

MATH EM@TICS

“All the ν 's fit to print”

Department of Mathematics | Ithaca College
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ν_0 : From the Desk of the Chair

As the vestiges of summer drift into the clouds above Cayuga Lake, I want to take a moment to acknowledge some transitions. We welcome our new math majors and say auf wiedersehen to Professor Jim Conklin who retired in May after 37 years of dedicated teaching. We thank former chair, Tom Pfaff, for working tirelessly over the past three years as department chair to lead us towards the next quarter century at Ithaca College.

I have been in the math department at Ithaca College since 2013 and made my way here by way of the University of Colorado and a career in options trading in Chicago. As the new chair of the department, I have big shoes to fill; my job is made much easier by the support I receive from our administrative assistant, Jill Ackerman, and our faculty and alumni. I am excited to work for our students, alongside our faculty, with the support of alumni.

As mentioned in the last newsletter, but worth re-

iterating here, the math student research endowment continues to grow. We can partially support student travel to national math conferences. We were able to send Earth Sonrod to the Joint Mathematics Meetings. There, he presented the poster "Some results on Integral Transforms of Dawson's Integral," research completed with faculty mentor Osman Yürekli. This would not have been possible without your generosity. As mentioned by Tom Pfaff in the previous newsletter, the endowment is on its way towards the goal of \$100,000. We are grateful to all of our donors. Thank you.

Keep reading to learn more about alumni, student, and faculty updates, and opportunities for students this semester. Wherever you are, I wish you transitions full of promise. Feel free to send me a note at mathchair@ithaca.edu and share with me what's on your mind. I look forward to hearing from you.

Ted Galanthay, chair

ν_1 : From the Math Club

At the first Math Club meeting of the semester, we discussed potential future events and enjoyed solving math-based puzzles. Upcoming meetings will include a variety of engaging activities: Origami Night, where we'll explore the mathematical principles behind paper folding; Puzzle Night, where members will bring their own puzzles for others to solve; Cookie Decorating and Snowflake Making, a festive event planned closer to finals; and Board Game Night, with the possibility of having two sessions in the fall semester. Additionally, we have scheduled a picnic for September 15th from 12 PM to 4 PM, promising a fun-filled afternoon outdoors.



— Kyler Lester, Secretary

Math Picnic



Sunday 9/15, 12-4 PM

Meyers Park

The Math Club is planning a picnic! Enjoy a fun-filled afternoon outdoors with fellow students and math professors. More information and sign-ups [here](#).

ν_3 : Alumni Spotlight

This issue continues our interviews with IC math alumni. If you are a current or future student, we hope these will give you some perspective on your studies at IC and some inspiration for the future. If you are an alum yourself, we hope these give you a chance to reconnect or further connect with other IC math alumni. (Also, we'd love to interview you! Please email the chair at mathchair@ithaca.edu if this is something you might be interested in.) We hope you enjoy hearing below from Sam Factor '19 and Jonathan Mack '06.

Interview with Sam Factor



EW: Hi, Sam. Welcome “back” to IC! (This interview is conducted by email, so the reunion is digital and asynchronous. . .) When did you graduate?

SF: 2019, with a double major in mathematics and applied psychology. I actually changed my majors around 6 different times. I still have a great interest in psychology, especially with how it relates to game theory, marketing, and day-to-day life.

EW: What do you do now? How did you get from graduation to where you are now?

SF: I am the founder, CEO, and content creator at my own startup, WalterPicks. After graduating I joined a program called *Teach For America*, which led me to teaching high school math in Chelsea, MA for two years following college. I started WalterPicks during

my second year of teaching and was able to grow the company large enough to go full-time after that.

EW: Can you tell me a little more about what *WalterPicks* is and how you came to develop it?

SF: *WalterPicks* is a fantasy football and sports betting insights app. It's called *WalterPicks* because “Walter” is the AI machine learning algorithm that powers all the insights on the platform.

The app helps with any decision you need to make with fantasy or sports betting. It's a free app that also has some features that require a premium subscription (like the ability to sync your fantasy leagues or sportsbooks for personalized insights). We've grown a lot so far, amassing over one million installs and reaching as high as #3 in the sports app rankings.

WalterPicks is the fusion of three of my favorite things: math, sports, and content creation.

EW: What have you found most challenging about starting your own business? What have you found most rewarding?

SF: There are a lot of very challenging aspects to starting your own business, which is why the vast majority of businesses fail within the first few years.

For me personally, I think the hardest thing has been finding a good work/life balance. With such a small team, there is always an endless amount of work that can be done and it's often quite difficult to make time for important things outside of work, like family and friends. Especially because we are a fully remote

company and I work from home, that often materializes as living at work. Fortunately I enjoy most of the work I am doing, but finding time for things outside of work is still something I am trying to improve on.

The most rewarding part of starting my own business has been the relationships I've built with colleagues and the role I've gotten to play in many people's career journeys. We have had part time members of our team go on to work full time at major companies like NBC, FanDuel, DraftKings, Sleeper, MLB Network, NHL Network, and more.

I've also learned so much about so many different domains which has been extremely rewarding.

EW: *Do you have a favorite memory as a math major at IC?*

SF: I have many favorite memories as a math major at IC. One of my favorite memories is simply hanging out in the math room lounge with my fellow math majors, many of which I am still close friends with today.

Another favorite memory is my frequent visits to the office hours for each of my professors. This may sound like a very nerdy favorite memory, but it was at office hours that I really got to know my professors and where so much of my learning really took place.

EW: *In terms of intellectual intrigue and growth, is there a math course you took at IC that stands out?*

SF: I actually was not a math major when I first came to IC, and it was my Calculus I class with Teresa (Moore) that convinced me to become a math major. The other classes that stand out to me looking back were Linear Algebra (with Ted Galanthay) and Statistics (with Jim Conklin). In my senior year I also did an independent study with Jim, where we applied different statistical analysis specifically to fantasy football. Looking back I am incredibly grateful I had the opportunity to apply what I was learning to my niche/nerdy interests; it ended up playing a major role in my career journey.

EW: *What was your favorite non-math course at IC? Why?*

SF: My Machine Learning Class with Doug Turnbull (even though I would argue this is a math class, it is technically a computer science class). This was the most challenging class I ever took because I had no prior coding experience. I was able to do my final project on applying machine learning to fantasy football; and this is also the class where I met my future co-founder Dylan Shane, who I have learned so much

from and is now one of my best friends.

My other favorite non-math course was the Introduction to Singing class I took my Junior year. I was the only person in this class with no prior singing experience, and I was (and still am) definitely not good at singing. But this class helped me get out of my comfort zone and made me a much better public speaker.

Join a COMAP Team!

Are you interested in applying math collaboratively to solve a real-world problem? Or learning how to delegate effectively and improving your time-management skills?



Join an IC team to compete in the **COMAP Mathematical Contest in Modeling** and use your talents and skills to collaboratively solve one of six interesting, open-ended problems.

- Weekly training begins in September. The competition takes place in January.
- Any student whose taken two math classes can join.
- Contact advisor Ted Galanthay (tgalanthay@ithaca.edu) to get involved!

EW: *What other interests (e.g., another major/minor, team or club, etc.) did you engage in at IC?*

SF: I played on the Men's Soccer team during my time at Ithaca and was the captain for two seasons. I was also a President's host (AKA tour guide), and I helped out as a math tutor in the math help room too.

EW: *Any advice for student-athletes?*

SF: My biggest piece of advice for student athletes is to focus on what they can control: Things like effort and having a positive influence on their teammates and to try not to sweat what they can't control: Coaching decisions, a bad play, a bad ref, etc.

EW: *What advice would you have for a current student interested in doing what you do now?*

SF: If you want to start your own startup: My biggest piece of advice is to choose your co-founders wisely. You will spend a tremendous amount of time with your co-founders and they will play a major role in your success or failure.

Try to go as long as possible with raising as little money as possible, this will force your company to prioritize sustainable profitability from day one. Also, don't underestimate the importance of marketing. There are tons of great products out there that nobody knows about because of a lack of successful marketing.

My biggest advice to students in general is, if you don't know what you want to do as a career yet, spend time trying different things to figure out what you want to do. Figuring out what you don't want to do is also progress in the right direction. Then, when you figure out what you want to do, go do it! Network as much as possible with other people already doing the thing you want to do.

Interview with Jonathan Mack

EW: Hi, Jonathan. Welcome "back" to IC! (This interview is conducted by email, so the reunion is digital and asynchronous. . .) When did you graduate?

JDM: Thank you, Emilie! I'm glad to be here!

EW: When did you graduate? In addition to your math major, did you have any other majors or minors?

JDM: I graduated back in May 2006, with a combined major of Mathematics and Computer Science, and a minor in music.

EW: What do you do now? How did you get from graduation to where you are now?

JDM: Currently, I work in an integrated role that combines program management, cost/financial management, and planning for a major defense contractor. Ultimately, I help ensure that our civil, federal, and international customers receive earned value for every dollar spent in accordance with the contract's budget, schedule, requirements, and mission success. Ithaca College provided me with the three most critical elements that simplified my transition from college into career: Career Services, Collegiate Science and Technology Entry Program (CSTEP), and our IC professors and staff! The below bullets summarize how they helped me secure my successful career.

- **Career Services:** It radically improved my confidence since they trained me to be effectively efficient in cover letters, resumes, interviews, job discovery, and even more!
- **Collegiate Science and Technology Entry Program (CSTEP):** It provided me with the highest paid internships on-campus, paid for multiple



research projects AND exciting trips. Due to this experience and CSTEP's connection with INROADS, I received two INROADS internships with the Lockheed Martin Corporation, and I have been employed with them ever since.

- **IC Professors and Staff:** All programs, support, events, experiences, mentorship, and camaraderie come down to the people. I had math professors who gave me multiple chances to be better in difficult subjects (Dr. Thomas Pfaff), professors who believed that I could succeed as a mathematician (Dr. David Brown), etc. And I can go on and on about how the staff from the Office of Multicultural Affairs (i.e., IAP, MLK Scholars, BIPOC Unity Center, etc.) to the provost listened and advised me. The IC staff and professors help create the culture where student community thrives! IC gives students the tools and confidence to become world renowned.

EW: What kinds of skills do you use in your job? How has being a math major at IC helped you in your career?

JDM: I believe math should come with the following tagline:

"Despite what others may think: You'll thank your math teachers later for teaching you this now."

I regularly use algebra and solving algebraic functions to find the cost for a given item with given variables. I was even so excited when I had to "solve for equations" to derive a budget spread for multiple program accounts! With my statistical calculus, I had to explain how R^2 slopes relate as a best-in-breed estimating practice for our department . . . to a pricing compliance auditor. As you can see, math degrees are critical in business, finance, technology, program management, and need I say any more? Mathematics is a tool, and it can be leveraged as a career advantage when you can explain it simply to

a non-mathematical person.

EW: Do you have a favorite memory as a math major at IC?

JDM: My most favorite memory was when Dr. Brown and I were able to get our Mandelbrot sets and complex numbers to plot correctly on the computer screen! It was a miracle [in my head] to get that computer working. . . try after try, input after input, code after code, with only days before we had to submit our fellowship paper, to see it finally work! My classmates in that room thought we had just won the lottery because we were so excited! I will carry that powerful memory with me for the rest of my life.

Our Ithaca College math professors were then, and still are, to this day, dedicated – to the very end – to see you get your victory.

EW: In terms of intellectual intrigue and growth, is there a math course you took at IC that stands out?

JDM: Of course! This would be a perfect time to mention the course that I went from a failing grade of an F to a D!

And yes, I am deeply proud of that hard-earned D!

I received it in my senior year in Dr. Pfaff's Combinatorics class. I thought the linear-matrix transformations of eigenvectors were hard . . . until I was humbled again by his class. Though it is okay to fail [in the beginning], Dr. Pfaff taught me that it was unacceptable to stay that way, because I can be better. He spent an abundance of time with me, in addition to his office hours, to gradually teach me at my slower pace of learning. Talk about a patient professor with a heart of gold!

EW: What was your favorite non-math course at IC? Why?

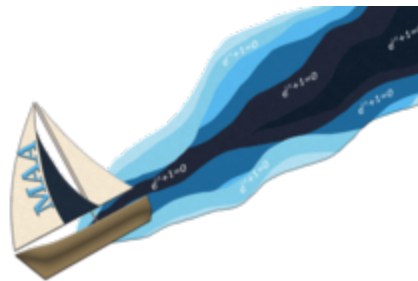
JDM: This question is too hard for me because I have so many favorites!

To pick one – I'll say my one-on-one percussion, composition and rehearsal time with Professor Gordon Stout. He is THE legendary, world-renowned percussion soloist, ensemble conductor, and composer; and his music is the standard qualifying repertoire from high school to international competitions! Moreover, to have him personally mentor me (who was not a percussion, music, or even a composition major), was one of the most impactful times in my life. Then he blew my mind away [and my socks off, too] by having the Ithaca College Percussion Ensemble perform my composition as a live recording for its world

premiere! This was a life-defining moment because Mr. Stout also surprised me even further, by having my beloved, middle-school music teacher, Yvonne Sloan, attend before her unexpected passing due to cancer. We were both in tears when she realized that the composition was dedicated to her and my music teachers.

Attend a math conference!

Join fellow students and faculty to attend the MAA-Seaway Conference!



MAA-Seaway Fall Meeting

Saturday, October 5

Rochester Institute of Technology

All students are welcome to join the group; transportation, registration, and meals will be covered. Contact Ted Galanthay (tgalanthay@ithaca.edu) to learn more.

EW: What other interests (e.g., another major/minor, team, or club, etc.) did you engage in at IC?

JDM: Ithaca College provided me the freedom to explore the various disciplines and schools via clubs, organizations, and employment. . . to the tune of over 22 separate organizations for me! I was able to be a part of the School of Business' Investment Club (and get paid), play with our school's tennis team (even when I didn't make the team), pledging to the Phi Mu Alpha Sinfonia music fraternity, play for our gospel choir, attend leadership and research conferences, compete on our competition-winning debate team, take classes in law and psychology, listen in on lectures at the Park School of Communications, complete the School of Humanities and Sciences Honors program, . . . and did I forget to mention the social justice research in Ghana I was able to do because of the Dr. Martin Luther King Scholarship Program?

In a nutshell, get out of your comfort zone! This is the time to ask, "What If?" Be curiously optimistic of the incredible potential you already possess.

If you still don't believe me, please remember this:

You are speaking to an introverted person who was held back a grade level due to neurological deficiencies in speech and listening.

Mathematics Colloquium

The math department hosts a regular colloquium. All are welcome! Stop by for a cookie, to chat, and to learn something new. Find the schedule [here](#). The first colloquium of the year is

MONDAY, September 16 at 4PM
in Williams 320

“Using math to solve real-world problems in the COMAP Mathematical and Interdisciplinary Contest in Modeling ”

Ted Galanthay and Earth Sonrod

EW: What advice would you have for a current student interested in doing what you do now?

JDM: My advice will be to challenge them as follows:

Reach out to IC alumni about the jobs you desire, or even ask your advisor for possible connections! Go to the Center for Career Exploration and Develop-

ment for resume critique and interview preparation. Practice doing things that make you uncomfortable, so that you can get comfortable with the process of “failing forward”. Remember “learning is in the doing.”

“Choose to be an Overcomer. . . because if something can’t be perfect, you can overcome it to be excellent!”
– Jonathan Mack

EW: Is there another question I should ask you?

JDM: How about this. . . name something that you wouldn’t expect a mathematics & computer science major to accomplish during or after college?

Take your pick of the following:

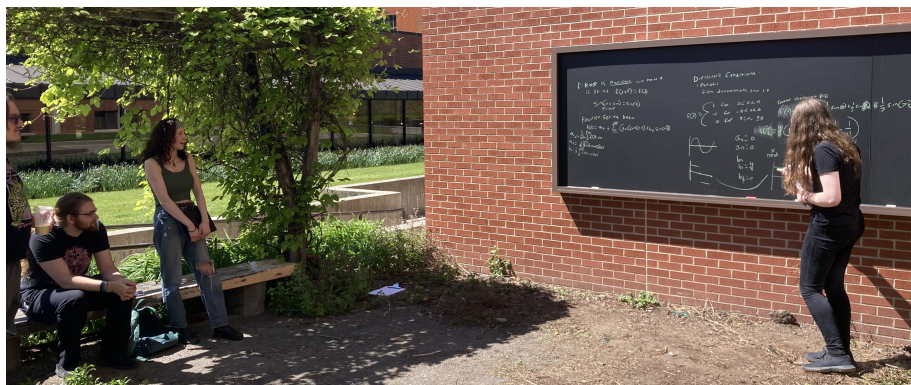
- Do a semester abroad at the University of Melbourne in Australia
- Make a CD with a grammy-award winning producer
- Become an ordained elder
- Become a certified personal fitness trainer
- Become a paid actor (or extra) in two short films on corporate ethics

The answer: I was able to accomplish all the above because Ithaca College is interdisciplinary, open, and gives you the confident freedom to Be You!

ν_4 : Summer Highlights from the Math Department

Although South Hill gets quieter over the summer, there’s still a lot happening in the math department, both on and off campus. Here are a few highlights.

The summer kicked off with the installation of an outdoor chalkboard on Williams Hall. Students were able to get in some real analysis work before the semester ended, and various math classes are venturing outside this fall. Thanks to **Tom Pfaff**, who worked to get the chalkboard installed.



Earth Sonrod '25 interned for the *US CMS Undergraduate Internship 2024*. He started with a two-week training session at Fermi National Accelerator Laboratory (below) in Illinois, where he learned technical skills necessary for the eight-week research in high

energy physics. He spent the rest of the internship working on “Reweighting NLO Samples with Negative Weights” with Prof. Christopher Palmer (Department of Physics, University of Maryland, College Park).



Joash Geteregechi attended a workshop on teaching statistics that emphasized multivariable thinking and the use of activities to make introductory and intermediate courses more engaging. Joash also received an Ithaca College AI mini grant. He used the grant to develop materials for our intermediate statistics course (MATH 246), to help students to use GitHub Copilot (a generative AI assistant for coding) to inform their coding in R. On the home front, Joash also had the opportunity to take on childcare for the summer for his two children, Morgan (5) and Tichi (6 months). One memorable challenge was Morgan sneaking into Tichi's room to wake her up, puzzled by why his baby sister needed so much sleep.

Ted Galanthay attended *MMEE2024*, a conference on mathematical models in ecology and evolution, at the University of Vienna, Austria. He presented research on the evolution of aggression in consumer-resource models and caught up with several of his collaborators. One thing he learned at the conference is that some bacteria have retractable daggers!

Megan Martinez went to Salt Lake City, UT to grade AP Research final papers in June and spent July teaching the Ithaca College HEOP Summer Institute math course for some of our incoming students. At the beginning of August, she presented on "Attainable Symmetries in Generalized Hitomezashi Patterns" (joint work with Antara Sen '22) at the *Bridges Math & Art Conference*. Her hand-stitched symmetry sampler, "Hitomezashi Wallpaper Triptych," (below) was exhibited in the *Bridges Math & Art Gallery*.



Teresa Moore spent time this summer getting ready to teach *The Symbiosis of Math and Art*. Some of the first Questions the class addresses are, "What is Math?" and "What is Art?" In exploring the distinction between art and design, she found the discussion on [EDEN Gallery](#) a useful starting point: "Designs have to solve problems, while art should provoke thought and emotions." Let her know if you have thoughts to share on the topic.

Dan Visscher participated in a one-month intensive boot camp in data science and won first place in the group project competition. His kids have never been as impressed with him as when the foot-and-a-half trophy (below) arrived in the mail!



Aaron Weinberg continued a collaboration on a research project investigating connections between features of mathematical tasks and the epistemic emotions (like surprise, curiosity, confusion, and frustration) that students experience as they work on the task. The study is in its early stages, but they hope to use their results to inform the design and implementation of mathematical tasks that support student learning. Outside of work, he tested the creative waters by writing two songs that his band (*Dad On Arrival*) is going to play at [Porchfest](#) on September 22.

Emilie Wiesner spoke at the conference *Representation Theory and Related Geometry: Progress and Prospects* at the University of Georgia. The conference was a birthday conference (that's a thing in math!) for one of her early-career mentors; it was a great chance to catch up with old colleagues and to about her work on the Virasoro algebra from the last 20 years.

Thanks to Endowment Contributors

The Math Department thanks the following individuals for donating to the math endowment or the annual fund. Your support of the math department and our current students is greatly appreciated.

Jon J. Bancone	Tyler E. Daffinee	Michael Johnson-Cramer	Mungunsuvd Terbish
David A. Brown	Carol J. Desoe	Laura M. Mansfield	Katherine E. Ulicky
Jacob Brown	Denise E. Dyer	Teresa E. Moore	Dheeraj Verma
Megan E. Brown	Patrick J. Engle	Raul Palma	Daniel Visscher
James E. Conklin	Drew H. Erskine	Pamela Pospisil	Aaron Weinberg
Lindsay-Leigh Consolati	Elizabeth K. Frank	Cameron K. Scheible	Caitlin J. Worth
John H. Cook	Ted Galanthay	Donny K. Tang	Anonymous
Kristen E. Crofoot			

ν_5 : What's the Problem... with Professor Brown

Compute the exact area enclosed by the curve given by $|x - y| + |x^2 + y| = 6$.

Send complete answers to Professor Brown at dabrown@ithaca.edu. Those submitting correct answers will have their names printed in the following newsletter. People who correctly solve all problems from Volume 4 of the newsletter will receive a special prize at the end of the year.

Solution to May's Problem

May's problem: Consider the two parabolas: $y = kx^2 + kx + 4$ and $x = ky^2 + ky + 4$ with $x \in \mathbb{R}$. Find every value of k for which the parabolas are tangent to each other. Be sure to give the exact values of k .

The curves are inverses of each other, so they have symmetry across the line $y = x$ and all intersections will occur along this line. Find the intersections:

$$x = kx^2 + kx + 4 \implies x = \frac{1 - k \pm \sqrt{k^2 - 18k + 1}}{2k}$$

The slope of the first curve is given by $\frac{dy}{dx} = 2kx + k$ and the second has slope $\frac{dy}{dx} = \frac{1}{2ky + k}$. At points of tangency (on $y = x$), the slopes are equal, so

$$2kx + k = \frac{1}{2kx + k} \implies (2kx + k)^2 = 1 \implies x = \frac{-k \pm 1}{2k}.$$

Substitute x into the first equation above to get $k^2 - 18k + 1 = 0, 4$. If $k^2 - 18k + 1 = 0$, then $k = 9 \pm 4\sqrt{5}$. If $k^2 - 18k + 1 = 4$, then $k = 9 \pm 2\sqrt{21}$.

Last year's solvers

Earth Sonrod '25 was the only solver of the May problem. Earth solved every problem last year. Congratulations!