

## Assessment of programs 2021-2022

### B.S. and B.A degrees in Mathematics

Assessment of our mathematics majors is done in a variety of forms, mostly in an on-going basis through the department's Undergraduate Committee's review of STEM and mathematics major courses. In addition to course work, students are also assessed by through their overall levels of participation in department, university and professional activities; these include interdisciplinary research projects, career fairs, REU's, internships, Math Club, AWM (Association for Women in Mathematics), Celebration of Mind, tutoring, and the Putnam Exam.

Our production of math graduates has been approximately constant in the last few years. The number of BA and BS degrees in the last several years are given in the following table.

	2015	2016	2017	2018	2019	2020	2021
BA	15	17	18	13	14	5	16
BS	8	13	17	15	28	23	21
Total	23	30	35	28	42	28	37

The average of these last several academic years is about 32 total degrees. (The 2021–2022 year figure is an estimate to date.) This year's number of graduates is at the higher end for this period. While the number of BA graduates has been mostly constant (except for the exceptional year 2020), the increase is largely due to the increase in the number of BS graduates.

One of the main assessments of our math majors occurs in the Mathematics Major Seminar (MATH 4933). This course serves as a capstone course for students in the major, and requires the completion of a written paper on a topic of mathematics. (An honors thesis can substitute for the paper.) Students are also assessed by taking a national standardized exam in mathematics, the Mathematics Field Test (MFT).

The MFT exam in Mathematics is taken by students almost 200 institutions across the country. Over the last several years, their reported data has a mean of 157.4 and median of 153.0. Furthermore, the institutional mean (respectively, median) is 154.8 (respectively, 155.0). Twenty BA and BS students in the department took the exam this Spring. The results are listed in the table below. Our students compare favorably, with a mean of 162 and median of 153, the mean score being is significantly higher than the institutional means.

	Institutional	U of A BA/BS	U of A BS	U of A BA
Mean	154.8	162	166	150
Median	155.0	153	159	150

There were only five BA students in the cohort, which may partially explain the lower figure. On the other hand, the BS majors performed significantly higher. This includes two students with perfect scores.

Graduating students are also assessed via an exit interview questionnaire. The following are responses for the twenty students.

In the first 5 questions, students were asked to rate responses on a 1–5-star scale. The questions and average rating is listed below.

Question	Average star rating
Quality of instruction from faculty in the department	4.15
Concern of department faculty toward math majors	3.95
Sense of community among math majors and math faculty	3.50
Quality of advising from mathematics faculty mentor	3.25
Overall assessment of the Department of Mathematical Sciences	4.05

The highest results are achieved by the quality of instruction. As to the lowest evaluation, the quality of advising, this includes five students who did not include a rating (according to instructions, to do so when the student does not know who their assigned department faculty mentor is); otherwise, the figure becomes 4.33. The overall assessment of the department is a positive one.

The next three questions assessed the major more specifically, using the following scale:

1 = strongly agree, 2 = agree, 3 = neutral, 4 = disagree, 5 = strongly disagree

Core major questions	Average response
The courses required for the major were challenging	2.5
The program prepared me well for my career plans	3.4
I would recommend becoming a math major at the U of A to others	3.2

These results indicate agreement that courses for the major were considered challenging. On the other hand, more than half of the students disagreed that the program well-prepared them for career plans. Similarly, only a quarter of the cohort agree (or strongly agree) with recommending becoming a math major at our Institution. Despite this, only three students

stated that there were not glad to have chosen the math major, and only one that there were unsatisfied with the variety of courses offered by the department.

The future plans of graduates includes Software Engineer (4), Graduate School (3), and Law School.