

MATHEMATICS

What can I do with this major?

AREAS

MATHEMATICS/COMPUTATIONAL SCIENCE

Research:

Theoretical

Applied

Mathematical specialties:

Modeling and simulation

Numerical methods and analysis

Statistics and probability

Engineering analysis

Differential equations

Operations research

Discrete mathematics

Functional areas:

Accounting and finance

Computer programming

Computer systems analysis

Operations

Sales and marketing

Management

Actuarial science

Engineering

Analysis and control of processes

Optimization and scheduling of resources

EMPLOYERS

State government agencies

Federal government:

National Security Agency

Department of Defense

National Aeronautics and Space Administration

National Oceanic and Atmospheric

Administration

Social Security Administration

Department of Homeland Security

Department of Energy

Military

Government laboratories

Scientific research and development services

Consulting firms

Computer services companies and software publishers

Electronics and computer manufacturers

Engineering firms

Insurance companies

Financial services firms

Chemical and pharmaceutical companies

Aerospace and transportation equipment manufacturers

Airlines and airports

Communications firms

Energy companies and petroleum producers

International government agencies

Nonprofit organizations (e.g., American Institute of Mathematics, Mathematical Association of America, American Mathematical Society)

STRATEGIES

To work in applied mathematics, consider earning a double major in a scientific or technical area. Many students with a bachelor's or master's degree in math work in related fields (e.g., computer science, engineering, science, or economics).

Some entry-level jobs in industry and government may be available at the bachelor's level.

Develop substantial knowledge of computer programming and software administration. Seek experience with relevant software packages.

Learn to work well with a team of people from diverse backgrounds and differing technical specialties.

Gain experience in an area of interest through internships or research programs (e.g., those sponsored by National Science Foundation).

Maintain a high grade point average and secure strong faculty recommendations to gain graduate school admittance.

Plan to earn a doctoral degree to work as a mathematician.

Research government hiring processes and internship opportunities if the public sector appeals to you.

AREAS	EMPLOYERS	STRATEGIES
<u>EDUCATION</u> Teaching Research Higher education administration	Public and private K-12 schools Universities and colleges	Develop excellent communication skills, verbal and written. Gain experience working with age group of interest through volunteering and tutoring. Acquire appropriate state teacher certification for K-12 teaching opportunities. Math majors may be eligible for alternative certification programs in certain public school systems. Private schools may hire candidates with degrees in mathematics who don't hold certification. Earn a doctoral degree in math to teach at four-year institutions. A master's degree may be sufficient for two-year colleges. Maintain a high grade point average and secure strong faculty recommendations to prepare for graduate school. Assist a professor with research. Seek appropriate graduate degree to enter higher education administration. Gain experience on campus in student leadership roles such as Resident Assistant or Orientation Leader.
<u>COMPUTERS</u> Programming Systems development Systems analysis Software development Network administration Web administration Technical support Training	Computer companies: - Computer services companies - Software publishers - Internet related companies - Consulting firms Businesses that hire computer competence: - Financial & insurance companies - Manufacturers - Telecommunications companies - Retailers - Healthcare organizations - Hotels and restaurants - Entertainment companies - Environmental management firms	Develop substantial knowledge of computer programming and software administration. Take classes to earn relevant certifications. Gain related experience through internships, part-time positions, or summer jobs. Work with campus information technology department or volunteer to develop/maintain the website for a student organization. Learn effective listening and verbal communication skills and how to work well with end users. Stay attuned with developments in computer technology. Consider earning an advanced degree in computer science or management information systems, especially if interested in management.

AREAS	EMPLOYERS	STRATEGIES
<u>COMPUTERS CONTINUED</u>	Education institutions City, state, and federal government	Exhibit patience and creativity for problem-solving computer or software issues. To advance into management, learn to effectively manage multiple projects, meet deadlines, and communicate effectively. Obtain experience with public speaking/teaching and learn to develop curriculums for training focused positions.
<u>INSURANCE</u> Actuarial science Risk management/assessment Loss management/control Underwriting	Insurance carriers Insurance agents and brokers Professional, scientific, and technical consulting firms Government agencies	Take additional courses in statistics and finance. Complete an internship with an insurance agency to gain relevant experience. Actuarial science is a good career path for those who want to extensively use math on the job. Areas such as claims, underwriting, and risk management are less math-intensive. Talk to professionals in the industry to learn more about various positions. Develop strong communication skills, as many positions require interaction with others and the ability to explain information clearly and concisely. Learn how to use statistical analysis software and various computer programming languages. Plan to take a series of actuarial exams to gain licensure from either the Society of Actuaries or the Casualty Actuarial Society. The type of insurance you deal with will determine which path to pursue. Most actuaries take these exams while working full-time, and the process takes several years. More than half of actuaries work for insurance carriers.

AREAS	EMPLOYERS	STRATEGIES
<u>BANKING AND FINANCE</u> Corporate and consumer credit analysis Commercial lending Trust management Capital services and mergers and acquisitions Mortgage loans Originations and packaging Branch management Operations Cash management Credit scoring and risk management Private banking Financial analysis Investment banking Actuarial science	Commercial banks Credit unions Savings and loan associations Savings banks Mortgage banks Captive finance companies Regulatory agencies: Federal Reserve Federal Deposit Insurance Corporation (FDIC) Office of the Comptroller of the Currency (OCC) Office of Thrift Supervision (OTS) Brokerage firms	Double major or minor in business to build a solid background in marketing, economics, finance, and accounting. Gain experience through part-time, summer, or internship positions in a financial services firm. Develop strong interpersonal and communication skills in order to work well with a diverse clientele. Serve as the financial officer or treasurer of a student organization. Plan to earn a graduate business degree to enter investment banking. Be geographically flexible when job searching.

OTHER BUSINESS AREAS

Buying Purchasing Sales: Industrial sales Consumer product sales Financial services sales Services sales Advertising sales E-commerce Customer service Sales management: district, regional, and corporate	Retailers Wholesalers Hospitals Universities and schools Local, state, and federal government For-profit and nonprofit organizations Product and service organizations Manufacturers Financial companies Insurance companies Print and electronic media outlets Software and technology companies Internet companies	Obtain experience through part-time, summer, or internship positions. Seek leadership positions in campus organizations. Become highly motivated and well-organized. Develop strong analytical skills and the ability to communicate effectively with a wide range of people. Take additional courses in interpersonal communication and public speaking. To prepare for a buying position, work in a retail store to learn about the industry. Research certification options within the purchasing field. For sales: Work for campus publications or student media selling advertisements. Learn to work well under pressure and to be comfortable in a competitive environment. Prepare to work independently and to be self-motivated. Plan to work irregular and/or long hours.
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GENERAL INFORMATION

- Math can be found in almost every sector of the world of work. Students majoring in math should consider if they want to use math skills directly or indirectly in the work place. This may determine the types of experiences and further education necessary to prepare for area of interest.
- Math backgrounds may work in a variety of settings and jobs such as analyst, researcher/research assistant, technical consultant, computer scientist, or systems engineer.
- Math majors develop many transferable skills including critical thinking, problem diagnosis and solving, computer/software skills, and quantitative skills. Other important skills to develop include good reasoning, persistence, and communication, both verbal and written.
- Seek relevant experiences through internships, part-time, and summer positions.
- Supplement curriculum with courses in business, economics, computers, or statistics for increased opportunities.
- Consider earning a graduate degree in a related area such as statistics, computer science, science, business, engineering, or other integrated degrees. Some examples of specialties that utilize a background in math combined with study in another field include bioinformatics, computer animation and digital imaging, climatology, or financial mathematics.
- Join relevant organizations and seek leadership roles. Learn to work well in a team environment.
- Conduct informational interviews with professionals in areas of interest to enhance knowledge and make contacts.
- Stay informed of new developments and current trends in the field.