Meet the Professors!

This fall, we welcomed Deepak Bastola and Claudio Gomez-Gonzales to the Mathematics and Statistics Department.

Deepak Bastola

Deepak was born in Nepal, in the foothills of the Himalayas. While attending St. Xavier’s college in Kathmandu, he was exposed to many educational paths abroad. As a travel fanatic and with the promise of an unparalleled education, he came to the US and earned his undergraduate degrees in mathematics and physics from Texas A & M University. He got an exciting opportunity to travel and complete my masters in his favorite scientific field, astrophysics, at three prominent European universities in Austria, Germany, and Italy. Deepak came back to the US to pursue a PhD in applied statistics, a field at the intersection of his research interests and all of his accumulated skills.

His passion for mathematics and innate curiosity of numbers led him to travel the world and gain quality education. As of now, Deepak is carrying that enthusiasm forward and is inspiring many students at Carleton to pursue their passion. He likes mountain biking, hiking, playing soccer, and listening to electronic house music.

Claudio Gómez-Gonzáles

Claudio is from Albuquerque and attended college in the shadow of Magdalena Mountain at New Mexico Tech where he waffled between studying physics, computer science, and math. He participated in a summer REU at the University of Chicago before becoming a Masters and later a PhD student at the same institution, where he studied arithmetic topology with Benson Farb. Claudio was also involved with his graduate student union and the University of Chicago Labor Council, where he made several lifelong friends including his partner, Natalia Piland, who is (among other things) a brilliant interdisciplinary scientist and committed organizer. After a brief postdoc at the University of
California, Irvine, Claudio joined the faculty of Carleton College this Fall where he is currently teaching Calculus II (120) and Abstract Algebra I (342) as well as Mathematical Structures (236) in the Spring.

---

**Budapest Semesters in Mathematics or Mathematics Education Information Session**

Are you interested in studying abroad in beautiful, historic Budapest with either the Budapest Semesters in Mathematics or the Budapest Semesters in Mathematics Education program? There will be a zoom information session with directors of these programs on Wednesday, January 26, 4:30-5:30. We'll send out the zoom link to the mast-interest list, so if you're interested, make sure you're on that list.

If you are applying to either program, you also need to apply to Carleton for OCS permission, as well as to the math/stats department. The department as a whole then acts as your recommenders, so you don't need to request individual recommendations from members of the department. These forms, along with more information about the programs, are available at [www.carleton.edu/math/further-opportunities/off-campus/](http://www.carleton.edu/math/further-opportunities/off-campus/) and are due by January 30th. If you have any questions, contact Owen Biesel (obiesel@carleton.edu).

---

**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 4:00-5:00 on Wednesdays, where we will work on solving some fun and challenging math problems together. All are welcome. This term we will focus on working problems from past editions of the Konhauser problemfest, a semi-legendary local team competition that features fun and challenging problems of a variety of difficulty levels, and occurs each February. Watch the Gazette for information later this term on how to sign up.

Rafe Jones will be hosting the session. You can contact him for more information at (rfjones@carleton.edu). If you can’t make the meeting but would like to stay up to date on activities of the problem-solving group, join our email list, send Rafe an email.

---

**Job, Internship, & Other Opportunities**

**Boston University Summer Institute in Biostatistics and Data Science**

The Boston University Summer Institute in Biostatistics and Data Science (BU SIBS) introduces students to the field of Biostatistics; a vibrant and growing career path that they may not have considered. BU SIBS introduces students to the field of Biostatistics with modules in statistics, epidemiology, infectious disease, statistical genetics and clinical trials.

This year’s program will be held in-person from June 6 – July 8, following the in-person program from July 11-mid-August students will be paired with a Biostatistics faculty mentor and work in groups to work on a research project remotely. Tuition (4 credits), supplies and computer program licenses are funded for all students attending. A stipend may be available to participants. We are seeking to engage a diverse group of students to participate.
Find more information and apply at www.bu.edu/sph/about/departments/biostatistics/summer-institute-for-training-in-biostatistics/.

Research Fellowships - Yale Child Study Center, Yale University School of Medicine

The Yale Autism Center of Excellence (ACE) and Yale Social and Affective Neuroscience of Autism Program (SANA) is interested in recruiting highly qualified students for exciting pre-doctoral fellowships for current graduates or graduating seniors. Anticipated start date is July 2022.

Completed applications including cover page, CV, transcripts, letters of recommendation, and personal statements are due no later than January 15, 2022.

Additional information about Yale Fellowship in Developmental Psychopathology and Social Neuroscience can be found at medicine.yale.edu/lab/chawarska/jobs/postgrad/.

Additional information about Yale Fellowship in Developmental Neuroscience of Autism can be found at medicine.yale.edu/lab/chawarska/jobs/translational/.

Math Camp Counselor - Epsilon Camp

Epsilon Camp is a two-week residential summer program for highly gifted 7-11 year old who are captivated by math. Help introduce campers to the rich world of higher mathematics. Topics taught by math professors and professional mathematicians range from methods of proof to hyperbolic geometry to visual group theory. Counselors provide classroom support for the faculty, lead unstructured mathematical play, and supervise campers throughout the day.

More information and how to apply can be found at epsiloncamp.org/jobs.

Financial Management Analyst - Fish & Richardson P.C.

Join Fish’s downtown Minneapolis team in our fast-paced Accounting & 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.

Apply on Handshake by January 26: carleton.joinhandshake.com/stu/jobs/5673554.
Happy New Year! It seems appropriate to start the year with two problems that feature the number 2022. To be acknowledged in the next Gazette, solutions to these problems should reach me by noon on Tuesday, January 25.

1. Suppose you write down the integers from 1 to 2022 inclusive, in order, with spaces between them, and then put one of the two symbols + and − in each space. Because you have 2021 independent decisions to make (which symbol to use in each space), there are $2^{2021}$ different expressions you can come up with. However, when you evaluate these expressions there will be lots of repetition among the answers, so there aren’t nearly as many different values the expressions can have (as an example, the largest value is $1 + 2 + 3 + \cdots + 2022$). Exactly how many possible values are there, and why?

2. Consider the $2024 \times 2024$ matrix whose $(i, j)$ entry (that is, the entry in the $i$th row and $j$th column) is $(i + j - 2)^{2022}$. Find (with proof) the determinant of this matrix, that is, find

$$
\text{det} \begin{pmatrix}
0 & 1 & 2^{2022} & \cdots & 2023^{2022} \\
1 & 2^{2022} & 3^{2022} & \cdots & 2024^{2022} \\
2^{2022} & 3^{2022} & 4^{2022} & \cdots & 2025^{2022} \\
\vdots & \vdots & \vdots & \ddots & \vdots \\
2023^{2022} & 2024^{2022} & 2025^{2022} & \cdots & 4046^{2022}
\end{pmatrix}.
$$

Sadly, no solutions to the problems posed November 19 have arrived. Good luck on the problems above, as well as on your various projects in the new term, not to mention dealing with the prevalence of omicron and staying as safe and healthy as possible!

- Mark Krusemeyer

---

Editors: Laura Chihara, Antonia Ritter
Problems of the Fortnight: Mark Krusemeyer
Web & Subscriptions: Sue Jandro