



# UNION UNIVERSITY

## DEPARTMENT *of* MATHEMATICS

Academic Update

Spring 2009

The Department offers a major in mathematics and minors in mathematics, mathematics with an emphasis in statistics, and a program in actuarial science. Students majoring in mathematics may select from the following tracks: mathematics, teacher licensure in mathematics for secondary education (grades 7-12), or actuarial science.

Regular offerings include precalculus courses, the standard calculus sequence enhanced with Mathematica (a computer algebra system for doing mathematics), advanced mathematics courses, and methods/student teaching courses for students seeking teacher licensure.

### **Mission Statement of the Mathematics Program**

Union's mathematics program seeks to further students in their quest for increased understanding of Creation and the created order and to equip students to serve God, church and society through excellence in thinking and the use of mathematics. We do this through a curriculum that develops the student's ability to think logically, analytically, and abstractly; to pursue a body of knowledge whose basis is independent of both empirical observation and culture;

and to learn humility and a sense of wonder at the complexity, beauty, and applicability of mathematics.

### **Faculty**

**Troy Riggs**, professor and department chair, came to Union in 1993. He teaches a variety of courses, including statistics, calculus, analysis and actuarial science. His current interests are in the history and philosophy of mathematics. He also coordinates the actuarial science minor.

**Bryan Dawson**, professor, came to Union in 1998. He teaches a variety of courses, including statistics and calculus, and upper-level courses such as geometry and analysis. He has published articles on a variety of mathematical subjects. He also serves as webmaster of the Association of Christians in the Mathematical Sciences.

**Richard Dehn**, associate professor, came to Union in 1969. He has a special interest in the foundations of mathematics. He teaches courses in basic mathematics, calculus, and numerical analysis.

**Chris Hail**, professor, came to Union in 1995. He primarily teaches mathematics courses designed for elementary education majors. He

also supervises student teachers seeking an endorsement in secondary mathematics.

**Dwayne Jennings**, associate professor, came to Union in 1981. He teaches pre-calculus, calculus, discrete mathematics, linear algebra, and differential equations. He is especially interested in the integration of computer algebra systems (CAS's), such as Mathematica, into the teaching of mathematics at all levels.

**Matt Lunsford**, professor, came to Union in 1993. He teaches college algebra, trigonometry, precalculus, calculus, linear and abstract algebra, and the history of mathematics. He serves as faculty sponsor of the Union chapter of Kappa Mu Epsilon. His interests include classical Galois Theory and the history of mathematics.

**Don Richard**, associate professor, came to Union in 1983. He teaches college algebra, statistics, trigonometry, precalculus, and calculus. His greatest love is teaching those students who think they have no aptitude in mathematics but are willing to try.

## Student Organizations

The Department is home to the Tennessee Gamma chapter of Kappa Mu Epsilon, a national mathematics honor society. Academically excellent students who qualify for membership are initiated each spring semester. The national organization hosts biennial conventions designed for undergraduate mathematics students and publishes a scholarly journal for undergraduate mathematics papers.

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## The Calculus Readiness Test

Incoming students intending to take calculus are required to take the Calculus Readiness Test, a brief multiple-choice exam to ensure that their geometry, trigonometry and graphing skills are sufficient for success in college-level calculus. Students with AP exam credit for calculus, or with a passing grade in college precalculus (algebra and trigonometry) do not need to take the exam.

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## Recent Faculty Publications

**Bryan Dawson** is the author of two books from Royal Fireworks Press, the largest publisher of books for gifted and talented students. *Supplemental Mathematics for the Curious: Number Theory* is written for high school students that have completed Algebra I, while *Supplemental Mathematics for the Curious: Number Systems* is for students that have completed trigonometry.

## Student Publications

May '08 graduate **Matthew Dawson** won a student paper prize at the 2008 Mathfest conference for his senior seminar paper "Bridging the Group Definition Gap." His article by the same name appeared in the Spring '08 issue of the *Harvard College Mathematics Review*. He is now pursuing a doctoral degree in mathematics at Louisiana State University.

### Jennifer Ellis '05

"Primes and Primality Testing: A Technological/Historical Perspective," *The Pentagon*, Volume 65, No. 2, 33-44.

### Allen Smith '04

"When Good Data Goes Bad," *The Pentagon*, Volume 64, No. 2, 41-54.

### Kolo Goshi '04

"The Brachistochrone Problem in an Inverse Square Field," *Proceedings of the National Conference on Undergraduate Research*, NCUR 2004

### Robert Rickett '03

"Chaos," *The Pentagon*, Volume 63, No. 2, 17-24.

### Caroline Ellis '02

"Mathematical Discoveries of the Bernoulli Brothers," *The Pentagon*, Volume 62, No. 1, 29-37.

### Andrew Nichols '01

"In Defense of Euclid," *The Pentagon*, Volume 61, No. 1, 3-9.

### Jennifer Murrah '98

"The Formation of the Rainbow," *The Pentagon*, Volume 58, No. 2, 16-38.

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## Putnam Exam

The William Lowell Putnam Mathematical Competition, billed

as "the world's hardest math contest," is an annual contest for college students administered by the Mathematical Association of America. Each year, a few Union students participate; in a recent competition our team scored in the top fourth of all universities fielding teams.

Regular "Putnam Practice" is held in both the fall and spring semesters. Participating students are able to enjoy the thrill of attempting challenging, interesting problems (and no grades).

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## Department Awards & Scholarships

First year students enrolled in calculus and majoring in mathematics are eligible for **The Wolfram Award in Computational Science**. The award and associated Mathematica license is Sponsored by Wolfram Research Incorporated and presented at the University Awards Ceremony.

The **Dr. Joe Tucker Scholarship** is a supplemental scholarship that is awarded annually to an outstanding upper-classman in either computer science or mathematics. The scholarship is given in honor of Dr. Tucker. During his 22 years of service as department chair the Mathematics Department grew from two faculty to two departments (Math. & Computer Science) with a total of eleven faculty.

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## Website

Please see the department website (<http://www.uu.edu/dept/math/>) for additional information.