

Table of Contents

Yu, Xingxing - #9777 - School of Math's Nomination of Anton Bernshteyn for the CTL/BP Junior Faculty Teaching Excellence Award	1
Nomination Package	2

Application Summary

Competition Details

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Application Information

Submitted By: Xingxing Yu

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Personal Details

Applicant First Name: Xingxing

Applicant Last Name: Yu

Email Address: yu@math.gatech.edu

Phone Number:

Primary School or Department

School of Mathematics

Primary Appointment Title: Professor

Application Details

Proposal Title

School of Math's Nomination of Anton Bernshteyn for the CTL/BP Junior Faculty Teaching Excellence Award



Michael Wolf
Chair, School of Mathematics
Georgia Inst. of Technology
Atlanta, GA 30332-0160

February 8, 2023

Nomination of Anton Bernshteyn for CTL/BP Junior Faculty Teaching Excellence Award

Dear Awards Selection Committee,

I am pleased to nominate my colleague, Assistant Professor Anton Bernshteyn, for the CTL/BP Junior Faculty Teaching Excellence Award. Since Fall 2020 when he joined the faculty of Georgia Tech, Prof. Bernshteyn has taught 4 undergraduate classes and 2 graduate classes, including large service courses for Engineering students and core courses for our undergraduate and graduate programs.

Through his teaching, Prof. Bernshteyn has had a broad impact on our undergraduate students. Two courses he taught (MATH 3012 and MATH 4022) were large classes taken by students from many schools on campus with very diverse mathematics backgrounds, but Professor Bernshteyn expertly guiding the students who had no experience with writing proofs into having a keen understanding of rigor while at the same time conveying an enormous amount of material. In a separate direction, Professor Bernshteyn has worked with a number of undergraduate researchers at Georgia Tech, resulting in high quality publications in peer reviewed journals – and displaying to the students their ability to do and enjoy mathematical research!

Prof. Bernshteyn also has had impact on core training for graduate students from many disciplines, through his teaching of MATH 7018 and a special topics course, as well as his offering of several reading courses. In particular, he has been mentoring three graduate students who are well on their way to complete their Ph.D. degrees.

Finally, I refer you to the teaching statement from Prof. Bernshteyn (and the supporting letters from colleagues and students). What shines through these documents is the image of a faculty member who cares about his students, has high expectations of his students, and is thoughtful, reflective and engaging enough of a teacher to be extremely effective in having all his students meet his high expectations. Of course, his recent CAREER award, with its educational component, also reflects his deep thinking about pedagogy.

In all, Professor Anton Bernshteyn is a model of junior faculty pedagogical engagement and excellence: at all levels he raises his students up to abilities that they may not even be aware were within them, and he does it all by dint of caring, attention and effort. I enthusiastically endorse him for this award.

Best,

A handwritten signature in black ink, appearing to read "Michael Wolf". The signature is fluid and cursive, with the first name "Michael" written in a larger, more prominent script than the last name "Wolf".

Michael Wolf
Professor and Chair

STATEMENT ON TEACHING

ANTON BERNSHTEYN, ASSISTANT PROFESSOR, SCHOOL OF MATHEMATICS

1. Introduction

Mathematics is without doubt one of the most beautiful, profound, and incredibly important areas of human activity. That is why I chose an academic career in mathematics: being able to contribute to this field, even in a small way, fills me with infinite joy and gives my life a world of meaning. My ultimate desire is to inhabit a society that has adopted a modified version of the famous utilitarian motto: “*the greatest knowledge of mathematics for the greatest number.*” This state of affairs can be brought about by research, which increases the total quantity of mathematical knowledge available, and through teaching, which imparts the already available knowledge unto the minds of students. From this standpoint, I view research and teaching as two equally important components of my overall mission, and tend to blur the line between them. For example, several undergraduate students who had taken classes with me at Georgia Tech went on to perform serious research work under my supervision afterwards. I am also currently conducting a project that integrates research and education, which has recently been awarded an NSF CAREER grant (\$500,290 for five years).

Between the fall of 2020 and the fall of 2022, I have taught 4 undergraduate and 2 graduate courses at Georgia Tech (I am not counting supervised reading, thesis research, etc.). The total number of students who have taken a class with me during that time period is 250. Being in a position to affect the lives of so many people, to instill in them the love of mathematics, to nurture their skills and abilities, and to guide them on a path toward a rich and fulfilling intellectual life is a great privilege, but also a tremendous responsibility. Effective teaching strategies can motivate students to reach their full potential and cultivate a lifelong interest in mathematics; mistakes may have the opposite effect. That is why I continuously strive to improve my teaching, trying to identify the greatest challenges I face and the best ways to overcome them. In the following pages, I shall discuss some of the educational solutions I have implemented over the years.

2. Undergraduate teaching

I have taught three different undergraduate courses at Georgia Tech: *Introduction to Graph Theory*, MATH 4022 (twice), *Combinatorial Analysis*, MATH 4032, and *Applied Combinatorics*, MATH 3012. (I am not counting undergraduate research here, which I will say a few words about later). Two of these, MATH 3012 and MATH 4022, are large classes taken by students with very diverse backgrounds. Therefore, it is important to adapt my teaching style in a way that makes the learning experience productive for students with different levels of preparation, different amounts of prior experience in mathematics, and different overall educational goals. How do I make sure that everyone takes something away from a class, without leaving the less-prepared students behind or making the better-prepared ones feel like their time has been wasted? How do I appeal simultaneously to students majoring in mathematics, computer science, engineering, and other subjects? Here are some strategies that I have come up with that help me achieve these aims.

- *Have clear educational objectives in mind, and remember: they may be different for each student.* Some students in the class need to learn enough advanced material to get ready for graduate school; for others, what’s important is to master the basics such as proofs by contradiction or mathematical

induction. The course material should therefore be designed in a way that makes it possible for every student to reach their own educational goals—even if those goals vary.

- *Interact with students directly—and face-to-face—as much as possible.* I would not be able to help a student attain their goals if I don't know what their goals are, and the only way for me to find that out is by interacting with the student directly. Naturally, I try to create various opportunities for such direct interactions. This can be a difficult task in a course with many students, but I have several approaches I use that work well even when the course enrollment is high.

First, I very strongly encourage students to ask questions and, more generally, talk to me in class. A large part of my typical lecture proceeds in the form of a dialogue between me and the students. One thing I found really useful is asking what I call “test-your-intuition” questions. These are questions where the students need to give their best guess for an answer, without having to justify it in any way. For example, I often ask this when introducing the basics of probability:

A fair coin is tossed a million times. What is your best guess for the probability that the coin is heads between 49% and 51% of the time?

In the ensuing discussion, the students usually divide into camps: some say the probability should be small-ish, maybe about 0.1% or 1%; some say it's about 50%, some that it's roughly 90% or even 99.9%. When I finally reveal that the answer is roughly $1 - 10^{-87}$ (a number so absurdly close to 100% nobody ever guesses anything like it), the students are understandably surprised, even shocked. And because they have thought about the question first, this feeling of surprise will stay with them for a long time and will help them internalize the concept of concentration of probability much better than if I just stated the correct answer right away. Additionally, because the whole exercise really feels like a game, and because there are no penalties for wrong answers, such experiences help engage the students who would otherwise be too shy or apprehensive to speak up.

Second, I tend to hold long office hours and encourage students to attend. Moreover, I normally continue answering the students' questions even after the scheduled office hour time. This is especially important for high-enrollment courses, where it takes a lot of time to be able to speak with every student individually. And oftentimes, after all the questions directly related to the course material have been resolved, there are still a few students left who just want to chat about math. Sometimes they ask questions about the experience of being a mathematician, some because they are considering a career in mathematics, some just because they are curious about “what it's like.” Sometimes they ask for reading suggestions or to help them decide what courses they should take next. Sometimes they come up with their own problems, or they want to know how the current course material is related to what they have learned in their other classes. For example, one of the students in my *Graph Theory* class in the fall of 2022 was taking *Abstract Algebra* at the same time. It just so happened that I was introducing graph homomorphisms in the same week as the instructor for the other class was covering group homomorphisms. The student was curious if there was any relation between these two notions—so I gave him and the other students who were present an impromptu lecture on universal algebra. I find it incredibly important to stimulate the students' curiosity and engagement in this way, and I feel that this part of my work provides an excellent opportunity to spread my passion for mathematics and nurture a similar passion in students.

Third, I encourage students to use Piazza to ask questions. I find Piazza to be an extremely effective tool, for two main reasons. On the one hand, if a question is asked on Piazza, it will be visible to everyone in the class, which means that by answering it, I am helping everyone and not just the one student who asked the question. On the other hand, sometimes a question is answered by another student, which is a valuable outcome both for the person who asked the question and for the one who answered it. In this way, using Piazza encourages collaboration and fosters a sense of community among students.

- *Provide appropriate feedback and assistance.* Depending on the student's background and their educational objectives, they may need different forms of guidance to find their way through the

course material. For example, when a student asks me for help on a homework assignment, I would give them different suggestions or hints depending on their current standing in the class, their overall level of preparation, and other educational factors. For some students, it may be extremely valuable to think through the problem on their own and try to arrive at a solution with what they already know, without any extra help. For others, the main learning experience should involve applying the course material in a somewhat unfamiliar, but still “safe” environment; I would point such a student to the specific parts of the lectures where similar material has been covered and suggest what approach they should try. Yet other students still lack a solid grasp of the basics of the material, so I would guide them through the solution more directly, or maybe even present to them a complete solution of a different but analogous problem as a sort of “road map.” The outcome of this strategy is that each student learns something useful to them, which is exactly what I am trying to achieve.

- *Under no circumstances underestimate the students!* Some of the most remarkable educational successes I had involved students who started off struggling but managed to grow by leaps and bounds during the semester. For example, I wrote a recommendation letter for graduate school applications for one of the students who took *Graph Theory* with me in the fall of 2020. Her final grade was a C, so it may seem strange that she asked me to write a letter for her. She did so because both of us knew how much of an accomplishment that C represented. The student started off way behind most of her peers, but by the end of the semester it became clear to me that she could have easily had an academic career in mathematics—if only she had been given enough encouragement to study mathematics earlier! What is also important to note regarding this example is that the student herself did not initially think she had any mathematical talent. This illustrates a general trend: students often tend to underestimate their ability; but we as educators have no right to do so. On the contrary, we must aim to unlock the students’ potential and help them realize they have what it takes to succeed, both academically and in their lives after graduation.

- *Connect the course material with recent scientific breakthroughs.* One thing that improves the learning experience of students of all backgrounds is knowing that the material they are studying is relevant and important. Mathematics is an ancient discipline, and sometimes it may be difficult for students to see how much value knowledge obtained decades or even centuries ago can hold today. That is why I endeavor to include in my lectures connections between the course material and cutting-edge contemporary research (including some that is performed here at Georgia Tech!). For example, after describing an important theory, I may pull up an [arXiv](#) preprint from just a few months (or in one case, only two days) ago that contains some new work building upon that theory. This way, the students can clearly see that the subject they are learning is still very much alive and of genuine interest. For the same reason, I try to pepper my lectures with open problems, indicating how the subject may develop in the future.

The success of my approach is perhaps best evidenced by a selection of student testimonials:

(MATH 4022, Fall 2020) The lectures were really engaging and overall I loved the material. Additionally, assignments really forced you to think deeply about theorems taught in class, and I thought the exams were very fair. I especially liked how as a CS major with little formal proof background, I was able to succeed in this class because of the instructor’s emphasis on concepts (and having the right picture in your head) and not formal proof writing.

(MATH 4022, Fall 2020) YOU LISTENED TO THE STUDENTS. I cannot stress enough how awesome it was that you really took into account student feedback especially during such a stressful semester. You helped us out on homeworks, while not bending too much to our will. I appreciated all the help and feedback as the semester went on.

(MATH 4032, Spring 2021) The lectures were phenomenal.

(MATH 4032, Spring 2021) Professor Bernshteyn was an amazing lecturer! His passion for all the topics we covered came across very clearly, and his upbeat attitude about it all made attending and watching lectures very enjoyable. Plus, the way he explained it, including numerous examples and follow-up remarks, was extremely helpful. I never once touched the textbook (though maybe if I did it would have helped a bit), but it didn't seem like I needed to since lecture was just so immersive. He never talked down to students and answered simple and complex questions very well, from complex combinatorics questions to basic questions about the contrapositive in proofs.

(MATH 3012, Fall 2022) The lectures were amazing. I have learned an incredible amount about combinatorics and understood proofs that I never dreamed of being able to understand or even know. The energy and pure love of math that is brought to this course everyday by the professor is awesome. I loved it, I thought the homeworks were really cool and clever once you figured out the "trick" to each problem. Though the amount of time to find the "trick" to each problem was a lot. The midterms also were very difficult but it was nice the amount of partial credit given to each problem.

(MATH 3012, Fall 2022) Professor Bernshteyn was a really great lecturer. He did a great job breaking down concepts and teaching them to us step by step, asking us questions along the way to prompt us to think about certain things, and guiding us towards discovery. He was really enthusiastic about the material, always with a smile on his face, and the lectures themselves were enjoyable.

(MATH 3012, Fall 2022) His energy and love of combinatorics. He is positively brilliant and has so much knowledge about the course subject. I do not think I have ever had such a passionate mathematics professor.

(MATH 3012, Fall 2022) He did not skip over topics that might have seemed simple - in other words, he always gave the proper background knowledge needed even if most of us had learned it already in another class.

(MATH 4022, Fall 2022) I loved how the homeworks were so hard at first but then at the end of the semester going back to look at them after having learned so much and realising they weren't bad at all. Lectures were awesome too, vibes were impeccable.

(MATH 4022, Fall 2022) THE HOMEWORKS WERE AMAZING

(MATH 4022, Fall 2022) Anton was always extremely excited about the material and tried to engage students, making lectures the most enjoyable part of the course. Anton was also frequently available for help during weekly office hours, where he would often stay after the end of the office hours to continue helping students.

(MATH 4022, Fall 2022) He clearly is very passionate and knowledgeable about his subject. His willingness to go along with wacky/out-of-the-box proofs that students would bring up in class was also very impressive.

3. Graduate teaching and mentoring

Not including the current semester, I have taught two graduate courses at Georgia Tech: *Probabilistic Combinatorics*, MATH 7018 and *Special Topics*, MATH 8803. I have also been teaching the graduate reading course (MATH 8900) during all but my first semester at Georgia Tech. Due to my research interests, I interact most with the students who are studying discrete mathematics and related areas (although there were, for example, some geometric group theorists in my *Special Topics* class). *Probabilistic Combinatorics* is a required course for students specializing in discrete math, so my goal when teaching it was to give them a solid background and a large collection of useful tools

for their future research work. MATH 8803 is a topics course, and when I taught it, the topic was “Descriptive Combinatorics,” which is an area of mathematics I work in that has been growing rapidly in the past decade. One of my goals for that course was to develop an approach that allows efficiently introducing the basics of descriptive combinatorics to junior researchers with a background in discrete mathematics. The outcome was very successful, as the following testimonial confirms:

(MATH 8033, Fall 2021) One, if not the, best professor I’ve had. Absolutely made me love the course. Professor Bernshteyn was very enthusiastic, which made the course very fun. He excelled at taking something that was complicated and making it simple.

The students in that course helped me a lot in shaping how I present this material. I have recently published an expository article¹ in the *Notices of the AMS* about this subject, and the approach there was strongly influenced by my discussions with the students in that course.

Another important educational activity is mentoring. I am currently advising three PhD students. All three have passed their comprehensive exams (both written and oral) and are now thoroughly immersed in their research work. In particular, they have presented their results at a number of conferences across the US. In addition to the students directly supervised by me, I have also been involved in research projects and reading groups with other PhD students at Georgia Tech and at other institutions, both in mathematics and in computer science. In particular, I ran a reading group on descriptive set theory in the spring and fall semesters of 2021 (listed as MATH 8900) that was regularly attended by 5 students.

4. Undergraduate research

I am deeply involved in undergraduate research. I have supervised undergraduate research projects every summer since 2019, and have worked directly with 14 undergraduate researchers to date. As mentioned in the introduction, I like to encourage students who take my regular courses to participate in research work. As a result, I have supervised research projects with 4 undergraduate Georgia Tech students, all of whom have taken a class with me before. With three of them, I ran a summer research group in 2021, which resulted in a paper that has recently been accepted for publication in the *Journal of Combinatorial Theory, Series B* (one of the most prestigious journals in discrete mathematics). For the other student I was a BSc thesis supervisor. The student has now graduated from Georgia Tech and is working on his PhD degree in mathematics at the University of Illinois Urbana–Champaign.

A feature of the School of Mathematics at Georgia Tech that I really enjoy is the yearly federally funded Research Experiences for Undergraduates (REU) program. As part of this program, I supervised a research group in the summer of 2022. My group consisted of 5 outstanding students from different institutions who worked on two separate projects. I find being able to inspire and guide students not only from Georgia Tech, but from all over the country in this way immensely fulfilling, and plan to continue doing so in the future.

Undergraduate research presents a set of unique educational challenges, and it was necessary for me to find ways of addressing them. To make meaningful research contributions, students need to acquire a considerable amount of background knowledge in their chosen area; moreover, they need to do so in a short amount of time. The solution I found is to create problem sets that guide the students toward discovering the necessary background on their own. This way, the students start their research activity while still in the process of learning the background. Furthermore, they get valuable problem-solving practice. This approach has been so successful, I have started supplementing lectures with worksheets in my regular classes, giving the students the ability to “learn by doing” and take a more active role in their own learning process.

¹A. Bernshteyn. Descriptive combinatorics and distributed algorithms. *Notices of the American Mathematical Society*, Feature Article, 69 (9), 2022, 1496–1507.

February 6, 2023

Nomination for Anton Bernshteyn, for the CTL/BP Junior Faculty Teaching Excellence Award

Dear Awards Selection Committee:

It is a privilege and pleasure to write a letter of support for Professor Anton Bernshteyn, for the CTL/BP Junior Faculty Teaching Excellence Award.

As Director of Graduate Studies, I heard many unsolicited comments from graduate students in the School of Mathematics about Professor Bernshteyn's excellent teaching and how they benefited from his classes. I visited Professor Bernshteyn's classroom twice, and was deeply impressed by his lectures which were extremely well prepared and flawlessly delivered. I was not surprised to hear from two undergraduate students (IE major and CS major) that they added mathematics as their second major after taking a class (MATH 3012) from Professor Bernshteyn.

Professor Bernshteyn began his teaching at Georgia Tech in Fall 2020 and taught the following courses: MATH 8803 (Topics course, Fall 2021), MATH 7018 (Spring 2022), MATH 4022 (Fall 2020 and Fall 2022), MATH 4032 (Spring 2021), and MATH 3012 (Fall 2022). The two graduate level courses were designed primarily for students in the PhD program in Mathematics and the interdisciplinary PhD program in Algorithms, Combinatorics, and Optimization, but they also attracted graduate students and advanced undergraduate students from all over the campus. Professor Bernshteyn provided background and useful tools that might be useful for those students in their future work. As a result, several students have started doing their doctoral thesis research with Professor Bernshteyn.

MATH 4032 and MATH 4022 are core courses for the undergraduate program in mathematics, and MATH 3012 is a service course which is required for CS majors and serves as a prerequisite to MATH 4032 and MATH 4022. Students in those classes have different backgrounds and preparations. Professor Bernshteyn strived to meet the educational goals of all students. He held long office hours for students, and provided hints and suggestions to students depending on their background and understanding of the course material. I visited his MATH 4022 class in Fall 2020, and his MATH 3012 class in Fall 2022. During both lectures, Professor Bernshteyn had extensive dialogue with his students, asking questions at various levels to help students develop the right intuition of the subject and feel comfortable with rigorous mathematical arguments. Professor Bernshteyn has the remarkable ability to structure and communicate a sequence of steps, based on students' inputs, to arrive at a solution to a problem. It was evident that even those students with less formal mathematics training benefitted from this process. Professor Bernshteyn also stayed in classroom after each lecture to answer additional questions from his students.

Professor Bernshteyn's classroom teaching is peerless, in terms of preparation, content and structure, presentation, and classroom interaction. For the two classroom visits that I made, the lectures were very well prepared and organized. This was evident from the notes he shared with the class as well as the structure of the lecture. He started by reviewing concepts (often with appropriate examples), motivated theorems and proofs with intuition, and then gave rigorous arguments. He also gave interesting applications as examples and relate the topics to materials students learned from other mathematics courses. Professor Bernshteyn was very professional throughout the lectures, pausing frequently to give students time to think and inviting students to ask questions. He often divided the proofs into a number of small steps, and students were able to come up with answers to his questions to complete those steps. Students were clearly motivated, and felt free to participate in the discussions.

Professor Bernshteyn's teaching was appreciated by his students, as can be seen from supporting letters from his students. In one Thank-a-Teacher certificate, a student wrote:

Thank you so much for teaching MATH 4032 this semester! This course was arguably one of the most rewarding courses I have taken at Georgia Tech due to the numerous concepts and applications we looked at throughout the semester. I also greatly appreciate all the steps you took to make this course in person despite the COVID-19 pandemic.

In another Thank-a-Teacher certificate, a student from his MATH 3012 class wrote:

Thank you for being the best teacher and mentor!

I also include an email I received from a student who added a mathematics major after taking MATH 3012 from Professor Bernshteyn:

Professor Yu, I am Matthew, a second-year CS and Math major. I am writing to communicate my support for Anton Bernshteyn for the Junior Faculty Teaching Excellence Award.

I was in Dr. Bernshteyn's MATH 3012 section last semester, and it was hands-down the most rewarding math class I have taken at Georgia Tech. His lectures are lively and engaging, and his passion for the material and education in general is apparent. He approached each topic from a perspective of curiosity and discovery, rather than handing down results from above. The homework and exam problems were challenging and satisfying, and I felt like my problem-solving abilities had substantially improved by the end of the semester. My experience in his class was the main reason for my decision to change my planned Math minor into a full-blown Math major. I also registered for MATH 4032 this semester because Dr. Bernshteyn so invigorated my interest in combinatorics.

I would love to see Dr. Bernshteyn's style of teaching become more prevalent in math education at Georgia Tech. For this reason, I think he should be rewarded with the Junior Faculty Teaching Excellence Award. Thank you, Matthew Spillman.

In summary, Professor Bernshteyn has been an outstanding and extremely effective instructor. His teaching and mentoring has already had an impact on a large number of students at Georgia Tech. Professor Bernshteyn fully deserves the CTL/BP Junior Faculty Teaching Excellence Award!

Sincerely,



Xingxing Yu
Professor & Director of Graduate Studies
School of Mathematics

Dear Members of the Award Selection Committee,

It is with great honor and utmost pleasure that I write this letter recommending Dr. Anton Bernshteyn for the CTL/BP Junior Faculty Teaching Excellence Award. I have had the privilege of taking two classes with Dr. Bernshteyn in the penultimate year of my undergraduate studies - Math 4022 (Introduction to Graph Theory) in the Fall 2020 semester and Math 4032 (Combinatorial Analysis) in the Spring 2021 semester. Additionally, I have had the wonderful opportunity to work with Dr. Bernshteyn in a research setting throughout my final year as an undergraduate, during which I completed my senior thesis under his supervision. Dr. Bernshteyn is extremely enthusiastic about mathematics, especially combinatorics, and possesses a particular knack for conveying, with ease, the mathematical intuition behind seemingly complicated ideas. He has been a role model and an absolute inspiration for me, both in developing a vibrant perception of and passion for combinatorics and mathematics in general, as well as in pursuing mathematics further, leading up to where I am today.

During the Fall 2020 semester, due to the COVID-19 pandemic, classes were moved to an online format with virtual participation. Despite looming questions regarding the efficacy of classes conducted in this format that many college students and professors had at the time, Dr. Bernshteyn made the best of the given situation, developing an invaluable course component which I had not encountered before. Namely, he held regular “homework presentations” via Zoom during which, instead of just discussing solutions, he made the sessions feel more like focused, extended office hours. More specifically, he used a thoughtful sequence of questions paired with hints to lead us to proofs of homework problems collaboratively, inducing in us the confidence that arriving at the solution was more natural than it was ad hoc (as many ideas in combinatorics may seem). This highlights one of his biggest strengths as a professor - the ability to structure and communicate a chain of steps using, primarily, the students’ own input in order to produce a proof.

Such an approach to teaching demystified, to a large extent, the origin of certain approaches to problems that may have seemed somewhat random initially. Personally, I began to develop an intuitive feel for how to navigate selected classes of problems, building up a toolbox of methods to apply when trying to solve new problems. In a similar spirit, Dr. Bernshteyn’s lectures were also crucial to reinforcing our understanding of the material. Proofs given during lecture were accompanied with several descriptive, hand-drawn pictures which were immensely helpful to keep in mind, both in developing intuition and, as I found as time went on, in quickly recalling and reconstructing arguments from memory. Moreover, Dr. Bernshteyn made each lecture as self-contained as possible, assuming a minimal amount of background and encouraging questions at each step in order to ensure that we could follow along. As was the case with his homework presentations, he also strategically posed questions at important points within proofs of major theorems and lemmas, so that we could carve our way to their completion; Dr. Bernshteyn showed that, more crucial to a deeper understanding of mathematics, was *the ability to ask the right questions*. The problem solving aspect was of paramount importance - questions were more of the form “what should we *expect* here?” or “why might induction not work?”, than “which of the lemmas from the previous class should we use?”.

Given the circumstances of the world at the time, Dr. Bernshteyn acknowledged that some students may not be able to attend class or the homework presentations regularly - in response to this, he not only recorded every lecture and homework session, but also published written lecture notes as well as homework notes online, alongside a class diary describing what material was covered in each class. His commitment to our success followed into the Spring 2021 semester as well. With the delivery method of many classes being listed as “in-person,” a mode that did

not prescribe any required online component or accommodations, many students returned to campus. However, unfortunately, I was not able to do so. Dr. Bernshteyn's Math 4032 class was also listed as having the "in-person" delivery method - although I was not on campus at the time, I still wanted to ask if it was at all possible to accommodate me as a remote student. To my excitement, he readily agreed, and he continued to post notes and recordings of his lectures and homework presentations online. Additionally, he allowed for a hybrid approach by distributing a Zoom link so that students who could not attend the class in-person could still attend virtually, thus live-streaming each of his lectures, even when it was not required to make such accommodations. In my case, he even arranged for a proctor so that I could take exams remotely via Microsoft Teams without the hassle of dealing with online proctoring software. This reflects Dr. Bernshteyn's unwavering commitment to ensuring that those eager to participate and learn have the unobstructed opportunity to do so.

In conclusion, Dr. Bernshteyn establishes an incredibly high pedagogical standard - one far above that of most, if not all, professors I have interacted with. He has the greatest dedication to students' success and understanding, and his style of teaching and communication makes complex ideas seem tangible and intuitive. Moreover, Dr. Bernshteyn's teaching inspires a deep curiosity and admiration for mathematics, due in large part to his tremendous passion for the subject alongside a unique inquiry-driven approach. I have the greatest respect for Dr. Bernshteyn - as a professor, a mentor, and an incredibly effective communicator of mathematics. He has played a massive role in inspiring me to pursue research mathematics, and I cannot be grateful enough for the influence he has had on my mathematical maturation and growth. Thus, I strongly believe that Dr. Bernshteyn is deserving of the CTL/BP Junior Faculty Teaching Excellence Award.

Sincerely,

A handwritten signature in black ink, appearing to read "Aaditya Raghavan". The signature is fluid and cursive, with the first name being the most prominent.

Aaditya Raghavan
ar58@illinois.edu

Dear Members of the Selection Committee,

I am writing to highly recommend Professor Anton Bernshteyn for the CLT/BP Junior Faculty Teaching Excellence Award. I met Professor Bernshteyn in Fall of 2022 when I had the honor to have him as an instructor for MATH 3012. His teaching approach and passion have forever changed the way I see and understand math.

Professor Bernshteyn has a unique ability to make complex mathematical concepts understandable and accessible to all students. He is deeply knowledgeable and enthusiastic about the subject matter, and his energy can be felt throughout every moment of the lesson. He encourages active participation and fosters a collaborative learning environment where students feel comfortable asking questions and discussing ideas. Professor Bernshteyn also excels at organizing course material and notes. He takes great care in structuring lessons and presentations in a logical and cohesive manner, making it easy for students to understand and follow along. He uses a variety of teaching methods such as visual aids and examples, which helped me grasp the concepts more effectively. His notes are detailed, well-organized, and easy to read, which made studying for exams and understanding complex concepts much more manageable. Additional resources, such as reading materials, which were provided during lessons also helped me deepen my understanding of the subject.

In addition to that, Professor Bernshteyn has a thorough understanding of the subject and is actively involved in contemporary research. Being up-to-date with the latest developments in the field, he brings this expertise to the classroom by revealing the bigger picture to the students. Professor Bernshteyn never lets the discussion run stale, and consistently challenges his students to think outside the box and push beyond their comfort zones. This was most evident in the challenging problem sets that required students to apply what they have learned in new and creative ways. Professor Bernshteyn is not only a good teacher but also a great mentor. He is always willing to meet with students outside of class and is dedicated to ensuring their success. He readily invited me to a private meeting where he shared great insight and helped me navigate my academic and career goals.

In conclusion, I truly believe that Professor Bernshteyn deserves full recognition for his amazing teaching and personal qualities. He is a true master of his craft and has made a lasting impact on my education and my future career aspirations.

Sincerely,

Daniel Savrasov
Georgia Institute of Technology
2nd year Undergraduate, Computer Science

February 7, 2023

Esteemed Awards Committee,

I am honored to write in support of Professor Anton Bernshteyn for the CTL/BP Junior Faculty Teaching Excellence Award. I am a second year Industrial Engineering and Math double major who took Bernshteyn's section of MATH 3012, Applied Combinatorics, in Fall 2022. I have taken many math courses here, but this is one that I enjoyed the most, due to Professor Bernshteyn's enthusiasm when teaching and the way he tackles problems in a much more analytical approach.

While my friends in other sections of the same class told me about how they were learning more basic counting principles, Professor Bernshteyn was able to teach us the basics and walk us through some examples relatively quickly and spend more time covering more advanced topics related to the course such as introducing us to generating functions. While such concepts seemed intimidating at first, the professor's analytical approach helped make them much easier to understand. He showed us how to break down more complicated and nontrivial examples into smaller parts that weren't as challenging, then showed us the connections between all the parts and concepts to bring them back together to gain a rigorous understanding of the more advanced concepts and the methods to solving problems related to them. Exposure to such high-level topics in the course made learning and understanding new material very rewarding for me.

Compared with other core math classes, MATH 3012 is very different and also considered to be professor dependent by many students. Those who take the class usually have never experienced topics or problem-solving methods similar to the ones introduced in this class. However, Professor Bernshteyn had a very enthusiastic attitude during lectures and always encouraged students to interact more with the math. It was not hard to follow along with him and stay focused in his class, and he was often willing to walk through multiple solutions for in-class example problems so that students would have a way to find how they could understand the material the best. In class, he would always give us good opportunities to speak up, ask questions about anything that seemed unclear, and be engaged with the course so that we would have a good understanding. He also had very good challenge problems to offer when some of us wanted more practice problems at his office hours as a way to prepare for exams. He was very patient when helping students who needed assistance. Because of his drive for teaching and student learning, even though I had some background knowledge of combinatorics, I ended up being exposed to and learning as many new topics as I did in other math courses where I had much less prior knowledge.

Professor Bernshteyn's teaching gave me a new understanding of combinatorics and discrete math, and I would be happy to take another of his courses in the future. Because of his class, I decided that I wanted to add math as a second major to pursue the discrete math concentration. I believe that Professor Bernshteyn makes an excellent candidate for this award and hope that his way of teaching can inspire everyone at Georgia Tech.

Sincerely,

Lawrence Zhou
Industrial Engineering | Mathematics
Georgia Institute of Technology

Anton Bernshteyn

Thank you for being an excellent teacher!

In appreciation of your teaching style and dedication to helping students learn in

*Mathematics 4032
April 27, 2021*

Georgia Tech Center for
Teaching and Learning

2020 Thank a Teacher Program Award Recipient

Joyce Weinsheimer

Joyce Weinsheimer, Ed.D., Director of CTL

Thank a Teacher Note

To: Anton Bernshteyn

From: Dhruva Bansal

Date: April 27, 2021

Course Title: Mathematics 4032

Semester/Year: Spring 2021

Note:

Thank you so much for teaching MATH 4032 this semester! This course was arguably one of the most rewarding courses I have taken at Georgia Tech due to the numerous concepts and applications we looked at throughout the semester. I also greatly appreciate all the steps you took to make this course in person despite the COVID-19 pandemic.

Anton Bernshteyn

Thank you for being excellent teacher

In appreciation of your teaching style and dedication to helping students learn in

Mathematics 3012
December 01, 2022

2022 Thank a Teacher Program



Center for
Teaching and Learning

Thank a Teacher

To: Anton Bernshteyn

From: Daniel Savrasov

Date: December 01, 2022

Course Title: Mathematics 3012

Semester/Year: Fall 2022

Note:

Thank you for being the best teacher and mentor!



Center for
Teaching and Learning