
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, join informational sessions on UR, sign up for HIDS I mailing list, etc.)

Soft Skills

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