



CENTER FOR CAREER & PROFESSIONAL DEVELOPMENT

Major Possibilities: Mathematics

Quick Facts

- 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.
- Internships (including research experiences) help shape professional identities, develop 21st century career-readiness skills, and make meaning of the academic experience.
- 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. A capstone is required to satisfy the major requirements and can be a designated senior seminar or senior project. Students can earn a Bachelor of Arts or Bachelor of Science (requiring additional science coursework) in mathematics.

Sample Occupational Areas

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.

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 that 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.

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.

COMPUTER SOFTWARE ENGINEER

Computer software engineers apply the principles of computer science and mathematical analysis to the design, development, testing, and evaluation of 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 computer systems. A bachelor's degree is usually sufficient, though a master's degree may be preferred for more complex work.

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

RESEARCH & TECHNOLOGY

Aerospace Engineer
Astronomer
Computer Software Engineer
Cryptographer
Demographer
Engineer
Hardware Developer
Information Scientist
Mathematician
Meteorologist
Mortgage Researcher
Physicist

Programmer
Seismologist
Statistician

INDUSTRY AND COMMERCE

Actuary
Appraiser
Banker
Bookkeeper
Business Analyst
Commodity Manager
Compensation Administrator
Computer Scientist

Contract Administrator
Cost Estimator/Analyst
Credit Manager
Estate Planner
Financial Auditor
Financial Consultant
Inventory Control Specialist
Investment Banker
Media Buyer
Numerical Analyst
Purchasing Agent
Rate Analyst
Revenue Analyst
Statistics Analyst

Underwriter

GOVERNMENT, SERVICE, AND EDUCATION

Computer Science Analyst
Defense Contract Consultant
Federal Banker
Mathematics Teacher/Tutor
Military Officer
Operations Research Analyst
Treasury Manager
University Professor

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 (US Risk, Inc.)
Business Analyst (Markit)
Commercial Real Estate Analyst (Bank of America)
Computer Programmer (Tifco Industries)
Computer Science Analyst (US Gov't. Accountability Office)
Engineer's Assistant (Insight Global)

Financial Advisor (Edward Jones)
Inside Sales Account Manager (Dell Inc.)
Math Teacher (Clear Springs High School)
Personal Banker (IBC Bank)
Pricing Analyst (Continental Airlines)
Quality Assurance Analyst (Accenture)
Researcher (UT Bureau of Economics and Geology)
Revenue Analyst (Opportune LLP)
Supply Chain Analyst (3M)

Professional Associations

American Academy of Actuaries

American Federation of Teachers

American Mathematical Society

American Statistical Association

Association for Symbolic Logic

Association for Women in Mathematics

Conference Board of the Mathematical Sciences

Institute for Mathematics and its Applications

Mathematical Association of America

National Association of Mathematicians

National Council of Teachers of Mathematics

Society of Actuaries

Society for Industrial and Applied Mathematics