**Welcome Back for 2014-2015**

**Mathematics Majors**

**We hope you had a good summer!**

You can get our undergraduate information from the [Math Department Web Page](http://wumath.wustl.edu). You should probably bookmark the [Undergraduate Web Page](http://wumath.wustl.edu/undergraduate) and look at it regularly:

* we try to keep the “News and Notes” up-to-date with announcements, as well as items of interest to majors.
* the link there to [Information for Majors](http://wumath.wustl.edu/undergraduate/information-math-majors) covers a lot of useful topics
* there are lots of other useful links on our [Web Pages for Math Students](http://wumath.wustl.edu/undergraduate-new/web-pages-math-students)

If you’re not already familiar with what’s at our web site, then take a little time to explore once you’re there. There’s probably more available there than you think. Take a quick look at the [site map](http://wumath.wustl.edu/sitemap).

Be sure to also 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):

You can always provide suggestions/feedback or send questions to

* [Professor Ron Freiwald (Director of Undergraduate Studies)](mailto:rf@math.wustl.edu)
* [Professor Blake Thornton (Coordinator of Lower Division Teaching, including calculus and differential equations](mailto:blake@math.wustl.edu))
* [Professor David Wright, Department Chair](mailto:wright@math.wustl.edu)

You might want to get in touch with your major advisor, just to re-establish contact and catch up!

**Who’s New, Visiting, Gone, …?**

Todd Kuffner is now an Assistant Professor. He was a visiting instructor last year in our department. Professor Kuffner received his Ph.D. in 2011 from Imperial College London, and came to us after a time teaching at the American University of Beirut. His research interests are in mathematical statistics, likelihood and asymptotics, and econometrics.

We have also hired a new Assistant Professor,Wushi Goldring, who works in algebraic geometry and number theory. He will not join us until Fall 2015 after he completes a postdoc position at the University of Paris.

We welcome a new William Chauvenet Lecturer, Xuanyu (Peter) Pan, who works in algebraic geometry and has just completed his Ph.D. at Columbia University.

Peter Luthy and Songhao (Travis) Li continue as Chauvenet Lecturers. In addition, Ivan Horozov continues this year as a Postdoctoral Teaching Fellow in Mathematics.

*Chauvenet Lectureships are “post-doc” positions—two or three year appointments to newer PhD’s*

*to advance their research and teach before seeking a permanent tenure track position.* [*Who was William Chauvenet?*](http://magazine.wustl.edu/2011/june/Pages/NaturesNobleman.aspx) *(Also look at the “Trivia” section on* [*Web Pages for Math Students*](https://wumath.wustl.edu/undergraduate-new/web-pages-math-students)*.)*

Hang Liang Gan will also join us this year as a Postdoctoral Teaching Fellow in Statistics. Dr. Gan just completed his Ph.D. at University of Melbourne, Australia.

Professor Matt Kerr will be on a sabbatical leave for 2014-2015. Professors Jimin Ding and Nan Lin will be on leave for the Fall 2014 semester only, and Professor Jack Shapiro during the Spring 2015 semester.

Professor Richard Rochberg retired at the end of the past academic year, but we expect to continue to see him around the Department.

Finally, we are saddened by the loss of [Professor Emeritus Al Baernstein](http://www.math.wustl.edu/News2014/News2014_Jun_Baernstein.html) who died on June 11. Professor Baernstein retired in 2011, but some of you may remember him.

**New and Not-every-year Offerings: Course Highlights**

* Math 302, *Elementary Geometry from an Advanced Point of View* (Professor Roberts), is offered in fall 2014. Even though primarily intended for majors planning to teach secondary school mathematics, this very small class can be a nice introduction for any major to axiomatics, “classical” Euclidean geometry, and some non-Euclidean geometry. In fall 2015, Math 302 will be replaced by Math 331, *Algebraic Systems.*
* Math 370, *Introduction to Combinatorics*, (Professor Shareshian) is offered in fall 2014. The frequency of this course is not completely predictable, but it tends to be offered in alternate academic years.
* Math 415, *Partial Differential Equations* (Professor Chi) is offered in fall 2014. Math 415 is usually a fairly small class in a very active area, one that is both mathematically interesting and very useful to scientists and engineers. In fall 2015, Math 415 will be replaced by Math 416, *Complex Variables*.
* Math 407, *Introduction to Differential Geometry* (Professor Feres) will be offered in spring 2015.

It is a good background elective for students considering graduate school in mathematics, and the material can also be very useful in some parts of physics. The recommended prerequisites are Math 233, 309 and 318. In spring 2016, Math 407 will be replaced by Math 4181, *Topology II*.

* Math 4351, *Number Theory and Cryptography* (Professor Shareshian)is planned for spring 2015. The stated prerequisites are Math 233, 309 and 310.
* Math 450, *Topics in Applied Mathematics,* will be taught by Professor Stern in spring 2015. The topic will be *Numerical Methods for Differential Equations,* covering application and analysis of numerical methods for ordinary and partial differential equations. Specific topics may include: Runge-Kutta methods, geometric numerical integrators, finite difference methods, finite element methods, spectral methods, etc. Prerequisites are 449 (and, of course, Math 217). Since the course topic is different from the most recent offering of Math 450 (*Mathematics for Multimedia*, Professor Wickerhauser), it may be possible for someone who’s already taken Math 450 to take it again (possibly registering as an “independent study” with Professor Stern). If this interests you, then talk with Professor Freiwald before registering for Spring 2015 classes.
* We plan to offer Math 4392, *Advanced Linear Statistical Models* again in spring 2015. Not surprisingly, Math 439 (fall 2014) will be a prerequisite.
* In spring 2015, Professor Weiss plans to offer Math 406 (*Topics in Analysis: Special Bases in Analysis*). This course will include material on wavelets. Students who took Professor Weiss’s course Math 410 (Fourier Series) in spring 2014 should check with him about whether the overlap in the two courses is too much to make taking both courses worthwhile.
* In spring 2015, Math 495, *Stochastic Processes*, will be offered by Professor Feres. Note that the stated prerequisites are Math 318 and Math 493. This course is offered in alternate springs, so not again until spring 2017.

**The Undergraduate Math Majors Lounge**

The Ross R. Middlemiss Math Majors Lounge is in Cupples I, room 222. *(*[*Who was Ross Middlemiss?*](http://wumath.wustl.edu/ross-middlemiss-undergraduate-mathematics-lounge) *)*

If you forget the lock combination for the Lounge door, see one of the staff 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. It’s not a large space, and 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. 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.
* Not leaving 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 correct 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 [Kelly Bullard](mailto:kelly@math.wustl.edu) in the Math Office. Also notify Kelly if there are any maintenance issues (e.g., burned-out light bulbs, need for clock battery, … ) or a shortage of supplies (printer paper, chalk, …)

*Remember that the printer is provided as a convenience for majors for occasional printing of relatively small jobs. We expect to replace a toner cartridge or so each year, and to supply several packages of paper. But the budget for these is limited; if it runs out, the printer won’t be useable for the rest of the year. Please do your large printing jobs somewhere else, especially for non-math courses and extracurriculars, so that everyone will be able to have convenience printing available in the UG Lounge throughout the whole year.*

Pass along other comments or problems about the Lounge to [Ron Freiwald](mailto:rf@math.wustl.edu).

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 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 10a.m. and any leftovers will be removed at around 3p.m. to be distributed to hungry graduate students. The supply of food is finite, so “get it while it lasts.”

# Earning Money

We usually need graders each semester for some courses. If you're interested, please contact [Blake Thornton](mailto:blake@math.wustl.edu) (room 108A, 935-6301) as soon as possible. Grading positions for the fall may have been already filled, but he can tell you whether we have any other positions available and talk to you about work for the spring semester. If there’s a favorite faculty member teaching a course you’d like to grade next spring, 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 Professor Thornton to see if this is possible (well in advance so that he hasn’t already assigned a grader to the course).

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

If you’re interested in academic mentoring: you can

* Consider work at Cornerstone Office (in Gregg Residence Hall on the South 40): see

<http://cornerstone.wustl.edu/AboutCornerstone/StudentEmployment.aspx>. The department has to recommend you if you haven’t done it before.

Generally, for a recommendation to be a mentor for 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 mentoring beyond the level of Calculus II, we’ll make individual judgments about recommendations, but you should probably have better than a 3.3 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 at the calculus level, but also for other courses (for example, 309, 493-494, 429-430, 4111-4121, … )—and sometimes we don’t have names available for more advanced courses. If you didn’t do so over the summer, then contact [Professor Freiwald](mailto:rf@math.wustl.edu) 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 good “fit” together.*)
* Some of you might be interested in leading one of the calculus PLTL groups. Interviews and hiring for those positions are handled each spring for the following academic year. Contact [Lisa Kuehne](mailto:lisak@math.wustl.edu) ([lisak@math.wustl.edu](mailto:lisak@math.wustl.edu)) about the timetable and details if you’re interested in PLTL for the 2015-16 academic year. Lisa’s office is in Cupples I, room 109 (935-4226)

**[Distinction in Mathematics & Latin Honors](https://wumath.wustl.edu/undergraduate/information-math-majors/distinction-and-latin-honors/requirements-and-suggestions)**

All graduating majors (including second majors) are eligible for the awards of Distinction, High Distinction, or Highest Distinction in Mathematics. Specifics are on the [Distinction in Mathematics Awards webpage.](https://wumath.wustl.edu/undergraduate/information-math-majors/distinction-and-latin-honors/graduation-distinction)  The Distinction Award depends only the upper level math GPA and math courses taken. In practice most majors, especially second majors, will probably only consider the Distinction Award, since a written senior thesis is among the requirements for the other two awards.

Latin Honors are an award attached to the degree, not the major. Therefore they are awarded by the school that grants the student’s degree (Arts & Sciences, Engineering, Business, …), and each school sets its own criteria. As part of Arts & Sciences, the Math Department is not involved with awarding Latin Honors to students graduating from other undergraduate schools, even if there is a second major in mathematics.

For majors in Arts & Sciences, the College’s decision to award a degree with Latin Honors depends on the overall GPA and a recommendation from the Department. The Department will recommend those majors who meet the College’s GPA requirements and the Department’s criteria for graduation with High Distinction or Highest Distinction (both involve a written honors thesis). These students will receive both Latin Honors and the appropriate Distinction award. Specifics are on the [Latin Honors webpage](https://wumath.wustl.edu/undergraduate/information-math-majors/latin-honors-requirements-class-2015-and-later).

Senior candidates for Latin Honors: you should have already filled out your department proposal for Candidacy for Latin Honors. The written thesis and oral presentation both need to be completed by late March for those graduating in May. The College of Arts & Sciences sets the exact deadline. For a suggested timetable for your work: look [at the bottom of this linked webpage](https://wumath.wustl.edu/undergraduate/information-math-majors/distinction-and-latin-honors/requirements-and-suggestions).

**Honors Cords for Graduating Majors**

Each year the Department distributes honors cords to wear at Commencement to graduating majors who have earned Latin Honors or any of the Distinction in Mathematics Awards, and students who are recipients of one of the [Departmental Prizes.](http://wumath.wustl.edu/undergraduate/information-math-majors/departmental-prizes-and-awards)

Honors Cords will distributed at the Annual Department Awards Ceremony on Thursday, April 23, 2015 at 4:30 in room 199.

Students who have earned Honors Cords and are graduating in August or December can pick them up from Professor Freiwald (Cupples I, 201).

**Miscellaneous**

Juniors Meeting

Not long after classes start you’ll get an email about an upcoming meeting especially for 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](mailto:kumar@math.wustl.edu), the Chair of our Graduate Committee, would 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](mailto:roberts@math.wustl.edu) might also be a good resource for general information.

Also look at the resources at the [AMS website for math majors](http://www.ams.org/programs/students/undergrad/undergrad). In particular there, notice the [Postbaccalaureate Program, Smith College,](http://www.math.smith.edu/center/postbac.php) for women with bachelor's degrees who did not major in mathematics or whose mathematics major was light.

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](http://careercenter.wustl.edu/Pages/default.aspx): 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.

Also look for the links on [Web Pages for Math Students](https://wumath.wustl.edu/undergraduate-new/web-pages-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 start soon after classes begin. You are welcome at the practice sessions even if you don’t plan to actually participate in the competition (always held on the first Saturday in December). Any number of students can participate.

[See how the MAA describes the nature of the exam material](http://wumath.wustl.edu/undergraduate-new/putnam-competition-description)

Missouri MAA Competition, sponsored by the Missouri Section of the MAA

The 20th annual [Missouri Collegiate Mathematics Competition](http://www.math-cs.ucmo.edu/~hchen/contest/) will be held on the campus of Missouri University of Science and Technology (Rolla, MO) on Thursday evening/Friday morning March 26-27, 2015. Early in the second semester, we’ll ask who’s interested in participating (leaving W.U. mid-afternoon Thursday and returning Saturday morning). We can take two teams (3 students each) to this statewide competition; if more than 6 are interested in going, then we’ll have to make some choices based on class, courses taken, grades, … The Department will provide transportation and cover expenses.

Also, the Missouri Competition overlaps with the spring meeting of the MAA Missouri Section at the same location on March 27-28, 2015. 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

[Peter Lu](mailto:peter.lu@wustl.edu) will be serving as president of the Math Club this year. He’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 whatever. Please send any suggestions.

[Washington University Actuarial Club (WUAC)](https://www.facebook.com/groups/103451909750291/)

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 [Michael Kim](mailto:khmichaelkim@gmail.com) or [Wen Xi Lee](mailto:wenxilee@go.wustl.edu) .

[Math Circles](http://wumath.wustl.edu/undergraduate/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 2013-2014. Near the bottom of the Undergraduate Web Page, you’ll find a link to an [article from](http://www.math.wustl.edu/%7Efreiwald/mathcircles.htm) [the W.U.Record](http://www.math.wustl.edu/%7Efreiwald/mathcircles.htm) about Math Circles.  Contact [Dr. Blake Thornton](mailto:Dr.%20Blake%20Thornton) (Cupples I 108A, 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. The tentative date/speaker for this year is Thursday, March 19, with speaker Professor Francis Su (Harvey Mudd College and President of the MAA). Watch for more details later.

**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 such interactions, 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 W.U. 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](http://wumath.wustl.edu/events)” link on the Department’s home page. 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 Tuesday, December 9, 2014—the day before finals start in the Department Lounge (room 200). It’s a good break from your study 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 23, 2015. This is an occasion to present teaching awards to faculty and graduate students, present undergraduate prizes and honors cords, 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 the day before Commencement, Thursday, May 14, 2012—immediately following the Arts & Sciences Recognition Ceremony.

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](mailto:wright@math.wustl.edu), David Wright (room 206) 935-6781
* [Director of Undergraduate Studies](mailto:rf@math.wustl.edu), Ron Freiwald (room 201) 935-6737
* [Coordinator for Lower Division Teaching](mailto:blake@math.wustl.edu), Blake Thornton (room 108A) 935-6301

Thanks and have a good semester!

Ron Freiwald, and the

Mathematics Department Undergraduate Committee

August 2014