

## Employment of Mathematical Sciences Majors

The bulk of the responses to the following questions are based on the National Science Foundation's report *Characteristics of Recent Science and Engineering Graduates: 2003* (NSF 06329). This is the most recent report by the NSF, and was published in September 2006. Links to this report and to prior and related reports can be found at:

<http://www.nsf.gov/sbe/srs/nsrcg/start.htm>

### Central Questions

1. What types of jobs do people typically get with a bachelor and master's degrees in the mathematical sciences?

Bachelor: The following table lists the primary work activities reported by the 22,200 employed mathematical sciences bachelor degree recipients surveyed for NSF 06329, together with the percentage listing each activity.

Primary work activity	n	%
Research and development	2800	13
Computer applications	3400	15
Management, sales, administration	5800	26
Teaching	7500	34
Other	2800	13

Source: Table 55 in NSF 06329.

Master's: The following table lists the primary work activities reported by the 4700 employed mathematical sciences master's degree recipients surveyed for NSF 06329, together with the percentage listing each activity.

Primary work activity	n	%
Research and development	1500	39
Computer applications	800	22
Management, sales, administration	S	S
Teaching	1500	39
Other	S	S

S denotes data that the NSF suppressed because of small sample sizes.

Source: Table 56 in NSF 06329.

Earlier reports made different distinctions between work activities. For example, see the summary of the 1993 NSF survey (NSF 93-309) compiled by the AMS at: <http://www.ams.org/careers/bachelor.html>

2. What mathematical skills are associated with these jobs?

Several jobs are listed below with typical mathematical skill requirements and the professional organization recommending those skills. Additional job description information (including general training requirements) is available in the Bureau of Labor Statistics Occupation Outlook Handbook (<http://stats.bls.gov/oco/>). Direct links to BLS job descriptions are included below.

Accounting (CPA): Mathematics and statistics including sampling, correlation and regression analysis, statistical decision theory; American Institute of CPAs (<http://ceae.aicpa.org/>).

BLS job description: <http://www.bls.gov/oco/ocos001.htm>

Actuary: Calculus, linear algebra, calculus-based probability and statistics; Society of Actuaries (<http://www.beanactuary.com/college/preparing.cfm>).

BLS job description: <http://www.bls.gov/oco/ocos041.htm>

Computer related jobs: Mathematics degrees can count toward CCP (Certified Computing Professional) certification through the Institute for Certification of Computing Professionals. (<http://www.iccp.org/iccpnew/about.html>) The Association for Computing Machinery has a number of volumes of guidelines for computer science curriculum. (<http://www.acm.org/education/curricula.html>)

BLS job descriptions:

Computer programmer: <http://stats.bls.gov/oco/ocos110.htm>

System analyst, database administrator: <http://stats.bls.gov/oco/ocos042.htm>

Computer software engineer: <http://www.bls.gov/oco/ocos267.htm>

Economist, survey and market researcher: Degrees in statistics or mathematics; Marketing Research Association (<http://www.mra-net.org/>)

BLS job description: <http://www.bls.gov/oco/ocos055.htm>

Financial analyst, personal financial advisor: Mathematics background is helpful in some certification programs. A list of programs is included in the BLS job description.

BLS job description: <http://www.bls.gov/oco/ocos259.htm>

Operations research analyst: Calculus, linear algebra, statistics, probability, other advanced mathematics; Institute for Operations Research and the Management Sciences (<http://www.informs.org/Edu/Career/q9.html>).

BLS job description: <http://www.bls.gov/oco/ocos044.htm>

Teaching: Graduates with a bachelor degree in mathematics education or who satisfy lateral entry requirements can teach in public secondary schools. Graduates with a master's degree in mathematics (or mathematics education) can teach at community colleges and some four year universities.

Statistician: Degrees in statistics.

BLS job description (<http://www.bls.gov/oco/ocos045.htm>)

## Related Questions

3. Do the mathematical sciences graduates actually use their degrees in their jobs?

Bachelor: Of the employed mathematical sciences bachelor graduates interviewed in NSF 06329, about 50% described their job as “closely related” to their degree, and 30% described their job as “somewhat related.”

Source: Table 49 in NSF 06329.

Master’s: Of the employed mathematical sciences master’s graduates interviewed in NSF 06329, about 72% described their job as “closely related” to their degree, and 23% described their job as “somewhat related.”

Source: Table 50 in NSF 06329.

4. How do employment levels for mathematical sciences majors compare to those for science and engineering students in general?

Bachelor: Restricting attention to those bachelor graduates who were in the labor force (and excluding those who were not seeking employment because of graduate school enrollment or other causes), 95.6% of mathematical sciences bachelor graduates were employed. The number of mathematical sciences graduates who were unemployed was listed as “too small to be measured.” For science and engineering graduates overall, 94.5% were employed, and 5.5% were unemployed.

Source: Table 37 in NSF 06329.

Master’s: Restricting attention to those master’s graduates who were in the labor force (and excluding those who were not seeking employment because of graduate school enrollment or other causes), 97.9% of mathematical sciences master’s graduates were employed. The number of mathematical sciences master’s graduates who were unemployed was listed as “too small to be measured.” For science and engineering graduates overall, 95.0% were employed, and 5.0% were unemployed.

Source: Table 38 in NSF 06329.

5. What proportion of mathematical sciences majors plan to attend graduate school?

Summary: Of the mathematical sciences graduates interviewed in NSF 06329, 78% said it was very likely that they would take additional college courses. Approximately 49.2% had taken additional college courses, including 32.4% who took courses in an advanced degree program.

Source: Tables 27 and 29 in NSF 06329.