Goodsell Gazette

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Welcome to Spring Term in the Math & Stats Department!

It's finally spring term at Carleton! The final nine weeks of this academic year in the department will prove to be busy and exciting.

Not only are students taking a whole slew of exciting classes (such as Combinatorial Games and Introduction to Sampling Techniques), we are also excited to welcome newly-declared sophomore majors into the department! Other things to look forward to include comps talks, speakers, and the department picnic. Get ready; this spring term is sure to be tons of fun!

Carleton teams shine at the Midwest Undergraduate Data Analytics Competition

Two teams of Carls participated in the 8th annual Midwest Undergraduate Data Analytics Competition (MUDAC) at Minnesota State University, Mankato, from March 30-31. Yuta Baba, Nobuaki Masaki, and Saahithi Rao took home third place out of 30 teams; and Chiraag Gohel, Elliot Pickens, and Zhihan Yang earned an honorable mention, finishing in the top five. Carleton was the only school to have two teams finish in the top five! Congratulations to everyone who participated!

Math Colloquium Talk

Speaker: Tim Trudgian, UNSW Canberra at ADFA
Date/Time: Tuesday, April 9, 4:00 - 5:00pm
Location: CMC 206

Title: Primes with Riemann and Computers

Abstract: It is easy to count the number of primes less than 10. However, it is impossible to say exactly how many primes are less than 10^100. We can say something about this, though, and this is due mainly

to Riemann in the 19th century. I shall introduce the prime number theorem, and talk about some of the mathematics that goes into estimating the number of primes in an interval.

Sophia publishes her second crossword in the NYT!

Sophia Maymundes, a junior Math major at Carleton, published her second crossword in the New York Times with the help of Jeff Chen. Sophia's first puzzle was a Thursday puzzle back in December and her second was a Sunday puzzle that appeared on March 17. Visit this link to learn more about it:

https://www.nytimes.com/2019/03/16/crosswords/daily-puzzle-2019-03-17.html

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Problem Solving Group

If you have always really enjoyed the problem-solving aspect to your classes, then the problem-solving group is just for you. Come join us in CMC 328 from 4:30-5:30 on Wednesdays, where we will work on solving some fun and challenging math problems together. All are welcome. There will be a variety of problems available, including some from problem-solving books, some from contests (such as the Putnam), and some from journals.

Rafe Jones will be hosting the sessions. You can contact him for more details at (rfjones@carleton.edu).

Job for the summer = Job for the year

Still looking for that exciting summer job? Well, look no further! Contact Mike Tie (mtie@carleton.edu x4067 cmc305). Mike is looking for three Assistant System Administrators to help him set up labs and classrooms for the upcoming school year. There will be some programming, writing documentation, building web pages, lots of software installations and imaging. Help faculty and summer researchers with anything and everything related to computers. You'll work with Linux, Windows, and OSX. No experience needed; you will be trained as you go. The positions are budgeted for 10 weeks of the summer, and that leaves you time to still enjoy a summer vacation. And best of all, you get to continue working for Mike during the school year.

Work in the Math and Stats Department Next Year!

Are you interested in getting involved in the Mathematics and Statistics Department next year and need to fill your work-study hours? We are looking for course graders and lab assistants, as well as tutors for the Math Skills Center. Applications are due by 5pm on April 21. For more information and to apply, visit:
https://apps.carleton.edu/curricular/math/resources/

Upcoming Events

Week 2, Tuesday, April 9, 4:00pm
Math Colloquium Talk, Tim Trudgian - CMC 206

Job & Internship Opportunities

CTY, Summer Teaching Assistant
The Johns Hopkins University Center for Talented Youth's summer programs provide three-week courses to academically talented high school and middle school students. We are looking for instructors for our locations in Northern and Southern California, Washington, Pennsylvania, Maryland, New Jersey, New York, and Rhode Island, as well as internationally in Hong Kong. Room and board are provided on campus for staff at our residential sites. Positions are for 3 or 6 weeks. Courses are offered in advanced topics, such as Number Theory, Mathematical Logic, Mathematical Modeling, Cryptology, and more. Details of our available instructor positions are below. For more information and to apply, visit: cty.jhu.edu/jobs/summer.

BMO Capital Markets, Summer 2020 Positions
Carleton alum, Andy May '15, Investment Banking Associate for BMO Capital Markets will be on-campus to talk more about Investment Banking, how to get into Investment Banking and opportunities with BMO Capital Markets. He will be posting a summer internship for a current sophomore for the summer after their junior year (summer, 2020). He will also hold 1:1 sessions following the session. RSVP for a slot via The Tunnel.

Fish & Richardson, Financial Management Analyst
Fish & Richardson, a premier global intellectual property law firm, is sought-after and trusted by the world's most innovative brands and influential technology leaders. Join Fish's downtown Minneapolis team in their fast-paced Finance Department as a Financial Management Analyst. This exciting opportunity will expose the ideal candidate to all aspects of financial operations. From pricing management and analysis, recurring and ad hoc reporting, revenue and expense management, to assessing operational performance and making related recommendations to management, you will be working with experienced professionals throughout the organization, making valuable contributions on a daily basis. The application deadline is April 12. For more informatiom and to apply, visit: The Tunnel.

Problems of the Fortnight

To be acknowledged in the next *Gazette*, solutions to these problems should reach me by noon on Tuesday, April 16.

1. For a quadrilateral (four-sided figure) in the plane, it is straightforward that if the four sides all have the same length and the four angles are all equal, then that angle is $90°$ or possibly (if degenerate quadrilaterals are allowed) $0°$. How about for a "quadrilateral" in 3-space, where not all four sides have to be in the same plane? That is, what are the possible values of the angle α if A, B, C, D are points in space such that the distances AB, BC, CD, DA are all equal and the angles ABC, BCD, CDA, DAB (which will usually lie in different planes) are all equal to α?

2. Let $n \geq 4$ be an integer, and suppose the integers $1, 2, \ldots, n$ are arranged in order around a circle. Now delete the integer 1, and skip over the next two integers (2 and 3). Repeat this process, deleting one integer and skipping over the next two, always continuing in the same direction around the circle. (Once an integer has been deleted, it doesn't count as being skipped over.) When there are just two integers left, delete the one you would skip over first, leaving the other one as the final survivor. (If you like, you skip over them both, which gets you back to the first one, and then you delete that first one.) For example, for $n = 12$ you start by deleting $1, 4, 7, 10$ in that order, then you skip over 11 and 12 and delete 2, next you skip over 3 and 5 and delete 6, and so on; the final survivor is 8. For $n = 14$ the full sequence of deleted integers will be $1, 4, 7, 10, 13, 3, 8, 12, 5, 11, 6, 2, 9$, and the final survivor is 14. Here's the problem: Are there infinitely many values of n for which the final survivor is n? (We've just seen that $n = 14$ is one such value.) If so, show why; if not, find the largest value of n for which the final survivor is n.

Maybe it was too close to final exams ... In any case, no student solutions have come in for the problems posed March 8. Solutions did arrive from faithful readers "Auplume" (for both problems) and John Snyder (for the second problem). Enjoy the new problems, and good luck with them!

- Mark Krusemeyer

Having trouble seeing the problem of the fortnight? Try enabling images for the message.

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