

CAREER PATHS IN THE
MATHEMATICAL SCIENCES A JOINT
IMA/MATH ALLIANCE WORKSHOP
ON: THE MATHEMATICS OF A JUST
AND FAIR SOCIETY

Providing resources and preparation for the modern mathematical career

A discussion with Math Alliance Mentors led by

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An attitude towards the undergraduate major

We should view undergraduate majors in the mathematical sciences as early professional mathematical scientists.

By the time students have graduated with an undergraduate degree in the mathematical sciences, they should have been given the opportunity to

1. Communicate mathematical/statistical concepts
2. Conduct investigations into mathematical/statistical ideas
3. Had an opportunity to apply mathematics/statistics

A professional mathematical scientist

1. Has a resume or cv
2. Attends professional conferences
3. Conducts research in the mathematical sciences or applies mathematical/statistical methods to understand natural processes
4. Communicates mathematical/statistical ideas
5. Is a member of professional organizations
6. Learns to function in a professional setting

Providing resources and preparation for the modern mathematical sciences career

First Year of Studies

Second Year of Studies

Third Year of Studies

Fourth Year of Studies

First Year of Studies

First Year of Studies

1. Advising: A long view of the major with a supporting minor that could be turned into another major
2. Development of programming skills
3. The beginnings of professionalism: A resume
4. Joining a student club, hopefully a technically based club that could offer tutoring services
5. Campus or departmental employment opportunities
6. Preparations for summer 1, local research opportunities

Second Year of Studies

Second Year of Studies

1. Advising: Student will complete lower division courses this year. Plans for a supporting minor fleshed out. Description of major and minor courses for the last two years.
2. Students begins attending the annual career fairs, with resume in hand.
3. Student establishing relationships with faculty. Letters of support.
4. Graduate school possibilities (not necessarily in math) or joining the workforce. This impacts selection of courses.
5. Plans for summer 2: Internships or research opportunities
6. Leadership opportunities on campus
7. Annotated list of summer opportunities
8. [https://mathalliance.org/wp-content/uploads/2021/01/Summer REU 2021-1.pdf](https://mathalliance.org/wp-content/uploads/2021/01/Summer_REU_2021-1.pdf)

There are three semester-long study abroad math programs taught in English

If the student has the resources to spend a semester abroad, there are limited opportunities for the student to pursue studies in the mathematical sciences.

Budapest

- **Budapest Semesters in Mathematics,**
<https://budapestsemesters.com/>
- Prerequisites: Have completed one semester courses in either real analysis or abstract algebra.
- Tuition per semester: \$12,545
- Estimated Living Costs per semester, excluding airfare: \$7,000
- There is also a summer semester.

MOSCOW

- **Math in Moscow**, <https://mathinmoscow.org/>
- Prerequisites: Have completed one semester courses in real analysis and linear algebra.
- Tuition per semester: \$9,000
- Estimated Living Costs per semester, excluding airfare: \$4,700

Guanajuato, Mexico

- **Mathematical Sciences Semesters in Guanajuato (MSSG)**
<https://mathsciencesgto.cimat.mx/> Prerequisites: Have completed three semesters of calculus and linear algebra.
- Tuition per semester: \$7,500.
- Estimated Living Costs per semester, excluding airfare: \$2,600.
- There is also a summer semester

Third Year of Studies

1. Advising: Plan for last two years, allowing for flexibility in the selection of courses. More focused conversations about graduate study or joining workforce.
2. Opportunities to attend conferences. Internships or research
3. Taking a leadership role in student clubs. This enables students to developing a response to Broader Impacts when applying for NSF graduate fellowships
4. Research with faculty
5. Programs for students to communicate technical ideas

Fourth Year of Studies

1. Advising: Program of study is set, but still flexibility is needed. With a strong minor, student can apply for graduate study in that minor instead of mathematical sciences or pursue employment in minor area.
2. Mentor is now advising about career paths, reaching out to contacts. Math Alliance if appropriate.
3. Summer internships or research are still possible after graduation.
4. Helping student with letters of interest, career center