

APPLIED AND INDUSTRIAL MATHEMATICS M.S.

APIM NEWSLETTER FALL 2021

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New APIM Interim Graduate Program Director

Dr. Yunwei Cui

Spring 2022



Dr. Cui joined Towson University in 2015. His current research interests include time series analysis, nonparametric analysis, and forecasting techniques.

He has been actively involved with the APIM program in the past, and earned his PhD in Statistics from Clemson University. Dr. Cui teaches several graduate classes at TU, including Predictive Analytics, Financial Time Series Analysis, and Multivariate Analysis.

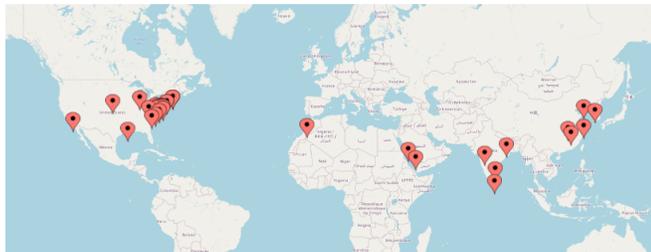
"It is my honor to serve as the interim director of the master program of APIM. For the past years, the APIM program has been growing strongly. I am excited about the future of the program and look forward to providing services to our students, faculty and community."



APIM Program Data

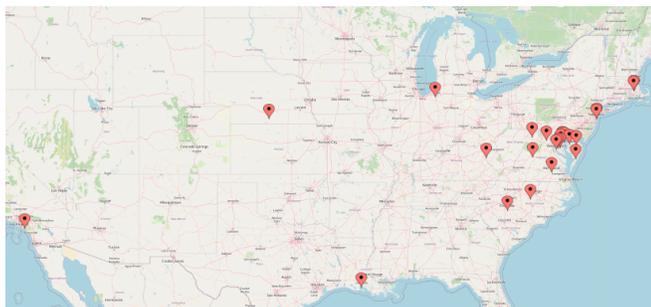
2014 – 2020

The following is a compilation of data and analyses of the APIM program's enrollment and patterns from 2014 – 2020.



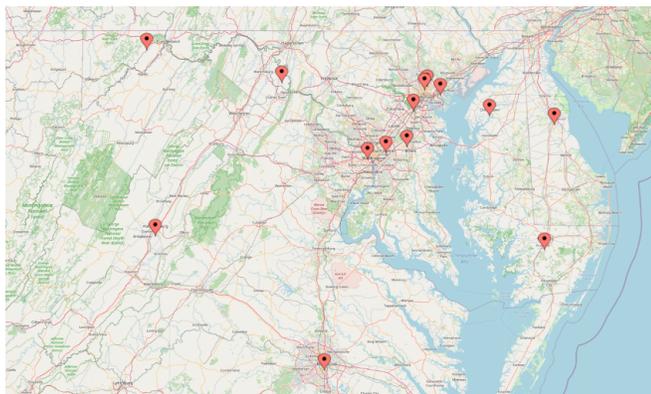
Global

While most of the students come from domestic universities – specifically Maryland – 22% studied at the undergraduate level internationally.



USA

Most of the focus is on the East Coast, with the South/West also being represented.

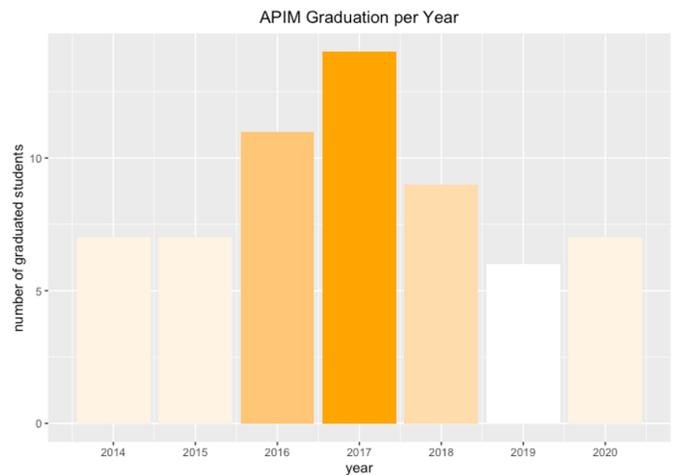


East Coast

A large concentration of the students is from the Mid-Atlantic region.

Graduation

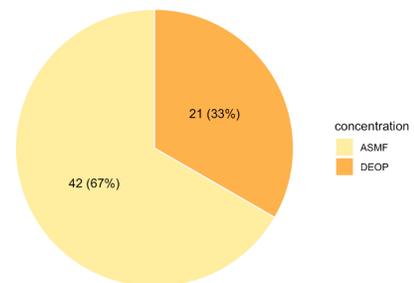
Looking at the number of students who successfully graduated per year, we see 2017 brought the largest class of graduating students. The trend since then has been decreasing, but not dropping below the years prior to 2016.



Concentrations

The majority of the students who graduated from the program were in the Applied Statistics and Mathematical Finance concentration, coming out to be two-thirds of the total.

APIM Graduated Students by Concentration



Among all courses, not including the Master's project or independent studies, the most popular courses are:

1. 643: *Computational Methods of Math Finance*
2. 632: *Computational Stochastic Modeling*
3. 686: *Special Topics in Diff. Eq. and Optimization*
4. 674: *Applied Partial Differential Equations*

Bachelor's to Ph.D.

what is right for me?

Read from two TU students' perspectives about transitioning into of a Ph.D. program of study.

Bachelor's → Ph.D.

Irwin Paredes Escobar

B.S. Applied Mathematics, 2021

What made you decide to go right to a Ph.D. program, instead of going for a Master's?

Most schools offer full funding to Ph.D. candidates and not to Master's students. Since I currently have debts due to my previous expenses as an undergraduate student, it was necessary for me to get full coverage for my studies. Besides, going right to Ph.D. program means "just one application" instead of going for a Master's and then to Ph.D. (that would be two applications).

What criteria were you keeping in mind when looking for a Ph.D. program? For example, did you want a university that had your program of interest, did you like the graduate community, or was there a certain faculty member you would like to do research with?

Since I'm still a F-1 visa holder, it was essential for me to be accepted into a graduate program. I knew it would be more difficult to get into high-ranked math grad schools; so, I used the following link: <https://www.usnews.com/best-graduate-schools/top-science-schools/mathematics-rankings> to know the score of each school. I applied to 8 grad schools, four of them between the 3.4-4.0 average and the other four below it. Among those schools, I based my decision on the ones that provided more information on their websites.

Do you believe your work at TU is directly transferable to your Ph.D. program? In other words, would it be possible to pursue this higher level of study without the coursework from TU?

TU has definitely helped me improve my math skills. Before studying at TU, I didn't think I had a chance to get into grad school, especially since I had gone to college for five years when I was in my country with a mediocre performance. I wouldn't have gotten into grad school if it weren't for the splendid quality of education I received from the math faculty and all the resources provided by TU.

Bachelor's → Master's → Ph.D.

Isabelle Pardew

B.S. Applied Mathematics, 2020

What made you decide to pursue a Master's degree before the Ph.D.?

Having just completed my Bachelor's at TU, I had already taken two graduate courses, as part of the Accelerated B.S. to M.S. program, and I was still actively involved in research projects. Both of these factors were motivating in my desire to finish my studies and research at TU, which will prepare me even more for my Ph.D. studies.

What criteria are you currently keeping in mind when looking for a Ph.D. program? For example, did you want a university that had your program of interest, did you like the graduate community, or was there a certain faculty member you would like to do research with?

Since I have had the opportunity to participate in several research projects at TU, including the Applied Mathematics Lab, I know that a research-based institution would be appealing. While completing PhD applications, I researched the faculty from each university, giving me a better understanding of the type of work and areas of research that are offered. Then, I based my decision on the potential areas of research that I would be interested in, as well as my past experience and skills.

Do you believe your work at TU will be directly transferable to an eventual Ph.D. program? In other words, would it be possible to pursue this higher level of study without the coursework from TU?

The courses at TU helped me develop my skills in a wide range of subjects, as well as allowing me to narrow down which areas I would prefer to pursue further. After taking several courses in the Differential Equations and Optimization track, then some in the Applied Statistics and Mathematical Finance track, I was able to see what field I would want to apply my mathematical training to.

Bachelor's to Ph.D.

what is right for me?

Read from two TU students' perspectives about transitioning into of a Ph.D. program of study.

Bachelor's → Ph.D.

Irwin Paredes Escobar
B.S. Applied Mathematics, 2021

What would you say to anyone trying to decide whether to embark on a Ph.D. program, or a Master's degree?

It always depends on the student's situation and what he/she wants; in my case, being an international student and my current financial situation led me to choose a Ph.D. program. The most important thing to consider is what do you want to do after school? Once you know that answer, you will know what to choose. And if you still don't know what to do, think that the higher you achieve academically, the more opportunities you will have.

Do you recommend students get research experience at the undergraduate level to help decide if they want to enter a Ph.D. program versus finding a career right after graduation?

Absolutely, the more experiences you have, the more you will know what you want to do after graduation. It is the same as when you buy a house; to know if you want to buy it, you first need to see it to get as much information as possible, it would be a bad idea to buy a house just by looking at the photos. Personally, I believe that many people change careers because they didn't know their work environment; therefore, it is always better to know sooner rather than later and that's what research experiences are for.

Bachelor's → Master's → Ph.D.

Isabelle Pardew
B.S. Applied Mathematics, 2020

What would you say to anyone trying to decide whether to embark on a Ph.D. program, or a Master's degree?

I believe that there are a few factors at play: whether or not you have ongoing commitments or research, whether you've secured a job, if the Master's tuition will be covered by assistantships, financial aid, etc. However, all these aside, I believe you can be prepared for a Ph.D. coming from a Bachelor's, but if you are still uncertain about what subject you want to devote 5+ years of study to, perhaps a Master's will help you hone in on what you enjoy doing. Another factor to consider is if you enjoy research, then a Ph.D. would be a great option.

Do you recommend students get research experience at the undergraduate level to help decide if they want to enter a Ph.D. program versus finding a career right after graduation?

I believe research can help steer you into the direction you would like your career to go. It also lets you see the rigor and communication skills necessary to work as part of a research team, which is something entirely beneficial for a Ph.D. Even if you may not be interested in a research-based career, it is essential to build experience with a project or two, to further develop your opinion.

GETTING STARTED AS A TU GRADUATE STUDENT



NEW MASTER'S STUDENT: NICK LABELLA

NICK RECENTLY SECURED A TU GRADUATE ASSISTANTSHIP IN STEM TUTORING.

What made you decide to pursue a Master's in Applied Mathematics?

I am an analytical thinker, not only academically, but in real life. I have enjoyed working with data for over ten years. I love to work with any data sets whether it be sports, money, car speed, etc. People have come to me numerous times when they need a math-related task completed, and they have confidence in my ability to apply my knowledge and think outside of the box.

What criteria did you keep in mind when looking for a Master's program? I.e., a program of interest, close proximity, the graduate community, etc.?

While searching for my Masters' program, my number one priority was if this a good "bridge" to start my career. I am confident after researching Towson's Applied Mathematics program that this is a strong fit for me. I want to keep adding to my "toolbox" of qualifications/knowledge that I have been adding to since my time as an undergrad at James Madison University.

Do you have a set goal in mind going into this program? In other words, do you want to continue to a Ph.D., or a career in a mathematics-related field?

After this program, I am hoping I will have all the tools I need to start a career as a Data Analyst. It may not be my one dream job, but that is okay.

Over the last few years, my main focus has been exposing myself to as many datasets as possible and being flexible. I enjoy looking at all different kinds of data.

What duties does your assistantship entail?

My new assistantship position involves overseeing tutors in the STEM field. I look forward to working with them. We will not only teach content, but we will provide other important resources to them, allowing the Towson STEM community to grow. We will provide workshops and academic coaching.

What was it about your undergraduate career that solidified the idea to continue to pursue mathematics in academia?

My undergraduate career made me realize that I have so much more to learn. I have learned to use software of many different languages. I have realized that the memorization skills that I mastered in high school will not get me as far in high school. I have had to think outside of the box, and that excites me! I love to perform tasks off script.

Since you are just beginning the program yourself, what would you say to anyone trying to decide whether to embark on a Master's program?

I would say to do your research. Look at the classes that the program is having you take and read the descriptions. Ask yourself if these are the kind of tasks you would be performing in your career. Look for internships or internships related to your field before, during, and even after your Masters' program to widen your expertise on the topic.

Meet the TAs

OF THE APIM PROGRAM



ANNMARIE FALZONE

My name is AnnMarie Falzone, and I am from Shrewsbury, PA. I graduated from the University of Delaware with a B.A. in Secondary Mathematics Education in May 2021. I am now pursuing my M.S. in Applied Mathematics with a concentration in Applied Statistics and Mathematical Finance. I am so excited to start my first semester of graduate school at TU. Outside of mathematics, I enjoy playing the clarinet and going hiking with friends.



ISABELLE PARDEW

I am from Towson, MD, and recently graduated from Towson University with a B.S. in Applied Mathematics this past spring. I am pursuing my M.S. in Applied Mathematics with a concentration in Differential Equations/Optimization. This is my second year working as a TA, and I enjoy the opportunity to review material from the courses, while providing feedback to students. Outside of mathematics, I am an avid ornithologist, and run a land conservancy to preserve land for future wildlife generations.



ANNABELLE EYLER

My name is Anna Eyler, and I am from Woodsboro, MD. I graduated from Hood College in May of 2021 with a B.A. in Mathematics and a minor in Chemistry. Currently I am working towards my M.S. in Applied and Industrial Mathematics. This is my first year in the program and I look forward to meeting new people on campus. When I am not working or in class, I enjoy volunteering as the Head Coach for the Frederick County Special Olympics Swim Team and grabbing coffee with friends.



DANIELLE TORNABENE

I'm working towards an M.S. in Applied Mathematics with the Differential Equations/Optimization concentration. I particularly enjoy the integration of computer science in the math courses and hope to blend them more to get the most out of my time at TU. It's quite the perspective as I spend my days as a teacher, my evenings as a student, and my weekends grading for myself and others! I look forward to seeing how education and the world at large adapt to new expectations and realities.

FALL 2021