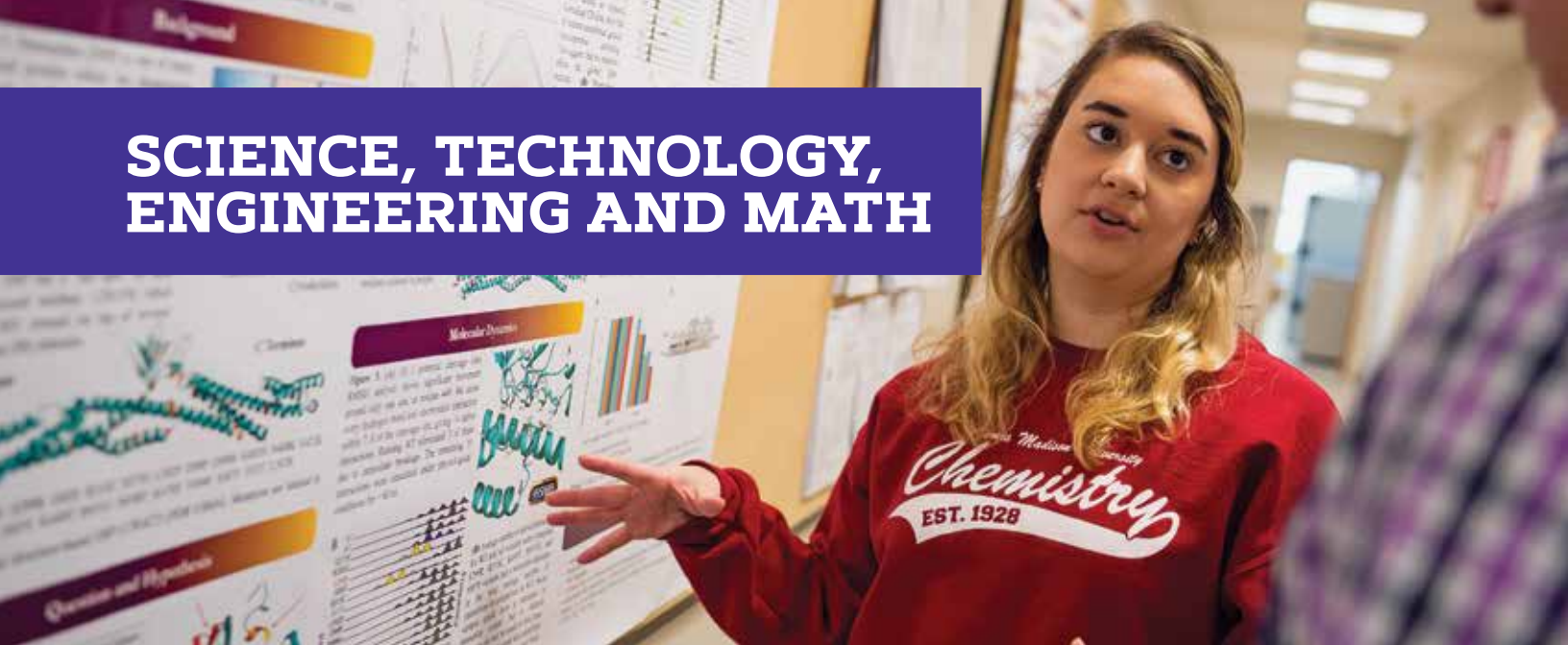


# SCIENCE, TECHNOLOGY, ENGINEERING AND MATH



## STEM Highlights

- **You are the focus at JMU:** Undergraduates work with highly qualified faculty to make new discoveries and address the world's most pressing problems.
- The best of both worlds: Our **specialized, customizable STEM majors offer an exceptional technical education.** When combined with JMU's liberal-arts foundation, our students graduate with the perspective and skills employers are looking for—ready to succeed in our complex world.
- **Small, student-focused classes and labs** allow STEM professors to guide through challenges to maximize their Madison Experience.
- **Hands-on learning:** At JMU, lab equipment is part of your entire collegiate career, not just in upper-division classes.



“There’s a sense of community and friendliness in the way students interact with each other. They are already willing to help, which makes a big difference to the experience of the class.”

— CHRIS MAYFIELD, COMPUTER SCIENCE PROFESSOR

## Programs of Study

### MAJORS

- Biology
- Biophysical Chemistry
- Biotechnology
- Chemistry
- Computer Science
- Earth Science
- Engineering
- Geographic Science
- Geology
- Information Technology
- Intelligence Analysis
- Integrated Science and Technology
- Mathematics
- Physics
- Statistics

### MINORS

- Astronomy
- Biochemistry and Molecular Biology
- Biology
- Chemistry
- Computer Science
- Data Analytics
- Environmental Information Systems
- Environmental Management
- Environmental Science
- Geographic Science
- Geology
- Humanitarian Affairs
- Integrated Science and Technology
- Mathematics
- Physics
- Robotics
- Science, Technology and Society
- Statistics

For details visit [jmu.edu/academics](http://jmu.edu/academics)

# JAMES MADISON UNIVERSITY®



## BIOLOGY

- Curriculum that provides breadth for the renaissance biologist and depth in a wide range of subject areas for the specialist
- Academic reputation that makes a difference to medical schools, graduate schools and future employers
- Modern investigative introductory classes with faculty teaching most of the labs

[jmu.edu/biology](http://jmu.edu/biology)

## BIOPHYSICAL CHEMISTRY

- Designed to provide theoretical and practical instruction to prepare students for careers in chemistry, biochemistry, medicine, dentistry, paramedical areas, forensic sciences, chemical engineering and other technology-based areas

[jmu.edu/chemistry](http://jmu.edu/chemistry)

## BIOTECHNOLOGY

- Work with cutting-edge technology—CRISPR genome editing, systems and genomics
- Take on complex problems such as disease, hunger and environmental devastation
- Transform scientific knowledge into real-world solutions
- Work side-by-side with faculty on meaningful research

[jmu.edu/biotech](http://jmu.edu/biotech)

## CHEMISTRY

- \$8.3-million, state-of-the-art equipment and facilities
- American Chemical Society-certified curriculum in chemistry, biochemistry, materials chemistry and chemical education

[jmu.edu/chemistry](http://jmu.edu/chemistry)

## COMPUTER SCIENCE

- Develop computational and critical thinking skills. Learn to design, implement and analyze algorithms to solve problems
- Work with software and software systems, including theoretical foundations and the design and development of applications to solve a vast range of problems
- Build communication and project management strategies through team-based experiences

[jmu.edu/cs](http://jmu.edu/cs)

## EARTH SCIENCE

- Prepares you to work in a wide range of professional public-sector service careers
- Undergraduate research opportunities with faculty in field and lab settings
- Teacher education opportunities, especially with our B.A. in Earth Science

[jmu.edu/geology](http://jmu.edu/geology)

## ENGINEERING

- Develop systems level analysis and vision through a mix of interdisciplinary engineering fundamentals, engineering management, and sustainable engineering
- Elevate professional development and readiness through four years of authentic engineering projects, including the nation's only year-long sophomore and two-year-long capstone projects
- Create value for real project partners through four years of engineering design experiences covering opportunity discovery, modeling, prototyping, testing, redesign and delivery

[jmu.edu/engineering](http://jmu.edu/engineering)

## GEOGRAPHIC SCIENCE

- Explore the effects of globalization and examine why the world is as it is
- Use geospatial methods and technologies to analyze resource issues, landscape changes and environmental degradation
- Develop deeper understanding of our climate, how it is changing, human vulnerability and risk, and how cities can reduce their environmental impacts

[jmu.edu/gs](http://jmu.edu/gs)

## GEOLOGY

- One major with two concentration options
- General concentration offers a wide range of geology elective courses
- Environmental and engineering geology concentration electives focus on applied environmental science

[jmu.edu/geology](http://jmu.edu/geology)

## INFORMATION TECHNOLOGY

- Analyze problems in the community related to IT, design, and implement solutions
- Provide undergraduate students with advanced technical hands-on experience in information technology as well as a broad perspective of problem solving into today's IT world
- Connect the theoretical knowledge of computing with real-world problem-solving

[jmu.edu/it](http://jmu.edu/it)

## INTELLIGENCE ANALYSIS

- Learn innovative ways to structure thinking to assess complex real-world problems such as terrorism or cyber crime
- Communicate assessments to support decision-making in a wide range of intelligence domains such as national security, military, homeland security, law enforcement, business, private-sector security, geospatial, and cyber
- Learn and apply new technologies to acquire data, evaluate that data and communicate it effectively to others

[jmu.edu/ia](http://jmu.edu/ia)

## INTEGRATED SCIENCE AND TECHNOLOGY

- Harness the power of science and technology to solve critical problems facing our society
- Work with the latest technology
- Discover innovative solutions to challenging problems
- Explore the interdependence of science, technology, politics, economics and ethics

[jmu.edu/isat](http://jmu.edu/isat)

## MATH

- Bachelor of Science and Bachelor of Arts degrees with majors in mathematics and a program that qualifies students for initial teaching licensure
- Copious undergraduate research opportunities, including National Science Foundation funding for undergraduate research teams involving mathematics and statistics students with biology students and faculty mentors from all those academic areas

[jmu.edu/mathstat](http://jmu.edu/mathstat)

## PHYSICS

- Small department with upper-level courses of 10 to 15 students
- Specially organized small groups of first-year students with faculty mentors and peer mentoring of new students by upper-level physics majors are two ways we help students make the transition to college life
- Direct faculty mentoring of students enhanced by involvement of students in research and other projects specifically designed for our undergraduate-only environment

[jmu.edu/physics](http://jmu.edu/physics)

## STATISTICS

- Bachelor of Science degree with a major in statistics
- Emphasis is on probability and the theory of statistics
- A wealth of hands-on undergraduate research opportunities

[jmu.edu/mathstat](http://jmu.edu/mathstat)

