Careers in Mathematics

April 8, 2024
WHAT'S OUT THERE FOR SOMEONE WITH YOUR TALENTS, INTERESTS, AND BACKGROUND?

Growing disciplines to consider and look into more closely:

- Climatology and Climate Change Impacts
- Computer Animation and Digital Imaging
- Data Mining and Differential Privacy
- Data Science
- Ecology/Epidemiology/Environment
- Machine Learning and Artificial Intelligence
- Materials Science
- Personalized Medicine
- Quantum Information Science
- STEM Ethics
- Systems Biology
Current trending fields

Statistics/Data Science

- Any company that deals with data needs statisticians and data scientists.
- Actuaries use statistics to help determine pricing for insurance companies, etc.
- “Artificial intelligence”, “machine learning” and “data mining” are really statistics and optimization.

Mathematical Biology/Public Health

- Bioinformaticians apply statistics and discrete mathematics to molecular biology
- Epidemiologists apply mathematical models and statistics to study disease spread and treatment effectiveness
Advice we heard

- Math skills are in demand, such skills can set you apart from the crowd – currently there is more demand for math majors than supply (e.g., the state is drastically in need of math teachers).
- Math gave foundation to pick up needed skills along the way.
- Finding a research experience can be life-changing.
- Earlier you start exams are better for actuarial careers, also consider taking business/accounting courses.
Technical Skills

- Take some statistics and linear algebra courses (Math 372 (Intro to Prob and Stats), Math 471 (Probability), Math 472 (Mathematical Statistics), Math 414 (Optimization), ICS 235 (Machine Learning Methods), ICS 435 (Machine Learning Fundamentals, Math 307/311 (Linear Algebra), Math 407 (Numerical Analysis))
- **Tracks and Certificates:** (i) Data Science Track (BS), (ii) Computational Science Track (BS), and (iii) Mathematical Biology Certificate.
- Learn some programming (ICS 235 and 435 are Python based)
- Gain data science skills (check out workshops at the Data Science Institute)
- Work on projects (check emails for opportunities, apply to UROP, explore [mathprograms.org](http://mathprograms.org), join informational sessions on UR, sign up for HIDSI mailing list, etc.)

Soft Skills

- **Communication skills** are important.
- Find joy in what you are doing, showing up and being present.