

Major Possibilities: Mathematics



Summary

- Many careers are available to graduates with a degree in mathematics. There are excellent prospects for people with bachelor's degrees because many positions only require an associate's degree, while a few require a master's degree or a PhD.
- Occupations in theoretical mathematics exist in academia and government research, and applied use of quantitative skills are useful in accounting, finance, actuarial science, market research, etc. More broad analytical skills can apply to a broad variety of fields.
- Experience and education correlate with the salary expected. Some companies offer cash bonuses for each professional designation achieved. Others may offer tuition reimbursement.

Mathematics major synopsis

The Mathematics major can stand alone or be blended with Computer Science to become the Computational Mathematics major. Mathematics majors are required to take at least one computer science course. Classes in mathematics include Introduction to Statistics, Calculus, Algebra, Numerical Analysis, and Differential Equations, along with other complex courses. Students can earn a Bachelor of Arts or Bachelor of Science (requiring additional science coursework) in mathematics.

Sample occupational areas

Actuary

Actuaries assess the risk of events occurring. They help create policies that minimize risk and its financial impact on companies and clients. Using their broad knowledge of statistics, finance, and business, actuaries help design insurance policies, pension plans, and other financial strategies in a manner which will help ensure that the plans are maintained on a sound financial basis. A bachelor's degree is usually needed to become an actuary. Both the Society of Actuaries (SOA) and the Casualty Actuarial Society (CAS) certify people to become actuaries.

Computer software engineer

Computer software engineers apply the principles of computer science and mathematical analysis to the design, development, testing, and evaluation of the software and systems that make computers work. There are two types of computer software engineers. Computer applications software engineers analyze users' needs and then design, construct, and maintain general computer applications software or specialized utility programs. Computer systems software engineers coordinate the construction, maintenance, and expansion of an organization's computer systems. A bachelor's degree is usually sufficient, though a master's degree may be preferred for more complex work.

Financial Analyst

Financial analysts provide analysis and guidance to businesses and individuals in making investment decisions. They assess the economic performance of companies and industries for firms and institutions with money to invest. Also called securities analysts and investment analysts, they work for investment banks, insurance companies, mutual and pension funds, securities firms, the business media, and other businesses, helping them make investment decisions or recommendations. Financial analysts read company financial statements and analyze commodity prices, sales, costs, expenses, and tax rates in order to determine a company's value and to project its future earnings. They use spreadsheet and statistical software packages to analyze financial data, spot trends, and develop forecasts. Strong math, analytical, and problem-solving skills are essential qualifications for financial analysts. They should also be very comfortable with computers, as they are frequently used in doing work. A bachelor's or graduate degree is required for financial analysts, including coursework in statistics, economics, and business.

Mathematician

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 mathematics and applied mathematics. Theoretical mathematicians usually research relationships between existing principles of mathematics, not necessarily with any practical result in mind. They do research for the sake of gaining knowledge, and that is why theoretical mathematics is often called pure mathematics. Applied mathematicians, on the other hand, use theories and techniques to formulate and solve practical problems in business, government, engineering, physical, life, and social sciences. A Ph.D. in mathematics usually is the minimum educational requirement, except in the Federal Government.

Operations Research Analyst

The procedures of operations research were first used by the military during wartime. Operations research is described as the discipline of using advanced analytical techniques to make better decisions and to solve problems. In civilian corporations, operations research analysts find better ways to manage money, materials, equipment, and people. A master's degree is usually preferred in operations research.

Statistician

Statistics is the scientific application of mathematical principles to the collection, analysis, and presentation of numerical data. Statisticians apply their mathematical and statistical knowledge to the design of surveys and experiments; the collection, processing, and analysis of data; and the interpretation of the experiment and survey results. A master's degree in statistics or mathematics is the minimum educational requirement for most jobs as a statistician.

Sample job titles

Industry and Commerce

Actuary
Appraiser
Banker
Bookkeeper
Business Analyst
Business Systems Analyst
Commodity Manager
Compensation Administrator
Computer Scientist
Consultant
Contract Administrator
Cost Estimator/Analyst
Credit Manager
Employee Relations Specialist
Estate Planner
Financial Auditor
Financial Consultant
Inventory Control Specialist
Investment Banker

Media Buyer
Numerical Analyst
Purchasing Agent
Rate Analyst
Revenue Analyst
Statistics Analyst
Treasury Management
Underwriter

Government, Service, and Education

Computer Science Analyst
Consultant for Defense Contract Companies
Disease Control and Prevention Center
Mathematics Teacher
Federal Banker
Mathematics Tutor
Military Officer
Operations Research Analyst
University Professor

Research and Technology

Aerospace Engineer
Air Traffic Controller
Astronomer
Computer Software Engineer
Cryptographer
Demographer
Engineer
Environmental Engineer
Hardware Developer
Information Scientist
Mapping agencies
Mathematician
Meteorologist
Mortgage Researcher
Physicist
Programmer
Seismologist
Statistician

Sample internship employers of SU students

3M Worldwide
Abbott Laboratories
Actinver Securities
American Express
Dell
Hewlett Packard
IBM

Industrial Light & Magic
Merrill Lynch
MGM Studios
Microsoft
National Security Agency
Rudd and Wisdom, Inc.
UT Austin Intellectual Entrepreneurship Program

Sample full-time employers of SU grads

Actuarial Analyst (Rudd and Wisdom, Inc.; Towers Watson)
Analyst (UTC Aerospace Systems)
Appraiser (Wentwood Capital Advisors, LP)
Assistant Broker (U.S. Risk, Inc.)
Business Analyst (Markit)
Commercial RE Analyst (Bank of America)
Computer Programmer (Tifco Industries)
Computer Science Analyst (US Government Accountability Office)
Consultant (Navigant Consulting)
Engineer's Assistant (Insight Global)

Financial Advisor (Edward Jones)
Math Teacher (Clear Springs High School)
Personal Banker (IBC Bank)
Pre-Calculus Teacher (YES College Preparatory School)
Pricing Analyst (Continental Airlines)
Research Engineer (U.T. Network Modeling Center for Traffic Research)
Researcher (UT Bureau of Economics and Geology)
Revenue Analyst (Opportune LLP)
Salesperson (Prestige Financial Group)
Supply Chain Analyst (3M)

Professional associations

American Academy of Actuaries: www.actuary.org
American Federation of Teachers: www.aft.org
American Mathematical Society: www.ams.org
American Statistical Association: www.amstat.org
Association for Symbolic Logic: www.aslonline.org
Association for Women in Mathematics: www.awm-math.org
Conference Board of the Mathematical Sciences: www.cbmsweb.org
Institute for Mathematics and its Applications: www.ima.umn.edu
Mathematical Association of America: www.maa.org
National Association of Mathematicians: www.nam-math.org/
Societies of Actuaries: www.soa.org
Society for Industrial and Applied Mathematics: www.siam.org

Additional Web resources

Beginner's Guide to Programming: www.guidetoprogramming.com/joomla153/
Careers in Applied Mathematics & Computational Sciences: www.siam.org/careers
Careers in Math: www.coolmath.com/careers.htm
Careers in Mathematics: www.maa.org/students/career.html
Computer Programming Algorithms Directory: www.algosort.com/
Mathematicians: www.bls.gov/ooh/math/mathematicians.htm
Math on the Web: www.ams.org/mathweb

Career Services resources

Actuaries' Survival Guide
A Career in Statistics Beyond the Numbers
Career Opportunities in Internet, Video Games, and Multimedia
Careers in Engineering
Careers in Information Technology
Career Opportunities in Banking, Finance, and Insurance
Financial Services Professionals: A Rewarding Profession

Great Jobs for Math Majors
Opportunities in Engineering Careers
Opportunities in Financial Careers
Sales and Marketing Careers in the Tech Sector
Starting Your Career as a Freelance Web Designer
Vault Guide to Technology Careers