

Welcome Back for 2012-2013
Mathematics Majors
We hope you had a good summer!

The [Math Department Web Page](#) web page is at <http://wumath.wustl.edu>). From there you can get to the [Undergraduate Web Page](#), which you should probably look at regularly. The “News and Notes” there contains up-to-date announcements and events.

On the [Undergraduate Web Page](#), the link to [Information for Majors](#) covers a lot of useful topics. The essential information is all available in printed form as the *Math Majors/Minor Handbook*, but the hardcopy version is only updated once a year; the information online is always up-to-date. *(There are a few copies of the printed version in the Undergraduate Lounge, and you can get one from Professor Freiwald or the Math Office, if you like.)*

If you’re not already familiar with what’s at our web site, then take a little time to explore. There’s probably more available there than you think. Take a quick look at the [site map](#) at the end of this letter.

You might want to make contact with your major advisor, just to re-establish contact and catch up.

You can always provide suggestions/feedback or send questions to

[Professor Ron Freiwald \(Director of Undergraduate Studies\)](#)
[Professor Blake Thornton \(Coordinator of Lower Division Teaching, including
calculus and differential equations\)](#), or to
[Department Chair, Professor David Wright.](#)

In addition, if you want to discuss some sensitive issue, there is also a link at the bottom of the Undergraduate Web Page that will let you [send an anonymous email to the Department Chair](#).

Ron Freiwald, 935-6737
rf@math.wustl.edu

Who’s New, Visiting, Gone, ...?

Professor [Richard Rochberg](#) is on leave for the 2012-2013 and Professor [Alvaro Pelayo](#) will be on leave for spring 2013.

Professor [Nik Weaver](#) has left Washington University and moved to Arizona with his family.

We are sorry to see Professor [Russ Woodrooffe](#) leave the department after four years as a post-doctoral Chauvenet Lecturer. He has accepted a tenure track position at the Mississippi State University (Starkville).

[Ari Stern](#), a new assistant professor, joins our faculty this fall.



Professor Stern received his A.B. degree in mathematics and an A.M. in the Mathematics of Finance from Columbia University before earning his Ph.D. from the Department of Applied and Computational Mathematics at California Institute of Technology. He is now finishing a post-doc position at University of California at San Diego. His work is in the area of geometric numerical analysis—of which he says “... while numerical analysis is traditionally a field of ‘applied’ mathematics, my research is also deeply connected with areas more commonly associated with ‘pure’ mathematics, particularly differential and symplectic geometry.

While at UCSD, he worked with a group in the Center for Computational Mathematics and was also a Fellow with the Center for Theoretical Biological Physics. He also holds an A.M. in Mathematics of Finance from Columbia University (where he also received his A.B. degree).

Also, Peter Luthy will be joining the faculty as a new Chauvenet Lecturer.



Professor Luthy received his Ph.D. from Cornell University in 2012. His research interests are in harmonic analysis: using techniques in time-frequency analysis to study operators inspired by problems in ergodic theory and partial differential equations. To quote from his Cornell web page, “I have numerous other interests. I love history and languages. Philosophy can be interesting. I also enjoy poetry, art and dance. I enjoy weightlifting, rowing, and pretty much any variation of wrestling, most especially grappling, jiu-jitsu, ground fighting, or whatever else you'd like to call it.”

Professors Tejas Kelalkar and Ivan Horozov are also continuing as Chauvenet Lecturers this year.

Who was William Chauvenet? See the "Trivia" section on [Web Pages for Math Students](http://magazine.wustl.edu/2011/june/Pages/NaturesNobleman.aspx) or go to <http://magazine.wustl.edu/2011/june/Pages/NaturesNobleman.aspx>

During the 2012-2013 academic year, we will be searching for three new faculty members who, we hope, will arrive in fall 2013.

The Math Office (room 100) was remodeled over the summer. Stop in to take a look and say hello to the staff. The main Department Lounge (room 200) was also remodeled. Stop by for refreshments before one of the [colloquium talks](#) to meet some people and take a look around.

Changes in Curriculum and Course Highlights

We will teach 3 sections of L24 Math 309 (*Matrix Algebra*) this year: two in the fall, one in the spring. This is the same as other years except that all three sections will be taught by the Mathematics Department. (*The ESE Department does not plan to teach a section of matrix algebra in the future.*)

Starting this year, the old one-year topology sequence Math 417-418 changes: we will offer Math 4171 (*Topology I*) every fall semester but the "corresponding" course that follows in the spring will alternate:

- In spring 2013 (and future odd-numbered springs) Math 4171 will be followed by Math 407 (*Introduction to Differential Geometry*). This will make an undergraduate introduction available in an important area of mathematics. Math 4171 and 407 together will be a nice pair of courses, but not strictly a "sequence" because 4171 will not be a prerequisite for 407. The prerequisite for Math 407 will probably be something like Math 233, 309 and 310 (or permission of instructor).
- In spring 2014 (and future even-numbered springs) Math 4171 will be followed by Math 4181, *Topology II*, whose content may vary. This will be a one-year course sequence in which Math 4181 will have Math 4171 as a prerequisite.

New courses and alternate-year undergraduate courses for the 2012-2013 academic year:

Fall 2012	Math 302	<i>Elementary Geometry from an Advanced Point of View (Chi)</i>
	Math 350 (new)	<i>Monte Carlo Methods (Feres)</i>
	Math 415	<i>Partial Differential Equations (Tang)</i>
	Math 434	<i>Linear Statistical Models (Lin)</i>
(Tentative) Spring 2013		
	Math 4xx (new)	<i>Number Theory and Cryptography (Kerr)</i> (likely prerequisites: Math 233, 309, and 310)
	Math 4xx (new)	<i>Advanced Linear Statistical Models (Ding)</i> (likely prerequisites: Math 3200, 493 and 439)
	Math 407 (see above)	<i>Introduction to Differential Geometry (Chi)</i>
	Math 408	<i>Nonparametric Statistics (Lin)</i>

If you have questions, especially about the new courses, please contact the instructor.

The Undergraduate Math Majors Lounge

The Ross R. Middlemiss Math Majors Lounge is in Cupples I, room 222.

Who was Ross Middlemiss? Check the [link online](#). Or, there's a picture of Professor Middlemiss and a short biography on the wall in the Lounge near the Bulletin Board.

If you forget the lock combination for the Lounge door, see the receptionist in the Math Office (room 100) or Professor Freiwald. The Lounge is intended for undergraduate math majors, not for general student use, so please don't pass the combination around to others. If we're going to have things like the microwave and the computer available, we want to have some control over who uses the room.

You'll see a few changes in the Undergraduate Lounge too. Over the summer, the floor was refinished and the lockers in the Lounge were removed (last April, an email was sent to all majors asking that any items in the lockers be removed before summer break). If you left something important in a locker, you can check with Professor Freiwald to see if it was saved when the workers removed the lockers.

We are also replacing some of the furniture and adding a new printer. All of this was ordered in July, but some of it may not have arrived by the time classes start.

Please help keep the Lounge neat by

- Using the wastebaskets. A wastebasket that is full or contains discarded food items can be placed in the hallway just outside the Lounge door and the housekeeping staff should empty it overnight or the next morning. Whoever comes in first the next day can put the wastebasket back in the Lounge.
- Please don't leave food items (like leftover pizza and half empty soda bottles) sitting in the Lounge. Take what you want home with you and put the rest in a wastebasket in the hallway for pickup. Please be sure to remove any food that you put in the refrigerator
- Reshelving books in the right sections of the bookcase (analysis, algebra, etc.)

The housekeeping staff is supposed to clean the Lounge regularly. If anything comes up that needs quick attention, please notify [Leslie Smith-Moreland](#) in the Math Office. Also notify Leslie if there are any maintenance issues (e.g., burned-out light bulbs, need for clock battery, ...) or a shortage of supplies (printer paper, chalk, ...)

Pass along other comments or problems about the Lounge to [Professor Ron Freiwald](#).

We hope the Lounge can be a friendly place to study or just take a break during the day. As an extra inducement to visit the lounge, we will have some free food (bagels, donuts, or cookies) available there on a few randomly chosen days during the year. On these days, an email will be sent out in the morning to all majors. The food will be there by 10am and any leftovers will be removed at around

3pm to be distributed to hungry graduate students. The supply of food is finite, so “get it while it lasts.”

Earning Money

Each semester, we usually need graders for some of our courses. If you're interested in grading, please contact [Dr. Blake Thornton](#) (room 204A, 935-6301) as soon as possible. He can tell you if we still need graders for this semester, what the pay scale is, and whether there are any other positions available. If not, he can also talk to you about work in the spring semester. If there's a favorite faculty member teaching a course you'd like to grade, feel free to contact him/her and offer your grading services: you don't have to wait to be asked! If the faculty member agrees, then contact Dr. Thornton to be sure he hasn't already assigned a grader for the course.

You should also contact Dr. Thornton if you might be interested in other jobs (like the Calculus Help Desk at Cornerstone).

If you're interested in tutoring: you can

- Stop by the Cornerstone Office (in Gregg Hall on the South 40) and complete an application. The department has to recommend you if you haven't done it before. Generally, for a recommendation to tutor Calculus I (or Calculus II), you should have completed the next course Calculus II (or Calculus III) with at least a grade of A-.

For tutoring beyond the level of Calculus II, we'll make individual judgments about recommendations, but you should probably have better than a 3.0 average in math courses and probably an A in courses you want to work with.

Let us know if you'd like to be considered for inclusion on a department list of “available tutors.” We get requests for tutoring in calculus level, but also for other courses (for example, 493-494)—and sometimes we don't have names available for more advanced courses. Contact Professor Freiwald if you're interested. Include the course(s) for which you think you can tutor, and your contact information: email, phone or both.

When students ask about tutors, we refer them to this list and the student decides who to contact. If someone contacts you during the semester, then it'll be up to you to negotiate rates, times, etc. (*If the student seems like someone you might want to work with, then a short free session, maybe half an hour, would be appropriate for both of you to see if you're a “fit” together.*)

Some of you might be interested in leading one of the calculus PLTL groups. Interviews and hiring for those positions are usually handled each spring for the following academic year. Contact [Lisa Kuehne](#) (lisak@math.wustl.edu) about the timetable and details if you're interested in PLTL for the 2013-14 academic year. Lisa's office is in Cupples I, room 108A (935-4226)

Miscellaneous

A Resource for Math Majors

Be sure look at the excellent set of resources on the undergraduate web page of the American Mathematical Society (AMS): <http://www.ams.org/programs/students/undergrad/undergrad>
It includes information about graduate school, internships, jobs & careers, etc. See
There are many other useful links on our [Web Pages for Math Students](#).

Seniors: Latin Honors and Graduation with Distinction in Mathematics

Latin Honors from Arts & Sciences

<http://wumath.wustl.edu/undergraduate/honors>

If you haven't already started, then you need to get moving immediately. [Review the requirements](#). You might not have completed all the required course work but to work on a project, you'll probably need to have finished at least the important core courses in your area: for example, 3200-493-494 in statistics. Talk with faculty in your area of interest about possible projects and then fill out an [Honors Proposal Form](#).

Honors work (written thesis and oral presentation) needs to be completed by late March for those graduating in May. The College of Arts & Sciences sets the exact deadline.

Students who are not doing an honors thesis in mathematics but who have records similar to the Latin Honors candidates might be eligible at graduation for the [Distinction in Mathematics Award](#). This award goes on your permanent university record.

Changes (not applicable to Classes of 2013 and 2014)

In March 2011, the College and Faculty of Arts & Sciences modified the requirements for earning Latin Honors, to apply to what would be the next incoming class (Class of 2015). The minimum GPA requirement for Latin Honors increased to 3.65, and the method for assigning different levels of Latin Honors was also changed. [Details](#) are at <http://wumath.wustl.edu/undergraduate/honors>

In response, the Department's GPA requirement for earning the Distinction in Mathematics Award will also go up to 3.65, and this will be computed using only grades in mathematics courses (defined as courses appearing with department number "L24" on your record). Course requirements and course grades for the Distinction award will remain the same

Some of the details are still being worked out, but the updated information will be posted to our webpage when available. , but the GPA will probably rise to 3.65 and probably be computed only using grades from L24 (math) courses for the purpose of this award.

Note: Latin Honors and the Distinction Award for students in the Classes of 2013 and 2104 are still the "old" requirements which will also remain on our webpage.

Honors Cords for Graduating Majors

Each year the department distributes honors cords to wear at Commencement to some of our graduating majors. These include those majors who have earned Latin Honors or the Distinction in Mathematics Award, and the students who are recipients of one of the [Departmental Prizes](#). The Honors Cords are distributed at the Annual Department Awards Ceremony (this year, on Thursday, April 25, at 4:30 in room 199).

Junior Meeting

Not long after classes start you'll get an email about an upcoming meeting especially targeting junior majors (although anybody's welcome). The purpose is to talk about longer term plans: senior projects, graduate school, jobs, internships, etc. We'll chat over pizza about the possibilities and try to have a representative from the Career Center there as well.

Planning for Graduate School

Talk with your advisor about planning and a timetable (a few deadlines, particularly for certain fellowship applications like NSF, may be as early as November). [Here's a pretty good, rule-of-thumb planning calendar](#): <http://gradschool.about.com/cs/overviewtimetable/a/timetable.htm>

[Professor Mohan Kumar](#), the Chair of our Graduate Committee, might also be a good source for general information—for example, how does our department decide whether to admit someone as a graduate student? What are the most important considerations—course work? independent work? GREs? letters of recommendation? ...

Former Graduate Committee chair [Professor Rachel Roberts](#) might also be a good resource for general information.

See also the resources at the [AMS website for majors](#).

If there's sufficient interest, we can schedule a meeting about graduate school plans for everybody who's interested.

Looking for jobs or internships?

Be sure to work with the Career Center: that's your best resource. I'll forward to majors any information I receive about job opportunities, recruiters, ... , but that kind of information is much more likely to be sent to the Career Center than directly to the Math Department. The best time to check for internship information is in September or January. The Career Center can also help you with preparing a resume, information about the GRE's and applying to graduate schools, etc.

Look at the links on [Web Pages for Math Students](#) and also the resources at the AMS website for majors.

Math Competitions

Putnam Competition (sponsored by the Mathematical Association of America (MAA))

If you're interested in the Putnam Exam Competition, please watch for information about the Putnam Practice Sessions which will begin shortly after classes start. You are welcome at the practice sessions even if you don't expect to actually take the exam in December.

You can look at <http://wumath.wustl.edu/MAAPutnam> to see how the MAA describes what's expected. For more details see also <http://amc.maa.org/a-activities/a7-problems/putnamindex.shtml>.

The competition is held on the first Saturday in December. Any number of students can participate.

Missouri MAA Competition

The 18th annual Missouri MAA Collegiate Mathematics Competition will be held on the campus of Northwest Missouri State University (Maryville, MO) on Thursday evening/Friday morning April 18-19, 2012.

Read more at <http://www.math-cs.ucmo.edu/~hchen/contest/index.html>

Last spring our teams took 1st and 3rd place, and it would be nice to keep the “traveling trophy”—now in the display case on the first floor at the east end of Cupples I—for another year. But the most important thing is to go, enjoy the experience and the time together.

We can take 6 students (two teams of 3) to this statewide competition; if more than that are interested in going, then we'll have to make some choices based on class, courses taken, grades, ...

The Department will provide transportation. This trip will involve a long drive. Students who want to participate will need to be available to leave St. Louis about mid-morning Thursday. Some may be able to return by late Friday afternoon, but we will also want some of the participants to present at the banquet Friday night (approximately 6:00-8:00) when awards are presented. Those students would leave to come back Saturday morning and probably arrive back in St. Louis by mid-afternoon Saturday.

We'll send out information asking who's interested right after the start of the spring semester.

Also, the spring meeting of the MAA Missouri Section is at Northwest Missouri State on the same weekend (Friday April 19-Saturday April 20). At that meeting, there are usually some students who make presentations of work they're doing. We'd like to encourage any students who have been working on a mathematics honors project or something similar to consider making a short presentation of the work at the meeting if there's an opportunity on Friday afternoon. It's good experience to talk about what you've done in front of strangers.

Undergraduate Math Club

Rachel Blake (rachelcblake@wustl.edu) will be serving as president of the Math Club in fall 2012. She'd welcome student suggestions about the kind of activities the math club should have: talks (by whom, what topics), more math-related films, sessions working together on problems/puzzles, more undergraduate speakers, or ... ??? Please send any suggestions.

[Washington University Actuarial Club \(WUAC\)](#)

The purpose of WUAC is to provide Washington University students with a better all-around understanding of the actuarial profession, give members a chance to meet other actuarial students and relevant faculty, build networks, and provide resources to aid members with actuarial exams. For more information, contact Trevor Hu (t.hu@go.wustl.edu) or Shannon Hanko (shannon.hanko@go.wustl.edu)

Math Circles is an outreach activity for middle and high school students. It is a nationwide program in which our department participates. Dr. Blake Thornton is the local coordinator. Some majors, especially those interested in education, might be interested in making a presentation or helping out at one of the Math Circles meetings during 2012-2013. Near the bottom of the Undergraduate Web Page, you'll find a link to an [article from the W.U.Record](#) about Math Circles. Contact Dr. Thornton (blake@math.wustl.edu, Cupples I 204A, 935-6301) if you'd like to participate or to talk about the program. It may also be possible to earn 1-2 credits for 200-level independent study working with Math Circles on a regular basis.

Each spring, the Loeb Undergraduate Lecture in Mathematics features a well-known mathematician in an annual lecture for undergraduates. This year, we have invited Richard De Veaux who is a Professor of Mathematics at Williams College. He is an applied statistician interested in data mining methodology and its application to problems in science and industry. These methods include artificial neural networks, and such techniques as decision trees, MARS, and boosting algorithms such as MART. He is also interested in model selection and other problems for large data sets. More information to come when we know the details.

Ways to Socialize with People in the Department (and sometimes have a snack)

The department wants to encourage a sense of community among majors, faculty and grad students. If you have an idea that would help promote interactions among some of the majors, please send suggestions to Professor Freiwald. We're open to all sorts of things if students are willing to join in or help to organize. Here are some suggestions about ways to get more involved.

Spend time in the Undergraduate Lounge, room 222, when others are there

Attend some Math Club or Actuarial Club meetings

Form a study group with a few others from one of your classes

Come to one of the department "teas" which precede colloquium talks. These talks are usually research level and beyond the reach of most undergraduates (and a lot of graduate students too) but undergraduate majors are welcome just to attend the tea and not the talk.

Teas are most often at 4 p.m. on Thursdays in the Department Lounge (room 200). Usually, there are some drinks and light snacks like chips and salsa or cookies. Sometimes the food is a little more elaborate. You can always check the schedule by looking at the “Events” link on the Department’s home page: <http://wumath.wustl.edu/events>. Most people at colloquium teas/talks will be faculty and grad students. So if you’re shy, bring another undergraduate along with you.

There will be a Departmental Winter Potluck Lunch for undergraduate math majors, grad students and faculty. It’s planned for Wednesday, December 12—the day before final start—from 12:30 to 2 in the Department Lounge (room 200). It’s a good break from studies and there’s always a lot of food including potluck contributions. You’re invited to bring some food to share, but if that’s not possible, don’t worry: come and enjoy! Mark your calendar and watch for announcements later with more details.

There will be a Departmental Awards Ceremony on Thursday, April 25, 2012. This is an occasion to present teaching awards to faculty and graduate students, present undergraduate prizes, and recognize other achievements. And again, there’s lots of good food. We’ll let you know when it’s happening.

For graduating seniors and their families, there will be a Math Department Senior Open House on Thursday, May 16, 2012: the day before Commencement.

We are always open to suggestions about curriculum or comments about any other issues. Please feel free to stop by to talk to

- Department Chair: David Wright (room 206) 935-6781
- Director of Undergraduate Studies: Ron Freiwald (room 203A) 935-6737
- Coordinator for Lower Division Teaching: Blake Thornton (room 204C) 935-6301

Thanks and have a good semester!

Ron Freiwald, and the
Mathematics Department Undergraduate Committee

August 2012

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