

Mathematical Sciences

“No human investigation can be called real science if it cannot be demonstrated mathematically.”

-Leonardo DaVinci

Welcome back! We hope you enjoyed your long break and are excited to be back.

This is the inaugural edition of what will be the Mathematical Sciences' quarterly newsletter.

Suggestions, comments, and submissions are welcome! Send them to tcontenza@otterbein.edu.

In this Issue:

Alumni Panel	1	Starry Nights	2
Get Involved	1	Colloquia	3
ECC News	2	Faculty Profile	3
Conferences	2	Problems	3
Employment	2	Distinction	3
Volunteer	2		

Alumni Panel – a smashing success!!

The Mathematical Sciences department hosted its second annual alumni panel during the fall quarter. Alumni working in statistics, computer science, and actuarial science spoke to a packed audience. Speakers included Anthony Johns (CS '98), Kayne Kirby (Math '02), and Jeni Squiric (Math '97). Mr. Johns is a project manager for

Nationwide Financial. He is currently pursuing a Master's degree in project management at George Washington University. Mr. Kirby is an Assistant Actuary for Nationwide Insurance. He works in their Commercial Lines Pricing Department. And Ms. Squiric is a Research Consulting Statistician at The Ohio State University

where she is currently working toward a Ph.D. in statistics.

Later this year, look for a panel discussion on grad school opportunities in the mathematical sciences. Until then, you can also browse through the guide to assistantships and fellowships located in the seating area outside the department office.

Get Involved!

Our department currently has two active student groups. The Actuarial Science Club meets regularly to study for the professional exams. In the fall, the club brought Richard Evans, a senior actuary from Nationwide Financial, to campus. Dr. Zhen Huang has more information about the actuarial science club.

The student chapter of the Association for Computing Machinery has recently been reactivated. Members held a LAN party in November and are planning guest speakers and tours of local businesses. Interested students should see Dr. Pete Sanderson or math.otterbein.edu/ocacm for more information.

Students interested in forming a student chapter of the Mathematical Association of America should talk to Dr. Terri Contenza. Possible club activities include guest lectures, student presentations, and mathematical movie nights.

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Show your support for our colleagues across campus!

The Physics Dept. invites you to *Starry Mondays*—OC's new Astronomy Lecture Series to be held the first Monday of each month.

Join Dr. Uwe Trittmann at 7:00 pm January 3, February 7, and March 7 for a short lecture followed by observation of the night sky from the rooftop of the Science Building.

Call the Physics Dept. at extension 1316 for more information.

Volunteer !!

The Admissions Office needs help recruiting new students. Volunteers speak to area high school students about their experiences at Otterbein. They may also accompany faculty to high schools to give presentations. Thanks to Aaron Born, Julie Carter, and Kevin Mugo for their help at recruiting events during the fall term. Students interested in volunteering should talk to Dr. Susan Thompson.

Jobs & Graduation

All students can monitor progress toward graduation by running a degree audit through Cardinal Web. Graduating seniors may be interested in job postings by alumni on the department's web site.

ECC Mathematics Competition to be held April 9

The annual ECC Mathematics Competition will be held April 9 this year. Mark your calendars now—this is the second week-end of the spring quarter. This year's competition will be held at West Virginia Wesleyan College. Students spend the morning working in teams to solve ten problems. Cash prizes are awarded to the top three teams. As preparation for

the contest, students are encouraged to enroll in Math 300 during the winter quarter. (It's not too late—sign up now!) Students interested in competing this year should talk to Dr. Tong.

Last year, the ECC Competition was held at Hiram College. Otterbein fielded three teams. Team Archimedes, consisting of Erin Moriarty (Math), Kellen Murphy (Math and

Physics), and Youyou Tao (Actuarial Science & Business Administration), won third place and cash prizes. Congratulations!

Other participants in the 2004 contest included: Sabrina Wang, Mark Tinderholt, Jon Ritts, Kevin Mugo, Mike Mosier, Chris Miller, Michael Duke, Aaron Born.

Upcoming Conferences

The Ohio Section of the Mathematical Association of America will hold its spring conference at Miami University this year. The conference will begin on Friday afternoon, April 1, and run through Saturday, April 2. Mark your calendars now—this is the first week-end of the spring quarter. All mathematics students are strongly encouraged to attend—especially those who plan to complete an



Faculty and students at the 2004 Ohio MAA Conference in Cincinnati:

Dan Boros, Terri Contenza, Susan Thompson, Sabrina Wang, Mark Tinderholt.

honors or distinction project. Students who are currently completing a project are encouraged to present their work at the conference in the form of a 10-15 minute talk.

Transportation and lodging will be provided and the conference registration fee is waived for students. Talk to Terri Contenza (x1167) for additional information.

Employment Opportunities Abound

Students who major in the mathematical sciences are qualified for some of the highest paying jobs on campus. The Academic Support Center is always looking for students to tutor algebra, calculus, and statistics. The ASC also hires students to run

problem/review sessions for the introductory statistics course, Math 230. This is a wonderful opportunity for those seeking secondary teaching licensure. Interested students should talk to Ann Biancamano (ext. 1823) in the library.

For those students with technological savvy, the college's Information Technology department hires student assistants throughout the year. Niraj Sharma (ext. 1359) has more information.

Department Colloquia

During the fall quarter, two faculty gave colloquia presentations. Dr. Pete Sanderson gave a talk on MARS, an interactive development environment that he developed. It supports the development of MIPS assembly language programs. Later in the quarter, Dr. Ioan Hrinca gave a talk on modern geometries and the philosophy of Felix Klein's Erlanger Programm. Thanks to both for taking the time to share with us.

Watch for notices about upcoming presentations during the winter quarter. Colloquia are typically held on Wednesday afternoons.

Faculty Profile Meet Dan Boros . . .

Dr. Dan Boros, the newest member of the mathematical sciences department, joined the Otterbein faculty in the fall of 2003. A native of Romania, Dr. Boros earned his doctorate in mathematics at The Ohio State University. His research area is at the intersection of geometric group theory and algebraic topology. This year, Dr. Boros is a national Project NExT Fellow. He is also active in the VIGRE program in geometric group theory at Ohio State. On campus, Dr. Boros is a member of the Student Life Committee and the task force for the National Survey of Student Engagement.



The Distinction Program

The Distinction Program at Otterbein involves the design and completion of an independent project within the student's major field of study. The project is carried out over the course of the senior year under the guidance of two faculty members in that discipline. Students who successfully complete the program will receive up to five hours of credit for independent study with the grade of A. In addition, the words "With Distinction" will be included on the diploma.

The Mathematical Sciences Department encourages all of its majors to complete an independent research project. Students qualified for the Distinction Program (3.0 GPA) will be notified during the winter quarter of their junior year.

Students interested in completing a project should talk to their advisors and consult the faculty member of their choice about possible research topics.

MFT & Actuary Exams

Students entering in the fall of 2005 will be required to take an exit exam for graduation. For Actuarial Science students, this exam will be one of the professional exams. For math and computer science students, this will be the Major Field Test. This year's seniors are also encouraged to take these tests. This will help the department with assessment. It also gives students the opportunity to find out their own strengths and weaknesses in the field and to see how they compare with other graduating seniors across the country. Susan Thompson has additional information.

Problem Corner

The following problems were proposed by Drs. Zengxiang Tong and Zhen Huang. They appear in the November 2004 issue of *The College Mathematics Journal*.

1. Show the convergence of the sequence given by $a_1 = 2\sqrt{2}$ and

$$a_n = 2^{(n+1)/2} \sqrt{2^n - \sqrt{4^n - a_{n-1}^2}} \text{ for any } n > 1, \text{ and find the limit } \lim_{n \rightarrow \infty} a_n.$$

2. Show the convergence of the sequence given by $b_1 = 2$ and

$$b_n = 2^{n/2} \sqrt{2^{n-1} - \sqrt{4^{n-1} - b_{n-1}^2}} \text{ for any } n > 1, \text{ and find the limit } \lim_{n \rightarrow \infty} b_n.$$

The first student to submit a complete and correct solution to both problems will receive a gift certificate to Graeter's Ice Cream. It could be you!!! Submit your solutions to Trish Patterson in the math office.