our students!

Seek out project-based courses and internships while you are an undergraduate. Be sure to highlight these in your personal statement when applying for jobs.

You can be a mathematics major or a mathematics actuarial science major AND become certified to teach middle school and high school mathematics all in four years. If you are interested, please see the [UTeach Program in Natural Sciences](#) or email [Dr. Daniels](#).

## DIRECTED READING PROGRAM

The [Directed Reading Program](#) (DRP) pairs undergraduate students with graduate student or faculty mentors to undertake independent projects in mathematics. Any undergraduate student may apply for DRP and, if accepted, will be assigned an appropriate graduate mentor. The student and the mentor will agree on a project. It can be based on reading through a book or an article, but the project is not limited to such things.

## OUTREACH OPPORTUNITIES

Dr. Jennifer Austin will be organizing volunteers for CNS Family Day, Saturday, October 26, 2019. We expect about 800 CNS students and their families. Dr. Austin will display mathematical puzzles and games with which families may interact. Email [Dr. Austin](#) if you can commit to representing our department at CNS Family Day. This is a great opportunity to connect with our larger Longhorn family, share your knowledge, serve as a math expert, bring mathematics alive, and enhance your communication skills.

While you're planning your courses for Fall 2019, we invite you to sign up for the UTeach Outreach class! UTeach Outreach allows students to teach hands-on science lessons with a partner at local elementary schools while receiving course credit at UT! Students can receive two (CH207K) or three (CH371K) graded credit hours of science or elective credit, depending on your major and prerequisites. Ask your advisor for credit you could receive. We invite you to be a part of this unique course that is planned around your schedule, provides a network with other UT students in a small classroom setting and opportunities to boost your resume with leadership roles in your area of interest. Check out this [video](#) or email us at [uteach.outreach@austin.utexas.edu](mailto:uteach.outreach@austin.utexas.edu) for more information.

The logo for Texas Mathematics, featuring the word "TEXAS" in a serif font above the word "Mathematics" in a larger, bold serif font, all set against a solid orange background.

# TEXAS Mathematics

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## REQUESTING LETTERS OF RECOMMENDATION

### What to do well before requesting letters of recommendation

Change can be challenging for anyone and the transition in moving beyond an undergraduate career can be arduous for many. You can make this time easier by being proactive and planning ahead to ensure your success. In the semesters before you are at the point of requesting letters of recommendation there are a number of actionable steps you should be practicing.

First, make meaningful connections with your mathematics faculty as you will need at least three faculty members in your field of study to write letters of recommendation for you during your senior year. To write strong letters on your behalf they need to know you, how you work with others, how you work independently, and your overall potential. Be an active participant in your mathematics courses, attend office hours, ask your professors about their research, get to know your professors, and allow them to get to know you. Second, you must check in with your academic advisor and/or faculty advisor at least once a semester to see that you are taking the best mathematics courses to prepare you for your desired career or graduate school program.

Third, network, network, network. Find out if there are local chapters of the [Association for Women in Mathematics](#) (AWM), [Society of Industrial and Applied Mathematics](#) (SIAM), and other professional mathematical societies on your campus. Join them or help found your own local chapter! Participate in your school's math club, actuarial science club, or future mathematics teachers club. Finally, I would add that volunteering for outreach opportunities is a great way to connect with the larger community, share your knowledge, serve as a math expert, bring mathematics alive, and enhance your own communication skills. (*Continue reading Dr. Austin's advice [here](#).)*

## GRADUATE SCHOOL PREPARATION

Juniors, spend the summer compiling the list of schools to which you will apply this fall. In the fall, have fellow students, CNS Career Services, and/or Dr. Austin proofread your statement of purpose. By November be prepared to request letters of recommendation from at least three faculty members (at least two of which will probably be mathematics faculty). When you request letters of recommendation, provide your letter writers with your resume, statement of purpose, and a spreadsheet or chart listing all schools to which you are applying. (In this spreadsheet or chart include the name of the school, the particular program to which you are applying, due dates, and method of letter submission.)

Sophomores and Freshmen, check in with Dr. Austin once a semester or at least once a year to see that you are taking the best mathematics courses to prepare you for graduate school. Participate in our Directed Reading Program, UT Math Club, and UT AWM. Make meaningful connections with your mathematics faculty as you will need at least three to write letters of recommendation for you during the fall of your senior year. To write strong letters on your behalf they need to know you, how you work with others, how you work independently, and your overall potential. Be an active participant in your mathematics courses, attend office hours, ask your professors about their research, and get to know your professors.

Find more graduate school resources [here](#).

## BE FEATURED IN UPCOMING NEWSLETTERS

Please contact [Dr. Austin](#) if you would like your internship, REU, DRP, thesis, or research to be featured in an upcoming UT Math Major Newsletter!

## SUMMER 2018 REU NEWS

"In the Summer of 2018, I participated in the 'Optimality and Uncertainty' REU program held at Cornell University under the direction of Dr. Alexander Vladimirovsky, collaborating on two specific projects: 'Quantifying and Managing the Uncertainty in Piecewise-Deterministic Processes' and 'Optimal Control under Initial Uncertainty.' The internship provided me with a deep perspective on mathematics research and enhanced my collaboration skills through the interaction with the Project Director, Teaching Assistants, and other interns. The work also enriched my ability to use code on applied mathematics.

As a result of the program, papers on both projects are currently being developed. This past January one of my peers and I conducted a poster presentation on the first one at the Mathematical Association of America's Undergraduate Student Poster Session held in Baltimore, MD. Our project addresses three natural questions related to uncertainty in cumulative cost of piecewise-deterministic processes' models. Its approach requires posing a (weakly-coupled) system of suitable hyperbolic partial differential equations, which are then solved numerically on an augmented state space. The method is illustrated using a simple example of trajectory planning under uncertainty.

I definitely recommend all Longhorns who have an interest in conducting mathematics research to join a REU program. The experience greatly helped me to confirm my desire to pursue doctoral studies in mathematics."

- **Antonio Farah, BS Mathematics Honors Undergraduate Longhorn**

## RESOURCES

Stop by the [Math, Physics, and Astronomy advising](#) office in RLM 4.101 if you would like to pick up a list of math tutors available for hire. If you are enrolled in calculus be sure to utilize the [Calculus Lab](#). For many mathematics courses the [Sanger Learning Center](#) is a valuable resource. Moreover, did you know that the UT Counseling and Mental Health Center offers a wide variety of free workshops and events intended to provide valuable life skills? Check them out [here](#).

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*"I still remember when I first saw the rigorous definition of a derivative, which involves taking the limit of difference quotients to give meaning to an expression that looks at first glance to be zero divided by zero. I was so excited I turned to a friend next to me and said, "Are you allowed to do that?" I really loved that course and I did very well in it, and I switched my major from physics to math."*

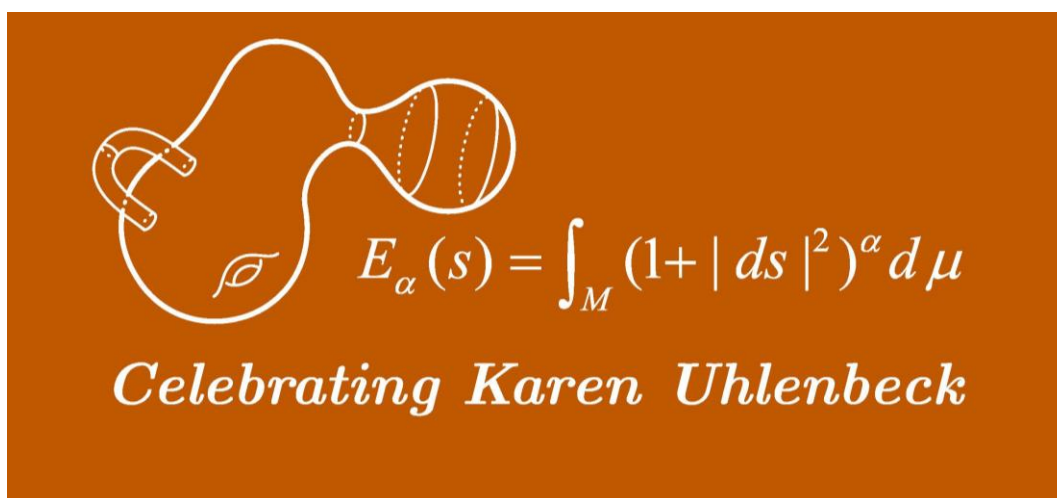
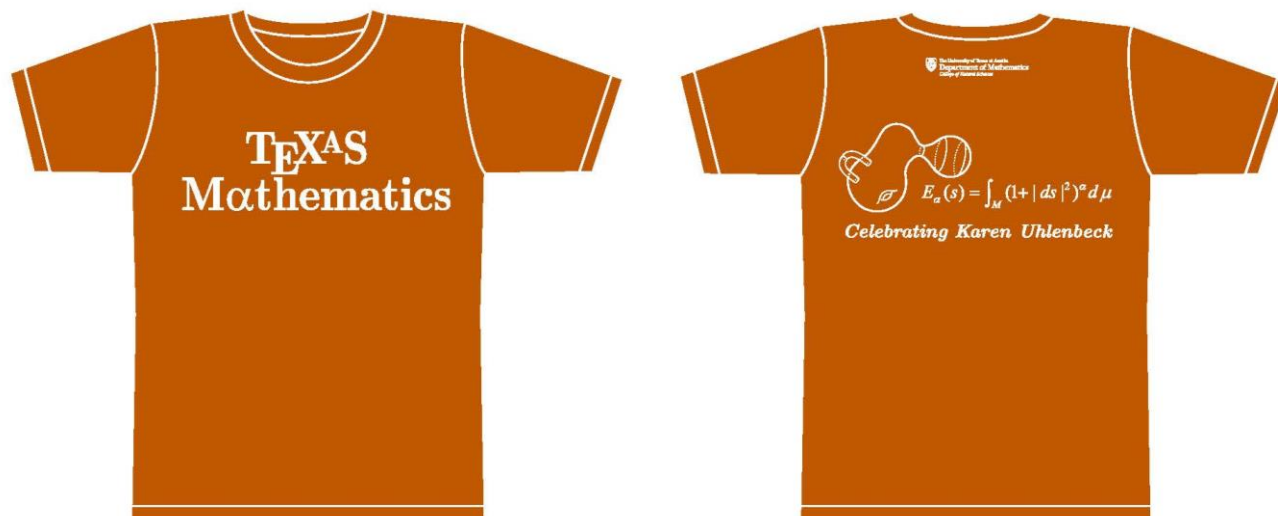
-**Dr. Karen Uhlenbeck** in "A Groundbreaking Mathematician on the Gender Politics of Her Field." *The New Yorker*, March 28, 2019, <https://www.newyorker.com/news/q-and-a/groundbreaking-mathematician-karen-uhlenbeck-on-the-politics-of-her-field>

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## TEXAS MATHEMATICS T-SHIRTS

UT Mathematics is selling t-shirts. The shirt color will be "Texas Orange" with white type. Short sleeve shirts are \$8 and long sleeve shirts are \$10. The shirts will be printed by Austin Screen Printing. We have UT Trademarks approval. If you would like to order more than one shirt, then please resubmit this [form](#) for each shirt you are ordering. We are accepting orders and payment through noon on Friday, April 19, 2019. We expect to have shirts by Friday, May 3, 2019.

Payment for your Texas Mathematics Shirt is due by noon, Friday, April 19, 2019. Payment is accepted (1) via an envelope in Jennifer Austin's mailbox in RLM 8.100, (2) bring it by my office (W 11:00 am - 12:50 pm, Th 11:30 am - 12:50 pm, F 11:00 am - 12:50 pm) in RLM 11.150, (3) via Venmo sent to DNAKnot, or (4) via PayPal sent to [Jennifer.mann@gmail.com](mailto:Jennifer.mann@gmail.com).



In March 2019 the Norwegian Academy of Science and Letters awarded [Dr. Karen Uhlenbeck](#) the Abel Prize, the highest prize in Mathematics. Our 2019 [Texas Mathematics shirt](#) design celebrates Dr. Uhlenbeck's work and achievement. Catch up on this exciting news [here](#).