Computational Times

Newsletter for the Wittenberg University Department of Mathematics and Computer Science

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VIEW FROM THE DEPARTMENT CHAIR

As I write this column, spring semester final exams are just ending, grades are being submitted, and we're all gearing up to watch this year's super class of MATH/COMP students graduate and head out into the world. We're always energized by the opportunities that our students find out there, and we love hearing from our alums as their careers and lives evolve and wander and grow in neat and unexpected ways. Yes, that's a hint to the alums, new and not-so-new: drop any of us a line, and/or fill out the alum info web form linked from the department's alumni pages! It makes our day to hear from an alum, and your feedback helps inform how we prepare our current students for the world ahead of them.

There are lots of activities for a department chair at this time of year, of course. One of the biggest is faculty personnel review for tenure consideration. As you can probably imagine, hiring often goes in spurts. Our little department had seven tenure-track hires between 1979 and 1989! The permanent staff was then set for quite some time at that point, and we didn't have any tenure-track hires for over a decade and a half. Now that some from this cohort are moving on or retiring, we're in the midst of yet another hiring surge: with Adam in 2005, Steve in 2007, Kyle in 2009, and Flavia in 2011. Adam was tenured last year, Steve is up for tenure this fall, Kyle's big 3rd-year review was this spring, and Flavia gets her first annual review this summer. That makes for a lot of personnel reviews! I don't at all mind, as it's important work. And we're really grateful that students (and alums!) contribute their thoughts and feedback and input, which really helps the department build a candidate's case for tenure or promotion. As chair, I personally would like to offer a huge "Thanks!" to all those who have helped in this process.

Lastly, I want to tell you about an exciting new development that involves our department very directly. Well, I want to tell you about it, but I can't - or else I'd have to kill you all afterwards. It hasn't officially been announced yet, so we'll have to save the complete story until later. But I can tell you now that it will connect Wittenberg and the community in a powerful way, it will bring to life the dream of a very kind and wealthy patron of math education, and it will help local youth with great promise in mathematics. How's that for a teaser? Wait until the next issue....

Have a great summer, everybody!

WITT PUTS ON GREAT SHOW AT RECENT COMPETITIONS

Each year, the department is well-represented in many competitions. This year our teams were particularly successful as multiple groups attended meetings and participated in rigorous contests in both mathematics and computer science.

One contest students participated in was the Four College Contest held on February 18th, 2012. This year there were 13 teams representing the schools of Wittenberg, Denison, Kenyon, and Ohio Wesleyan. Wittenberg was represented by two teams of three members each: **Alec Biehl '14, Peiqian Li '13, and Xiao Shou '12** on one team and **Shelby Cummings '13, Ernie Heyder '13, and Emilie Larned '14** on the other. The trio of Biehl, Li, and Shou won the entire competition, making the department extremely proud. Congratulations and great job to all who participated!

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Dr. Higgins and Dr. Andrews enjoy a lunch at Dr. Stickney's home during a break from the Putnam exam with Savannah Kiser, Peiqian Li, Trang Ha, and Ian Chadd.

Another competition worth noting is the 2012 Leo Schneider Math Competition that was at the Spring MAA meeting at Xavier University. Held on April 13th, 13 teams from 9 different schools competed. The teams could have 2 to 3 members each, and Wittenberg's two teams came out with a very strong showing. Our team consisting of **Peiqian Li '13 and Xiao Shou '13** placed 3rd and our team of **Alec Biehl '13, Trang Ha '12, and Savannah Kiser '12** came in 4th place, placing just 3 points behind our other team!

One of the most infamous contests Wittenberg Math students participate in is the Putnam Exam. The Putnam Competition, which has been called by Time Magazine the "World's toughest math test," consists of 12 challenging problems, to be solved over 6 hours. Each problem is then graded on a 0-10 point scale for a maximal total score of 120 points. This exam is known for its extreme difficulty, where the median score among the students is usually a zero. The professors seem to love the challenge of this test as much as the students, always hoping to find a problem or two that they can complete. This year there were a total of 4,440 students representing 572 different schools from both Canada and the United States taking on this challenging test. Wittenberg was lucky enough to have 8 brave students brave the Putnam exam: **Courtnay Dollinger '12, Trang Ha '12, Peiqian Li '13, Savannah Kiser '12, Ernest Heyder '13, Sven Isaacson '13, Ian Chadd '13,** and **Arianna Hamilton '12**. The department is proud to extend huge congratulations to Savannah Kiser who received a positive score for the second year in a row with her score of 1 point this year. Also, a well deserved congratulations goes to Trang Ha, Ian Chadd, and Ernie Heyder who each scored 1 point on the exam. Four scores above zero is one more than last year and may be a record for the number of positive scores from Wittenberg. Way to go!

On another note, Computer Science students continued their excellent showing in two recent contests this year. The first competition was the 2011 East Central North America Regional Contest of the Association for Computing Machinery International Collegiate Programming Contest. This contest is put on worldwide and is known to foster teamwork, innovation, and creativity. Teams of three students must race against the clock to solve at least 8 real-world problems in a mere 5 hours. The Wittenberg team "Cowgorithms," consisting of **Ernie Heyder '13, Peiqian Li '13, and Jordan Hildebrandt '12**, successfully placed 9th out of a total of 122 teams, placing just behind teams from larger schools such as Carnegie Mellon University and the University of Waterloo. This is a great achievement!

In the spring, Wittenberg Computer Science students competed in the 2012 Denison Spring Programming Contest. Competing in this 4-hour contest were a total of 18 teams from 8 different schools. Wittenberg University was once again represented well, this time by a team known as the "Tree Climbers." The Tree Climbers, consisting of **Ernie Heyder '13, Peiqian Li '13, and Brandon Nesiba '13**, nabbed first place at this great competition, solving all of the 6 problems in a very impressive time and manner. Congratulations to these three outstanding students!

Keep an eye on your e-mails for invitations for these and other competitions in the coming school year!

YOU CAN'T STOP THE BEAT OF DEPARTMENT MAJORS AND MINORS

It has been said that we should not judge a book by its cover. It has also been said that there is often more than meets the eye. This is exactly the case when it comes to our departmental majors and minors. Not only are our students passionate about their studies, but many of them have found ways to express their other passions far beyond the classroom.

The Wittenberg Choir

Our Univeristy is proud to call itself the home to an amazing group of people known as the Wittenberg Choir. Founded in 1930, the Wittenberg Choir represented the true essence of a liberal arts education: aiming to create the "wholeness of a person." Students within the choir represent all spectrums of Wittenberg University, ranging from freshmen to seniors, and including majors such as Biology, Communications, History, Theatre, Religion, and more. As a department, we are extremely proud to say that we have five math majors and minors representing us in this amazing group: **Ian Chadd '13, Susannah Engdahl '13, Skylar Folkens '15 Sven Isaacson '13 and Kreig Spahn '15.**

This year, the Wittenberg Choir had the honor of being selected from a blind audition to perform at the 2012 Ohio Music Education Association (OMEA) Professional Development Conference in Columbus, Ohio. Being chosen was an amazing accomplishment and recognition for the choir, especially when you take into consideration that this conference is known to bring in over 9,000 music educators from the state of Ohio. Outside of this great achievement, the choir also does a lot for the neighboring communities by singing at many different local churches of all denominations. On top of all of this, the choir plans to travel abroad to Wittenberg, Germany to help in celebrating the 500th anniversary of the Reformation.

Sven Isaacson '13 and Ian Chadd '13 during a choir performance.

We would like to take a few moments to spotlight some of our fabulous department representatives:

Susannah Engdahl '13, a physics major and mathematics minor, has been singing in choirs ever since she was in middle school. Wanting to continue following her passion, Susannah joined the Wittenberg choir at the start of her freshman year. After three years of involvement, Susannah is most grateful for the impact the choir is able to have on many local communities. She explains that after their many off-campus performances, "we often meet people who comment on how meaningful it was to have us sing for them. Being able to see first-hand how our music affects people is really powerful – it makes all of the hard work worth it when you know that you've impacted someone's life, even in a small way." Susannah's favorite song to sing is "Entreat Me Not To Leave You" by Dan Forrest. She loves this piece because it is very emotional and "it really resonates with a lot of the choir members," making it even more enjoyable to share. When it comes to the professors at Wittenberg, Susannah feels that they really support her extra-curricular activities. Not only are the understanding of having to miss a class or two for performances, but they are also often in attendance at many concerts.

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FACULTY NOTES

Brian Shelburne: Spring 2012 was the first time in 4 years I did *not* teach an overload! So it was a fairly relaxing (?) semester only teaching Math 120: Elementary Functions, Math 131: Essentials of Calculus and Comp 285: Theory of Computation (the latter being one of my favorite courses to teach). And I was also the Senior Thesis advisor for Trang Ha, whose thesis was on the Prime Number Theorem and its connection with the Riemann Hypothesis (a very difficult topic as we both found out).

Since the Business department dropped the calculus requirement for their majors, enrollment has dropped off quite a bit in Math 131. However, I'm redesigning the course to be a good one-semester calculus course for students who need a calculus course but are not able to fit our two semester Math 201-202 sequence into their schedule. Thus, students who need calculus should either take the two semester Math 201-202 sequence or the one semester Math 131 (since Math 201 does not cover integration in detail, by itself it's an incomplete calculus sequence - or to put it in a more positive way we want to encourage students who have successfully completed Math 201 to go on and take Math 202).

I also oversaw the spring SMACCM (Stat, Math and Computer/Computational Monday) colloquium series. Three of the colloquia were student presentations based on work done over the previous summer or on current work for senior projects and thesis. The other three colloquia were presentations by faculty present (Flavia Sancier-Barbosa and Moez Ben-Azzouz) or faculty former (Eric Stahlberg who visited us in January).

Finally, this summer I plan to work on a number of projects one of which is redesigning how I teach Stats 127 which I'm due to teach again in the fall and working in a new course (for me) Comp 331: Introduction to Computer Hardware which will make use of FPGA based circuit boards to design and test circuits.

Steve Bogaerts: This past semester I have continued to work in development of curricular materials in parallelism. I gave a short presentation on some aspects of this work at the Intel Session on Parallelism in Education, at the Association for Computing Machinery Special Interest Group in Computer Science Education conference. I look forward to further exploration of these concepts this summer, as I revise Comp 265: Programming Languages for the fall.

I also worked with two groups of seniors on capstone projects, culminating in presentations at the Butler Undergraduate Research Conference. **Patrick Copeland**, **Jordan Hildebrandt**, and **Deanna Fink's** paper was entitled "Parallelizing Alpha-Beta Pruning in the Context of Connect-4," while **Andre Harvey** and **Nathan Rutter** wrote "Mancala: A Java Rendition."

Finally, I continue my study of cybersecurity, with plans to attend a week-long workshop in late May, preparations for a WittSem in cybersecurity in the fall, and exploration of possible future collaborations with the Cybercorp program at the Air Force Institute of Technology. I look forward to further development of this important work.

Al Stickney: I'm writing this the week after our 2012 Commencement. Once again, we had a great group of seniors graduating. This has been another very good year for the department. I imagine you'll read about it elsewhere in this Newsletter, but we've had an unusually successful year in 3 separate student math competitions: The Four College Contest, the Putnam Exam, and the Leo Schneider Competition at the Spring Meeting of the Ohio Math Association. We have also had a number of majors involved in interesting research projects which have been presented and/or published to significant audiences. Also, our newest faculty member, Flavia Sancier-Barbosa, had a very successful first year with us. We are excited to have her as a member of our department.

I started out spring semester by traveling to Boston in January for the annual Joint Mathematics Meetings of the MAA and AMS. I was there to attend the meeting of the Board of Governors of the MAA as Governor of the Ohio Section. It was an enjoyable and worthwhile trip. Meanwhile, back here at Wittenberg, I had a great semester teaching Calculus II, Abstract Algebra, and Number Theory. While they were all enjoyable classes, I really liked having the opportunity to teach Number Theory again. It's one of my favorite sub-areas of mathematics, and I don't have the chance to teach it very often. My summer plans include trips to Boston (and Rhode Island), Michigan (the Traverse City region), and perhaps Minneapolis. Of course, I'm also looking forward to being back in the classroom with students next fall.

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FACULTY NOTES (CONTINUED)

Bill Higgins: In January, I attended the Joint Mathematics Meetings in Boston. While there I served as a judge for the undergraduate student poster session. The poster session is organized by the MAA Committee on Undergraduate Student Activities and Chapters, on which I have served for a couple of years. As part of the duties for that committee, I coordinated the MAA Diversity Initiative program to help departments, via travel grants, send students from underrepresented groups to the joint mathematics meetings. In Boston, I also attended a meeting of the editorial board of the MAA Text book series on which I continue to serve.

This spring I took five Wittenberg students - **Savannah Kiser, Alec Biehl, Trang Ha, Xiao Shou, and Peiqian Li** - to the Ohio Section MAA Meeting at Xavier University. Trang gave a talk during the contributed paper session related to some of the work she had done under the direction of Dr. Shelburne. Xiao and Peiqian won a prize for placing third in the Leo Schneider Student Mathematical Competition held at Xavier while Savannah, Alec and Trang placed fourth. This was the best showing ever for teams from Wittenberg in this annual statewide contest.

In the fall I will have the first semester of a split sabbatical. When I began the second half of my previous sabbatical, our son Prakash was about to enter Kenyon College as a freshman. This spring he graduated from Kenyon with a major in Philosophy. Our youngest son Vijay will be a sophomore at the University of Notre Dame in the fall, majoring in mathematics. Time flies.

Doug Andrews: In most ways, this has been a typical semester, with a couple good classes and with plenty of administrative duties as chair. But two things I've been involved in this term are a bit out of the ordinary. One is the "development" that I referred to in the chair's overview, which I can't tell you about until it's official. The other is my participation on the search committee that ultimately selected Laurie Joyner as Witt's next president. I was overwhelmed by the depth of commitment of all the search committee members - most of whom are from the Board of Directors, though with plenty of representatives from the faculty, staff, students, alums, and community. I think Dr. Joyner is exactly the right person to help lead Witt in the challenging years ahead, and I look forward to seeing her here in action on campus.

Looking forward to the summer, I'll be attending a huge new on-line conference on teaching statistics in May, and then a workshop on stat modeling in July. And for fun, I'll join the usual friends for another week-long bike trip, this time back in western Pennsylvania and Maryland. I'll probably join my partner's family in North Carolina again for a week of hiking in the mountains. And my niece graduates from high school and turns 18 later this month, so I get to enjoy a trip to Texas, too. I hope to increase the number of colonies in my apiary; hopefully I won't end up with more bees than I can handle!

Adam Parker: This spring I was out of the classroom on my very first sabbatical. While it was hard not to be teaching, I wanted to make sure that I made the most of the opportunity. Overall, I found it to be very rewarding.

The most important project had to do with my position as Chair of the Program Committee for the Ohio MAA. It is my job to invite speakers for the two large Ohio MAA conferences held each year. While those conferences aren't until Oct. 2012 and April 2013, I needed to make sure to get those speakers set up. This took most of January, and I was very relieved to have that done.

I spent a lot of my sabbatical doing research. The first paper that I wrote was accepted to the College Math Journal. It is about the history of the Bernoulli Differential Equation (for those who remember Differential Equations). I submitted a paper with physics major and math minor **Susannah Engdahl** and bio major **Nicole Andre** about the Heine-Borel theorem (for those who remember Real Analysis). Finally I submitted two technical papers with math alum **Amanda Furness**. I hope to hear back about these last three papers sometime soon. But they say no news is good news!

It wasn't all work. My wife and I took a trip to California and Arizona to see family and the grand canyon. I got some windows in my home replaced and did some painting. But I must say that I can't wait to get back in the classroom for the fall.

YOU CAN'T STOP THE BEAT (CONT.)

Skylar Folkens '15, an applied math and music double major, was led to be a part of the Wittenberg Choir due to her music major. Not only does Skylar enjoy being a choir member because of the music, but she also has found it to be a great way to meet new people: "It's hard to meet people at a school where you hardly know anyone around you, and getting involved in things like choir helps a lot with the process of adjusting to a new environment." Although she agrees that balancing school work and choir can be challenging, she believes the work is doable and well worth it. Skylar feels that the math department is very supportive of students involved in many activities. Because of the smaller class sizes, professors are more likely to know what their students are involved with around campus, and "this blending of departments makes it easier to be involved in both things and makes the professors more understanding of the student's schedule." Skylar also chose the song "Entreat Me Not To Leave" as her favorite to perform.

Ian Chadd '13, a mathematics and economics double major, has always had an interest in music. After being selected as a Music Scholarship recipient, Ian decided that "participation in the Witt Choir was the best way to contribute to the performing arts on campus." He believes that the most rewarding part of being in the choir is getting to know all of the great people who are involved: "Everyone in the choir really exemplifies the liberal arts spirit here on campus and it has been a joy to have known so many talented students."

Congratulations on all of your honors. Thank you for being such great representatives of the department and Wittenberg University. Keep up the great work!

ALUMNI NOTES

Kristin (Spiegelberg) LaGuardia (math major, '93) continues to enjoy her position on a tenure track at Cuyahoga Community College. Recently she has become involved in the Statway and Quantway initiatives, sponsored by the Carnegie Foundation for the Advancement of Teaching. The program centers around the development of quantitative reasoning courses meant as alternatives to developmental algebra for non-STEM majors. "Tri-C" is one of only 8 institutions nationwide selected for the program, and Kristin is one of only 3 faculty members at Tri-C involved, so she feels like a "rock star" because of all the attention and the program's great success.

In some sad news, **Melissa Montag (math major, '97)** passed away. Our thoughts go out to her family.

Beth (Michelfelder) Stelz (math major, '97) and husband Greg still love living in Colorado but continue to enjoy traveling – recently to Italy, Yellowstone National Park, and New York City. (Dogs Hunter and Emitt are doing well, too.)

Paul Hurd (math major, '01) left Nationwide for Grange in 2008 and is now a manager in the Personal Lines pricing area. **Matt Sharp (math major, '04)** also works at Grange, managing the Commercial Lines pricing area.

Ellen Peterson (math major, cosc minor, '06) is wrapping up her post-doc at Carnegie-Mellon and has accepted a three-year visiting faculty position at Center College in Danville, KY. She turned down tenure-track offers in great part for geographical reasons, so that she can be near Lexington, as her fiancee works at the University of Kentucky. In huge personal news, Ellen and Jason will be married in May!

Natalie Banks (math major, '07) works "in Customer Service for Mitsubishi International Food Ingredients. We are the Food Science branch of Mitsubishi Corp. The company buys, sells, and distributes many of the raw ingredients in the food we eat everyday. I take care of the MidWest Region of the United States."

Shannon Cooper (math major, '09) took a position recently as Product Analyst with Reynolds & Reynolds.

Danny Marous (math major, '10) continues in the Pharmacology Ph.D. program at Johns Hopkins University. He's still chugging away on research-two main areas on a larger project (one more risky, but more interesting if it worked.) He is finishing up his last elective class and anticipates being in school a couple more years to complete his research.

ALUMNI NEWS (CONTINUED)

Alex Griffith (math major, cosc minor, '11) works for Northrop Grumman in Baltimore, MD, and is studying in graduate school at Johns Hopkins.

Kim Mowrey (math major, '11) works as a marketing analyst for Reynolds and Reynolds in Houston.

Alex Sitarik (math major, '11) is enjoying her first year as a grad student in biostatistics at U of Michigan. She's taking courses in probability theory, stat methods, clinical trials, SAS programming – and teaching an intro grad-level biostat course to over 200 students!

MAJOR NEWS

Patrick Copeland (computer science major, math major, '12) and **Deanna Fink (computer science major, computational science minor, '12)** will both enter the "CyberCorp" program at the Air Force Institute of Technology in Dayton - a very nice and lucrative program.

Next year, **Will Herrmann (computer science major, computational science minor, '12)** will be doing an Americorp service year working with the Community Technology Empowerment Project (CTEP) to teach basic computer classes to teenagers, immigrants, and low-income individuals. He's also hoping to finish a program that he began working on as part of his Honors Thesis for Computer Science and be able to sell it.

Jordan Hildebrand (computer science major, math minor, computational science minor, '12) will be spending the summer cross-country bicycling, toying with 3-D imaging at NASA's Goddard Space Flight Center, and napping. He will then grab a Stetson and attend a PhD program at the UT-Austin Jackson School of Geology.

Last November **Zach Hedges' (computational science minor, '12)** research on the impact on fungicides on the declining bee population was published in three co-authored chapters of the book "Honey Bee Colony Health: Challenges and Sustainable Solutions". This spring he has been busy finishing up the application process for medical school, and this summer he will be matriculating into the medical program at the University of Cincinnati.

John Meszaros (math minor, '12) will be attending WVU in the fall in an Economics Ph.D. program.

This summer after graduation **Jon Pozderac (math minor, '12)** will be returning to Boston to work at MIT's Lincoln Laboratory to work in the Aerospace Sensor Technology Group for the second summer. Following this internship, he will be returning to Columbus where I will be attending The Ohio State University with a University Fellowship to obtain his Ph.D. in Electrical Engineering.

Ian Chadd (math major, '13) will be the Washington D.C. area this summer. He will be working part-time at the Center for the Study of Neuroeconomics at George Mason University and also doing research for his honors thesis in economics.

Ernie Heyder (math and computer science major, '13) will work this summer with Dr. Parker on a project using optimization algorithms to create art (something called Opt Art in the literature). Both Ernie and Dr. Parker are looking forward to the project.

Jeremy Massengale (math minor, '13) was awarded an internship at WPAFB through SOCHE this summer where he will be studying quantum dots using Fourier transform infrared spectroscopy.

Considering a Donation ?

If you would like to make a donation to the math department, you can make a donation to the "MATH DEPARTMENT GIFT FUND" at

The Wittenberg Fund
Wittenberg University
PO Box 720
Springfield, Ohio 45504-0720

Make sure to designate your donation to the math department. Your gifts help support undergraduate research, travel, and the general mission of the department. We appreciate all of your help.

WELCOME!

The department would like to welcome all of our new majors and minors that have declared during the spring. We're happy to have you in the department!

Mathematics Majors:

Emily Bast '15—Knoxville, TN
Alec Biehl '14—Medina, OH
Sarah Cummings '15—Columbus, OH
Katelyn Haralamos '15—Maineville, OH
Aubree Herrin '15
Manas Mudbari '13
Andrew Phillips 'SCE—
Kyle Sanning '14—Fairborn, OH
Meredith Troy '13—Cincinnati, OH

Mathematics Minors:

Brandon Nesiba '13—Sioux Falls, SD
Eli Pavlatos '13—South Charleston, OH

Statistics Minor:

Garrhett Via '15—Geneva, OH

Computational Science Minors:

Antonette Grandison '14—Columbus, OH

Computer Science Majors:

John Albertson '15—Morrow, OH
Joshua Criss '12—Blanchester, OH
Robert DeBell 'SCE—
Bradley Frilling '14—Ft. Laramie, OH
Stephen Hartshorne '15—Hamilton, OH
Jake Hsu '14—Cleveland Heights, OH
Noah James '15—Grand Rapids, MI
John Klamar '14—Upper Arlington, Oh
Margo Morton '15—Hebron, KY
Joshua Nichols '14
Lance Pioch '15- Ottowa Hills, OH
Alex Tatusko '14—Westport, CT
Hunt Wagner '13—Springfield, OH
Luke Wysmann '14—Gilbert, AZ

Computer Science Minors:

Tyler Bly '15—Fort Wayne, IN
Andrew Stylski '14 — Bay Villiage, OH

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