Work in the Math and Stats Department Next Year!

Are you interested in working for the Mathematics and Statistics Department next year? Are you looking for a flexible job on campus and an opportunity to work with and for your professors? Do you want to help other students learn mathematics and statistics with the added benefit of learning the material *better* for yourself?!

We are looking for students to work in a variety of positions, including math and stat course graders, teaching assistants, prefects, and Gazette editor. Teaching assistant's duties may vary depending on the course and instructor preferences, but they could include some combination of office hours, grading, and one-on-one help for students in a specific course. Prefects will be working for Kathy Evertz (Academic Support Center) and will need to meet the criteria for that program. Graders and TAs should have received at least a B+ in the class you would like to grade (or have had an AP score that tested you out of the course). If you took a class in the spring of 2020 and you did well in the class, let us know in the comment section of the application.

We also need students to work in our Stats Lab (CMC 201) to assist students from a variety of stats courses on HW, project and R questions. Students interested in working in the stats lab should be comfortable with R and R Markdown, have a B+ or higher in either Stat 120 (Math 215) or Stat 250 (Math 275), and a B+ or higher in Stat 230 (Math 245); we highly recommend having taken Stat 220 (Math 285) though this is not a requirement.

The [application](#) for these positions is now available and due on **Sunday, April 10**.

The Math Skills Center will also be hiring tutors for next year and you can apply [here](#).

If you have questions about the math and stats positions outlined here please contact Sue Jandro. If you have questions about tutoring in the Math Skills Center please contact Russ Petricka.

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**Free Books!**

The Math and Stats Department will be holding a free book giveaway on Saturday, April 16 from 10 AM - 1 PM in CMC 209. Come and bring your friends and take as many books as you would like.
Job, Internship, & Other Opportunities

Fall Term Science Undergraduate Lab Internships - US Department of Energy Office of Science

The Office of Science / US Department of Energy is pleased to announce paid research internship opportunities for undergraduate students majoring in the areas of Science, Technology, Engineering, and Mathematics (STEM) for the Fall of 2022. The application system for the 2022 Fall Term Science Undergraduate Laboratory Internships (SULI) program is currently open, with all applications due by 05:00 PM Eastern Time on May 26, 2022.

The Science Undergraduate Laboratory Internships (SULI) program places students from 2 and 4 year undergraduate institutions as paid interns in science and engineering research activities at DOE national laboratories and facilities, working with laboratory staff scientists and engineers on projects related to ongoing research programs. Appointments are for 16 weeks during the Fall term, are open to US Citizens and US Lawful Permanent Residents, include a weekly stipend, reimbursement for one round trip domestic travel to the participant’s host DOE laboratory, and possibilities for a housing allowance. More than 850 internships are sponsored annually.

The application is made online. Full program information and descriptions, including links to the online application system, are available at science.osti.gov/wdts/suli/.

Economic Research Analysts - U.S. Department of Justice, Antitrust Division, Economic Analysis Group

The Economic Analysis Group in the Antitrust Division of the U.S. Department of Justice is soliciting applications for full-time economic research analyst positions in Washington, DC starting in the Summer 2022. The Economic Analysis Group is looking for detail-oriented highly motivated individuals interested in economics.

A bachelor’s degree with a grade point average of 3.0 or better is required, and you must be a U.S. citizen. Experience in working with spreadsheets, statistics, computer programming, and econometrics is useful. Course work in statistics, econometrics, calculus, computer science, and linear algebra is also useful.

By April 17, 2022, please submit a resume, a short writing sample on an economic topic, names and emails of three references, and a copy of your college transcript, via e-mail to: U.S. Department of Justice Antitrust Division, atr.eagra@usdoj.gov.

A formal application through usajobs.gov will be required. Find more information on Handshake.

GIS & Data Analysis Internship - Southern Environmental Law Center

The Southern Environmental Law Center is seeking a current university student with geospatial data analysis experience to research, build, and update databases relating to hazardous sites in the Southeast and their adjacent communities. Likely topics may include but are not limited to, industrial facilities in floodplains, sources of toxic industrial chemicals, historic and active community identities, and the role of carbon storage.

• Duration: Summer 20-40 hrs/wk
• Compensation $10/hr for undergraduates and $12/hr for those with a bachelor’s degree
• Location: Remote
• Applications are due Tuesday, April 12th at 5 p.m. EST
• Please send a cover letter and resume to Libbie Weimer at lweimer@selcnc.org

Find more information on Handshake.

**Python Developer/Business Analyst - Optum, a UnitedHealth Group Company**

As the Python Developer/Business Analyst, you will perform critical research and investigation of key business problems. You will leverage your strong business skills and translate them into solid technical solutions.

**Primary Responsibilities:**
- Support the data infrastructure for the Optimal Care HCE initiative
- Develop data queries and extracts necessary for Optimal Care analytics initiatives
- Provide claims, premium, capitation, and membership data in support of provider reporting and utilization analyses
- Create and update automated processes
- Produce and review reports

**Required Qualifications:**
- 2+ years of experience in Python, with high-level proficiency
- Experience using Python data libraries such as pandas
- Bachelor's degree with either a major or minor in Computer Science or equivalent
- Exposure to a introductory statistical concepts such as linear regression
- Ability and interest in learning the intricacies of the business and translating them to technical solutions

Submit a résumé and transcript via Handshake.
Welcome back for the new term! As you probably expect, solutions to these problems should reach me by noon on Tuesday, April 19 to be acknowledged in the next Gazette.

1. As the snow started to melt in northern Minnesota, a few students from the geometry class at Wohascum High discovered six old railroad ties and decided to use them to build a regular tetrahedron. They started by putting down three of the ties, which were six feet long, in an equilateral triangle. Unfortunately, they then realized that only one of the three remaining ties was also six feet long; the other two were seven and eight feet, respectively. Because the students had nothing to cut the ties with, it was decided to go ahead and finish building a tetrahedron anyway. How much taller was the result than the students had originally intended?

2. It is fairly well known that there exist arbitrarily large intervals of positive integers that don’t contain any primes; in other words, given a positive integer \( N \), it is possible to find a “run” of \( N \) consecutive integers that are all composite. Is it also possible to find arbitrarily large intervals of positive integers that don’t contain any powers of primes? (Primes themselves count as [first] powers of primes. For instance, the complete list of powers of primes that are at most 50 is:

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2, 3, 4, 5, 7, 8, 9, 11, 13, 16, 17, 19, 23, 25, 27, 29, 31, 32, 37, 41, 43, 47, 49.
\]

Thus there are several cases of five consecutive composite integers \( \leq 50 \), specifically 24 through 28 and 32 through 36, but the longest “run” of consecutive integers \( \leq 50 \) that are not powers of primes consists of only four integers, 33 through 36.) If it is possible for every \( N \) to find \( N \) consecutive positive integers that are not prime powers, show why; if it is not possible for every \( N \), find the largest \( N \) for which it is possible.

The first part of the second problem posed March 11 was posed by Oliver Calder; he should consult with Sue Jandro about picking up a B.B.O.P. item. Otherwise, the drought of solutions continues, but maybe that’s about to change ... after all, it’s been anything but dry outside recently ...

- Mark Krusemeyer