What can I do with a major in... Mathematics

Mathematicians use mathematical theory, computational techniques, algorithms, and the latest computer technology to solve economic, scientific, engineering, physics, and business problems. There is a wide variety of activities and careers that math majors pursue. However, mathematical work itself is largely theoretical or applied.

Theoretical mathematicians advance mathematical knowledge by developing new principles and recognizing previously unknown relationships between existing principles of mathematics. Although these professionals seek to increase basic knowledge without necessarily considering its practical use, such pure and abstract knowledge has been instrumental in producing or furthering many scientific and engineering achievements. Many theoretical mathematicians are employed as university faculty, dividing their time between teaching and conducting research.

Applied mathematicians use theories and techniques to formulate and solve practical problems in business, government, engineering, and in the physical, life, and social sciences. For example, they may analyze the most efficient way to schedule airline routes between cities, the effects and safety of new drugs, the aerodynamic characteristics of an experimental automobile, or the cost effectiveness of alternative manufacturing processes. Applied mathematicians working in industrial research and development may develop or enhance mathematical methods when solving a difficult problem. Some mathematicians, called cryptanalysts, analyze and decipher encryption systems designed to transmit military, political, financial, or law enforcement related information in code.

INDUSTRIES
- Agriculture
- Banking
- Biostatistics
- Business
- Clinical trials
- Computer information
- Consulting
- Ecology/environmental research
- Education
- Financial services
- Government
- Insurance
- Management
- Manufacturing

EMPLOYERS
- Allianz Life
- Allstate Insurance
- Ameriprise Financial
- Cognizant Technology Solutions
- Deloitte
- Epic Systems
- Fast Enterprises, LLC
- Google
- IBM
- Meditech
- Microsoft Corporation
- Northwestern Mutual
- PricewaterhouseCoopers
- Securian Financial Group
- Target Corporation
- The Travelers Companies, Inc
- Towers Watson
- US Bank
- UnitedHealth Group/Optum
- Wells Fargo

TECHNICAL SKILLS
- Excel
- Mathematica
- MATLAB
- Microsoft Office

CSE Career Outcomes

Average Starting Salary: $61,675*

Post-graduation Outcomes:*
POSSIBLE POSITIONS

- **Actuary**: Deals with the financial impact of risk and uncertainty. Actuaries mathematically evaluate the likelihood of events and quantify the contingent outcomes in order to minimize losses.

- **Auditor**: Examine and analyze accounting records to determine financial status of establishment and prepare financial reports concerning operating procedures.

- **Database administrator**: Works with database software to develop/implement ways to manage and store data.

- **Economist**: Studies how society distributes resources to produce goods and services. Economists conduct research to develop forecasts on a wide variety of issues, including energy costs, inflation, interest rates, exchange rates, business cycles, taxes, employment levels, and more.

- **Financial analyst**: Provides guidance to businesses and individuals making investment decisions and assess the performance of stocks, bonds, commodities, and other types of investments.

- **Insurance underwriter**: Decides whether insurance is provided and, if so, under what terms. Insurance underwriters identify and calculate the risk of loss from policyholders, establish who receives a policy, determine the appropriate premium, and write policies that cover this risk.

- **Market/survey researcher**: Gathers information and statistical data to help companies understand what types of products people want, who will buy them, and at what price.

- **Mathematician**: Uses mathematical theory, computational techniques, algorithms, and the latest computer technology to solve economic, scientific, engineering, and business problems.

- **Operations research analyst**: Helps managers make better decisions and solve problems by applying mathematical modeling methods to develop, interpret, and implement information.

- **Personal financial advisor**: Manages and assesses the financial needs of individuals and assists them with investments, tax laws, and insurance decisions.

- **Statistician**: Applies mathematical and statistical knowledge to the design of surveys and experiments.

- **Supply chain analyst**: Applies quantitative skills to answer critical strategic business questions and support operational initiatives. Translate high-level business problems into more specific questions which can be answered by data driven analysis.

**Some of these positions may require an advanced degree.**

**GET INVOLVED**

- Active Energy Club
- Actuary Club
- Association for Women in Mathematics
- CSE K-12 Outreach
- CSE Ambassadors
- CSE International Ambassadors
- Engineers Without Borders
- National Society of Black Engineers
- Plumb Bob Honorary Leadership Society
- Science and Engineering Student Board
- Society for Industrial and Applied Mathematics
- Society of Asian Scientists and Engineers
- Society of Hispanic Professional Engineers
- Society of Women Engineers
- Solar Vehicle Project
- Tau Beta Pi
- TeslaWorks
- Theta Tau

**RESOURCES**

- American Mathematical Society: [ams.org](http://ams.org)
- American Statistical Association: [amstat.org](http://amstat.org)
- Association for Women in Mathematics: [awm-math.org](http://awm-math.org)
- Institute of Mathematical Statistics: [imstat.org](http://imstat.org)
- Mathematical Association of America: [maa.org](http://maa.org)
- National Council of Teachers of Math: [nctm.org](http://nctm.org)
- Society for Industrial and Applied Math: [siam.org](http://siam.org)
- Society of Actuaries: [soa.org](http://soa.org)

See the Major Binders available in the CSE Career Center’s Resource Center for more information about this major and career.

*Salary and Career Outcomes gathered from the 2016-2017 CSE Graduation Survey*

*Post-graduation outcomes reflect the percentage of students who were employed full-time in their field or were enrolled in a graduate program. For detailed starting salary information see the CSE Career Center website.*