

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: 2001* (NSF 04-302). This is the most recent report by the NSF, and was published in October 2003. 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 an undergraduate degree in the mathematical sciences?

Summary: The following table lists the primary work activities reported by the 21,100 employed mathematical sciences undergraduate degree recipients surveyed for NSF 04-302, together with the percentage listing each activity.

Primary work activity	n	%
Research and development	3300	16
Computer applications	3600	17
Management, sales, administration	4500	21
Teaching	8000	38
Other	1700	8

Source: Table D-11a in NSF04-302. 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://www.aicpa.org/nolimits/become/courses/index.htm>).

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/content.cfm?ID=146>)

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: Mathematics education degree, or satisfaction of lateral entry requirements.

Statistician: Bachelor's degree 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?

Summary: Of the employed mathematical sciences graduates interviewed in NSF 04-302, about 53% described their job as “closely related” to their degree, and 32% described their job as “somewhat related.”

Source: Table D-5a in NSF04-302. (See also Table D1.)

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

Summary: Restricting attention to those graduates who were in the labor force (and excluding those who were not seeking employment because of graduate school enrollment or other causes), over 99.5% of mathematical sciences graduates were employed, as compared to 96.1% of science and engineering graduates overall. Viewed as an unemployment rate, the unemployment rate for science and engineering majors was almost eight times that for mathematical science majors.

Source: Table C-5a in NSF04-302.

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

Summary: Of the mathematical sciences graduates interviewed in NSF 04-302, 66% said it was very likely that they would take additional college courses. Approximately 42.6% had taken additional college courses, while 27.0% took courses in an advanced degree program. 17.6% were enrolled as full time students at the time of the survey.

Source: Tables B-11a, B-13a, B-15a, and B-17a in NSF04-302.