

Mathematical Sciences

"How can it be that mathematics, being after all a product of human thought independent of experience, is so admirably adapted to the objects of reality?"

-Albert Einstein

Welcome back!!

We hope you're looking forward to the new school year. And a special welcome to our new students. This year's freshman class includes 20 math, computer science, or actuarial science majors. We look forward to getting to know you over the next four years.

Important Dates:

Sept 21:	Department pizza party
Sept 26:	Science Lecture Series
Sept 26:	Vernon Pack Lecture
Sept 30-Oct 1:	Conference at Miami U
Nov 5:	Math Day at U of Dayton

Upcoming Events

Pizza Party – September 21

Save the date! The fall pizza party will be Wednesday, September 21, at 4:00 in front of Towers Hall. All mathematics, computer science, and actuarial science majors are invited to attend. Take advantage of this opportunity to meet other students and faculty. Students should RSVP to Trish Patterson in the math office (through door 107A in Towers) by Monday, September 19.

Fall Conferences (See Terri Contenza for more info)

Sept 30 – Oct 1, Miami University: The theme of this year's annual conference is "Mathematics and Biology." This conference is for undergraduate mathematics majors and presentations will be accessible to them. There will also be several student talks. There is no registration fee for students and overnight housing may be provided.

Nov 4-5, Argonne National Laboratory: The annual symposium will feature research talks exclusively by undergraduate students in computer science, mathematics, and other sciences. Registration deadline: September 23

Nov 5, University of Dayton: Math Day speakers include Dr. Patrick Flinn from the National Security Agency. There will also be numerous student presentations.

Nov 12, James Madison University: The undergraduate math and statistics conference will feature student talks, a poster session, and panel discussions on graduate school and careers in industry. Registration deadline: October 21

Problem-Solving Seminar Offered

Math 300 is a one-credit hour seminar that meets Monday afternoons for two hours. It is generally offered every quarter. In the fall quarter, Math 300 will focus on mathematical modeling. The winter quarter offering will focus on general strategies and preparation for the ECC Mathematics Competition. In the spring quarter, Math 300 will be an introduction to mathematical research. The only prerequisite for Math 300 is a grade of B or better in Math 180 (Calculus II). Up to three (two) credit hours of Math 300 can be applied to a Math major (minor). Students in all majors are encouraged to enroll. Math majors in this year's entering class will be required to complete two quarters of Math 300 for graduation.

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“What I Did Last Summer”

Those lazy days of summer were not so lazy for many students in our department. Kevin Mugo is a junior math and computer science double major. He spent seven weeks this summer doing mathematics research at Miami University. Youyou Tao is a senior actuarial science and business administration double major. She completed an internship at Nationwide this summer. Read on to learn more about their experiences.

Kevin Mugo:

This summer, instead of lying on a beach and working on my tan, I opted to do something far more profitable and spend 7 weeks at Miami University attending the *Summer Undergraduate Mathematical Sciences Research Institute* (SUMSRI). There were many great reasons to attend SUMSRI – experience a research environment, improve my research and technical writing skills, and learn about opportunities for graduate school; but to be perfectly honest, what tipped the scales for me was the fact that the money was pretty good and there were lots of fun activities planned on the weekends.

SUMSRI was a lot more than just about doing research. I learned how to write a math paper in a mathematical writing seminar, and then actually got to write one. I spent time with a panel of graduate school recruiters and learned the ins and outs of applying to graduate school. I got to hear mathematicians and statisticians talk about their fields of research and areas of interest and about career opportunities in mathematics.

On a typical day, the morning session ran from 8-12. Half of the time was spent in either an algebraic topology or measure theory seminar – graduate level courses designed to give you a feel for graduate school; and for the other half, we split up into our particular research seminars – there were four other members in mine, as well as Dr. Goins, the seminar director. For the first three weeks he lectured exclusively on the requisite material to tackle the project – group theory, the theory of elliptic functions, projective geometry, and other special topics. From the fourth week on, the project was broken up into a sequence of mini-projects, and Dr. Goins would continually check on our progress and direct our efforts. In my research seminar, there was a strong emphasis on not only doing mathematics but also on reading and talking about it. We spent a great deal of time reading math papers and presenting them. The afternoon sessions ran from 2-6, and the time was split between the research seminar and either a mathematical writing seminar or a Math GRE seminar – the latter the source of much anguish at SUMSRI because it meant working lots and lots of problems, supplemented by plenty of in-class testing. Add to this schedule a healthy dose of wailing and gnashing of teeth and you’ve got a typical day at SUMSRI.

After an incredibly stressful first week, something strange began to happen – I actually began to have fun. I realize now that really the best reason to attend a summer research program is because it can turn out to be an incredibly memorable experience. I mean where else are you going to run around a dormitory in your pajamas at 3 am, yelling at the top of your lungs because you found a ‘Mordell-Weil rank 6’ elliptic curve?

Youyou Tao:

During my past 13-week-summer internship at Nationwide Financial Corporation, I had a great time interning in the investment life department as a summer actuarial analyst. Working with their variable life product development team, not only did I fully apply my in class knowledge – life contingency to the real world, I also gained valuable experience which will definitely help me prepare for the actuarial career.

The job was pleasant but full of challenges. Most of the time we received diverse assignments and projects instead of routine work, which required me to have a deep and precise understanding of the basic knowledge (e.g. “interest theory” and “life contingency”). A high degree of flexibility and willingness of taking challenges were also essential for this career. Besides, it was a very competitive environment in which everyone was intelligent as well as diligent. This has always motivated me to learn more and work harder. After receiving intensive training, I obtained more knowledge on Universal Variable Life products, and I was also able to combine my knowledge and their software to solve specific real world problems.

The intern program was very well organized. Presentations were given by managers from different functions on our weekly meetings, which helped us learn more about actuarial life. There were also great interactions between interns and employees. Not only was each of us assigned a work specific manager, we had mentors as well.

Overall, my summer intern experience was awesome. My technical skills, interpersonal skills as well as presentation skills have been greatly improved. It also illuminated my future career path.

Plan ahead for next summer!!

Department majors are encouraged to take advantage of the many research and internship opportunities that are available to them. Doing so takes careful planning and consideration. Applications for summer programs are typically due in late fall or early winter, so students should start planning now! Talk to your advisor for more information.

Join the Fun!

Students can become involved in department life in many ways.

The Actuarial Science Club meets regularly to study for the actuarial exams. They also bring speakers to campus to talk about the actuarial profession. Contact: Dr. Zhen Huang or Emily Ling by e-mail

The Student Chapter of the ACM was reactivated by computer science majors last year. They meet regularly. Contact: Dr. Pete Sanderson

Faculty meet Wednesday afternoons throughout the year to discuss department issues. Student representatives are welcome at these meetings. Contact: Dr. Susan Thompson

The College Senate meets twice each quarter. It is comprised of both students and faculty. Student representatives are eligible to serve as a department senator. Contact: Dr. Susan Thompson

Thanks to all our students who volunteered their time over the past year to help the department in its recruiting efforts. More volunteers are always welcome. You may be asked to represent the department at an information session, to visit a local high school with a faculty member, or to phone prospective students. Contact: Dr. Susan Thompson

Faculty Profile

Meet Dave Stucki . . .

Dave Stucki joined the faculty of the Mathematical Sciences department in 1996. Professor Stucki earned a bachelor's degree in mathematics from Wheaton College in Illinois. He completed his graduate work in Computer Science at The Ohio State University.



Professor Stucki's interests are wide and varied. Although he was hired to teach computer science, he also teaches the History and Philosophy of Mathematics each spring. He attends the problem solving seminar regularly (even when he's not the instructor!) and often accompanies student teams to the annual ECC math competition.

Professor Stucki is an avid reader. He is an active member of the college's Common Book Committee. He has also begun writing book reviews for the Mathematical Association of America.

When he's not reading, you can find Professor Stucki creating a digital library of his family history or playing with programmable Lego robots.

Problem Corner

The puzzle at right contains 81 squares that are grouped into nine 3x3 grids.

Use the digits 1 – 9 to fill in the puzzle (one digit per square) so that each digit appears in each row exactly once, in each column exactly once, and in each of the smaller 3X3 grids exactly once.

The first student to submit a complete and correct solution to the puzzle will receive a gift certificate to Graeter's Ice Cream. It could be you!!! Submit your solution to Trish Patterson in the math office (through door 107A in Towers Hall).

	3	2	4				6	
				7			3	
	1			6	8	2		
	2				7			4
		7				1		
6			8				7	
		3	2	4			5	
	8			9				
	7				1	9	2	

ECC Competition

The annual ECC Mathematics Competition was held at West Virginia Wesleyan College last spring. Otterbein fielded two teams—Aaron Born, Kevin Mugo, and Youyou Tao placed sixth; Allen Cox, Carrie Ebright, and Jon Ritts placed eighth. Well done, teams! Students interested in this year's competition should enroll in Math 300 during the winter quarter.

Big Bang Boom!

This year's Science Lecture Series celebrates the 100th anniversary of Albert Einstein's Special Theory of Relativity. Follow the link on the college's intranet site to see the lecture schedule for September 26. Students are encouraged to attend the scheduled events and support the sciences at Otterbein. And if that's not enough to keep you busy, the Vernon Pack Distinguished Lecturer will also be on campus September 26. The topic for the lecture will be the crossroads of science and the humanities. More information is available online. (Follow the link from the college's intranet homepage.)

You've Got Mail!

Departmental news and future issues of this newsletter will be e-mailed to your school account. Note: You can (and should!) configure your Otterbein e-mail account to forward messages to your preferred e-mail address. Check your mail on a regular basis!!

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