

Florida Institute of Technology– Career Management Services

Career Profile: Mathematics

Mathematics is one of the oldest and most fundamental sciences. Mathematicians use mathematical theory, computational techniques, algorithms, and the latest computer technology to solve economic, scientific, engineering, physics, and business problems. The work of mathematicians falls into two broad classes—theoretical (pure) mathematics and applied mathematics.

Theoretical mathematicians advance mathematical knowledge by developing new principles and recognizing previously unknown relationships between existing principles of mathematics. Many theoretical mathematicians are employed as university faculty.

Applied mathematicians, on the other hand, use theories and techniques, such as mathematical modeling and computational methods, to formulate and solve practical problems in business, government, engineering, and the physical, life, and social sciences.



Mathematicians usually work in comfortable offices. They often are part of interdisciplinary teams that may include economists, engineers, computer scientists, physicists, technicians, and others. Deadlines, overtime work, special requests for information or analysis, and prolonged travel to attend seminars or conferences may be part of their jobs. Mathematicians who work in academia usually have a mix of teaching and research responsibilities. These mathematicians may conduct research alone or in close collaboration with other mathematicians.

A Ph.D. degree in mathematics usually is the minimum educational requirement for prospective mathematicians, except in the Federal Government. In the Federal Government, entry-level job candidates usually must have at least a bachelor's degree. Bachelor's degree holders who meet State certification requirements may become primary or secondary school mathematics teachers.

Employment of mathematicians is expected to increase by 16 percent from 2010 to 2020, about as fast as the average for all occupations. Advancements in technology that allow for better collection and processing of data will lead to an expanding need for mathematicians to analyze the data. Competition for jobs is expected because there are relatively few mathematician positions.

The number of Ph.D. degrees awarded in mathematics continues to exceed the number of available university positions. Therefore, many graduates will need to find jobs in industry or government. Those with a Ph.D. and a strong background in a related discipline—such as engineering, computer science, physics, or operations research—should have the best job prospects in related occupations, because they can best apply mathematical theory to real-world problems.

Those with a master's degree should have opportunities in applied mathematics. One use for applied mathematics will be in the growing field of cloud computing, in which companies and governments buy access to data storage and computing power over the Internet. Increasing migration to cloud computing is creating many new sources of data that have to be mined and analyzed. Mathematicians who have a master's degree will likely find opportunities in private industry.

Median annual wages in industries employing the largest numbers of mathematicians in May 2010 were as follows: The median annual wage of mathematicians was \$99,380 in May 2010. The median wage is the point at which half the workers in an occupation earned more than that amount and half earned less. The lowest 10 percent earned less than \$52,850, and the top 10 percent earned more than \$153,620. Scientific research and development \$108,230; Federal government, excluding postal service \$106,370; Management, scientific, and technical consulting services \$100,890; Architectural engineering and related services \$76,350; Colleges, universities, and related professional schools \$62,010.

For more information on a career in Mathematics contact the Career Management Services Office or your academic advisor.

Sources: Bureau of Labor Statistics, U.S. Department of Labor, Occupational Outlook Handbook, 2012-13 Edition
National Association of Colleges and Employers Salary Survey: Winter 2011



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