Mathematics at UMW

Welcome Back!

Dr. Hydorn, chair

This is an exciting time for the Mathematics Department! We have a number of new activities and events that are chronicled in this newsletter, plus plans for a fall speaker series to complement our successful "Mathematics Awareness Month" talks in the spring and for conducting the first of *four* searches for additional full-time department members. The fall talks will be geared more towards mathematics majors than are those given in the spring, and will start off with presentations given by the students who participated in the Summer Science Institute. And, although we don't exactly know yet where our new colleagues will have offices, we are very excited about the prospect of expanding our department!

Over the past year, our faculty have been active in their research and other professional activity - in preparing this newsletter, Dr. Mellinger restricted us to just ONE piece of information about ourselves and I believe it must have been hard for several folks to choose what to include! We have also been active in teaching and course development. We have a new course being offered this fall (MATH 330 Foundations of Advanced Mathematics) and two new Across-the-Curriculum courses (MATH 330 as an Speaking Intensive course and MATH 381 as a Writing Intensive course). And, the Department has put together a rotation schedule for our elective courses to make it easier for students to plan their course schedules.
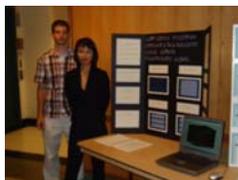
Thanks to Dr. Mellinger for taking the initiative to put this Newsletter together - it will provide us a wonderful vehicle for keeping our students and alumni informed about faculty and student/alumni achievements and about upcoming department events! *Best Wishes for a successful year!*

Math Dept participates in Summer Science Institute

During the summer of 2004, four of our majors worked with faculty on original research projects. Jennifer Stovall and Amanda Passmore worked in the area of error-correcting codes with Dr. Mellinger. Their final paper, titled "On codes generated by quadratic surfaces in PG(3,q)" was submitted for publication in the Rose-Hulman Institute of Technology Undergraduate Mathematics Journal. We are very proud of Jenny Stovall for winning the award for Best PowerPoint Presentation at the Summer Science Research Symposium held in

Jepson on July 21.

In addition, students Keith Manion and Lisa Song worked with Dr. Edmunds in the area of dynamical systems. Lisa traveled with Dr. Edmunds to Michigan in July where she presented her poster at the International Conference for Mathematics in Biology and Medicine held at the University of Michigan. All four students did a superb job this summer. Give them a pat on the back (or a high-five) when you see them around Trinkle Hall. θ

UMW to host its first Undergraduate Mathematics Research Conference

The Mathematics Department received a grant from the Mathematical Association of America to host its first conference on undergraduate mathematics research. Students from colleges and universities throughout the region will be invited to participate. The conference this year will be held on January 22, 2005, right here in Trinkle Hall. We hope that most of our majors will plan on attending this (hopefully annual) event. Stay tuned for more details. θ

Professional Activity

In case you wanted to know what *we've* been up to... **Yuan-Jen Chiang** directed undergraduate research in fractional calculus and its applications with students Damian Waston and Allison Mowery last spring. Damian wrote an honors thesis under Dr. Chiang's supervision in May. **Jeff Edmunds** published a research article titled "Species Competition: Uncertainty on a Double Invariant Loop" in the *Journal of Difference Equations and Applications*. In August, **Debra Hydorn** gave the poster presentation "Introductory Statistics as an Across-the-Curriculum Course" at the Joint Statistical Meetings in Toronto. The presentation was co-authored by **Jeff Edmunds** and summarized their goals and methods in teaching MATH 200 as an ATC course. **Janusz Konieczny** published a research article, "Automorphism Groups of Centralizers of Idempotents," in the *Journal of Algebra*. Take Math 431 & 432 if you want to learn what all those words mean. **Keith Mellinger** attended the SIAM conference on Discrete Mathematics in Nashville where he presented the results of his article "LDPC codes and triangle-free line sets," which recently appeared in the journal *Designs, Codes, and Cryptography*. He also snuck out one night to see some live bluegrass. **Marie Sheckels** is taking her first sabbatical this fall and will be working on examining the role and effectiveness of Mathematics Specialists in the elementary schools. She has been working with professors and school personnel from around the state to develop and evaluate programs to educate these specialists. **Suzanne Sumner** and **Wyatt Mangum** presented their joint research titled "A One-Dimensional Quartic Map Modeling the Aggressive Patterns of Worker Honey Bees towards a Foreign Queen: A Theoretical and Experimental Approach," at the 9th International Conference on Difference Equations and Applications in Los Angeles, California, in August. They tried shortening the title, but it just didn't have the same ring. Dr. Sumner will also be presenting this research which demonstrates the first example of chaos in bee science at the 8th International Conference on Tropical Bees in Brazil in September. On a final pleasing note, **Gary Collier** reports that one of the interesting things he did this summer is rebuild a 47-key harpsichord, embellish the case, and learn to tune it using mathematical tuning methods such as meantone, Pythagorean, and well-tempered. Personally, I don't believe him. ☺ KEM

Students and faculty spend a day at the National Cryptologic Museum

In July, two faculty and over a dozen students took a day trip to the National Cryptologic Museum located near the National Security

Agency headquarters in Fort Meade, MD. The group enjoyed a two-hour tour filled with wonderful stories about how cryptology played a role in the major wars over the years. We also got to play on an Enigma machine. After the tour, attendees received information about career opportunities at the NSA and enjoyed lunch with former NSA mathematician Dr. Jeremy Dover. Information about careers at the NSA was provided to all in attendance. π

Attention all Alumni!

We want to hear from you! If you received a degree in mathematics from Mary Washington, please keep us updated on your whereabouts and happenings. We are always interested in knowing how our majors fair out there in the *real world*. Please e-mail Dr. Edmunds (jedmunds@umw.edu) to let us know what's up. θ

MAA looking for new members

Our majors have a student chapter of the Mathematical Association of America. They have monthly meetings, organize the semester parties, and arrange other social events (like *bowling against the profs*). Keep your eye out for the information about the first meeting and come join in. Σ