Welcome to the Mathematics Department

431 DMF Science and Mathematics Center
508-531-1342
Why do we use Math?

Let’s listen...

http://weusemath.org/
Our Faculty

- **19 full-time** mathematics faculty members having a wide variety of areas of specialization, including:
  
  Geometry, Probability Theory, Mathematical Statistics, 
  Actuarial Science, Graph Theory, Combinatorics, Gaming Theory, Applied Mathematics, Logic, Cryptology, 
  Mathematics Education, Number Theory, Abstract Algebra, 
  Geometric Dynamical Systems, History of Mathematics, 
  and Functional Analysis.

- **33 part-time** mathematics faculty members.
Who are we?

Our Students

• Our students have a healthy attitude toward the hard work they are called on to do.

• We have a diverse student population, in regards to age, ethnicity, nationality, sexual-orientation, and gender.

• We now have more than 350 majors. This has increased 33% over the past 5 years.

• Roughly, half of our majors plan to teach mathematics in High School. They finish the full mathematics major and complete a minor in Secondary Education.

• Our numbers of students in the Pure Math and Statistics concentrations are growing.

• We also offer a Mathematics and a Statistics minor.
What are our Programs?

BS in Mathematics

• Designed to introduce students into math as an important area of human thought.

• Purpose is to give students the mathematical knowledge to succeed in their chosen careers.

• Includes a mathematical foundation (the Calculus Sequence, Transitions to Advanced Math, Linear Algebra, Abstract Algebra, Analysis) and an opportunity to explore the beauty of math with electives. See the University Catalog for specific requirements.
What are our Programs?

BS in Mathematics – Pure Math Concentration

- Purpose is to give students the mathematical knowledge to succeed in Graduate School in Mathematics or work in fields that require advanced mathematical techniques and ideas.

- Emphasizes Analysis, Abstract Algebra, and the proof-based structure of modern mathematics.

- This concentration also requires specific science sequences.

- For more information on this concentration, please contact the Math Office.
What are our Programs?

BS in Mathematics – Statistics Concentration

- Purpose is to give students the mathematical knowledge to succeed in Graduate School in Statistics, mathematical careers in business, government, or industry.

- Offers an in-depth development of the field of statistics.

- This concentration also requires specific science sequences.

- For more information about this concentration, please contact the Math Office.
What are our Programs?

Internships

- Several students participate in internships, which provide hands-on experience, using mathematics in careers.

- For further information about careers and internships in mathematics please contact the chairperson.
What can We Offer You?

Extra-Curricular Activities

- The Math Honor Society is Pi Mu Epsilon (πμε). BSU represents the Massachusetts Gamma Chapter.

- Lectures & Seminars.

- Students may obtain Departmental Honors in Mathematics by taking Honors courses and completing an Honors thesis.

- Research Opportunities & the Adrian Tinsley Program (ATP) grant.

- On-campus employment.

- The Math Club holds social and informational events such as plays, career panels, and math games with food and prizes.
What can We Offer You?

Pi Mu Epsilon (πμε)
BSU Massachusetts Gamma Chapter

- Bridgewater was the 3rd University in Massachusetts to join this National Honorary Society. Each Spring we hold an induction ceremony for students who have demonstrated excellence in mathematics and in their college studies overall.
What can We Offer You?

Lecture & Seminar Series

• Each year the Mathematics Department sponsors two lectures – the **Abramson Colloquium** and **Class of 42’ Lectures**. Both are open to students, faculty, staff, and the public. Topics have included:
  
  • “Math and Music: Exploring the Connections”
  • “Weird Multiplication”
  • “Mayan Mathematics”
  • “Origami Math: Theory and Practice – How To Turn Paper into Cold Hard Cash”
  • “Chaos Games and Fractal Images”

• Several times a semester, the Department also sponsors seminar series, presented by faculty members. These are open to students and faculty members.
What can We Offer You?

Honors & Adrian Tinsley Program

• Students may obtain Departmental Honors in Mathematics by taking Honors courses and completing an Honors Thesis.

• Students may participate in undergraduate research with a Mathematics faculty member throughout the year.

• Undergraduates may apply for the Adrian Tinsley Program (ATP) grant, which helps fund undergraduate research by providing a stipend for students and faculty who are conduct research over a 10-week period in the summer.

• After completing research projects, students have the opportunity to publish their research in the Undergraduate Review, as well as present at local and national conferences in their field.

• If you are interested in any of these opportunities, please contact the chairperson of the Department.

BRIDGEWATER STATE UNIVERSITY
Some Examples

Analyzing the Galois Groups of Fifth-Degree and Fourth-Degree Polynomials

Jesse Berglund

Jesse is a senior mathematics major. This research was conducted over the summer of 2010 as an Adrian Tinsley Program Summer Grant project under the mentorship of Dr. Ward Heilman. Upon graduating Jesse plans to attend graduate school and continue research in mathematics.

Impact of Pathways to College Level Mathematics on Success in Mathematics and Retention

Paraskevi Liouzas

Paraskevi “Vivi” Liouzas is a senior with a double major in Elementary Education and Mathematics and a minor in Art. This paper is an abridged version of her honors thesis developed under the guidance of Dr. Uma Shama with the wonderful assistance of BSU’s Office of Institutional Research and Assessment. Vivi was motivated to do research in the area of math education because of her passion for teaching mathematics. She is committed to excellence in teaching and is eager to join the profession after graduating.

Modeling Plaque Aggregation on the Neuronal Network

Thomas Howard

Thomas Howard graduated in May 2012 from BSU with a BS in Mathematics and is currently a graduate student earning an MS in Computer Science at BSU. This research was developed as part of an ATP Summer Research Grant under the direction of Dr. Inna Seceleanu. Tom presented his research at the Joint Mathematics Meeting, the largest annual mathematics meeting in the world, and at the National Conference on Undergraduate Research in the spring of 2012. Tom is looking forward to completing his MS and joining the workforce as a programmer.

Alzheimer’s disease is a condition linked to plaque aggregation in the brain. Despite being the focus of many studies, current treatments are of questionable significance in the overall improvement of a patient’s condition. In recent years, computer models have been used to better understand complex biological systems and simulate the effects of various treatments. In the following paper we present a mathematical model studying the effect of plaque aggregation on the neuronal pathways of the human brain. To create our mathematical model we employ tools from the theory of dynamical systems and stochastic processes, and simulate the passage of a signal through a healthy and a plaque-affected brain. Moreover, our model simulates the increased resistance of the neuronal network to plaque disruption as a result of cognitive stimulation through learning and cerebral exercises, and measures the increased connectivity in a plaque-affected neuronal network when cognitive stimulation is present. Our mathematical model also promises as a first step to modeling the complex interactions of plaque deposits in the human brain and studying the influence of behavioral treatments on Alzheimer patients.

Alzheimer’s disease is a condition linked to plaque aggregation in the brain which has a great impact on the population in the United States and worldwide. Projections show that fifty percent of Americans over 65 will suffer from dementia, and fifty million Americans are expected to have some form of dementia by 2050 according to the Alzheimer’s Association (2012). The debilitating effects on patients include memory disturbances, high incidence of emotional outbursts, communication difficulties, daytime wandering,
What can We Offer You?

Employment Opportunities

• **Math Services** hires math majors as tutors and facilitators for our Problem Solving in Math sections.

• Faculty members hire math majors to assist with their grant-funded research and projects.

• Some majors, who have experience with Computer Science, are hired by IT on campus.

• Faculty members can hire majors, who also qualify for workstudy, to assist with clerical work.

• Students may apply for undergraduate research grants through ATP in the summer.

BRIDGEWATER STATE UNIVERSITY
How does Advising Work?

For Transfer Students

• Each Major is assigned a professional and caring member of our full-time faculty in the Mathematics Department as an advisor.

• Meetings between students and advisors are scheduled at various times during the semester, especially before registration each semester.

• In order to register for classes, your advisor need to approve your course schedule and “check you off” in the system.

• You have the freedom to contact your advisor at any point in the semester. You may want stop by his/her office to introduce yourself early in the semester.

• If you are unable to reach your advisor, you may also contact the chairperson of the Department.
How does Advising Work?

For Transfer Students

• The Admissions Office determines transfer equivalencies. If you took a course at another institution, which didn’t transfer to BSU, you may want to consider petitioning this.

• For Mathematics courses, course equivalencies can be discussed and decided upon, based on the student’s academic background, by the chairperson.

• When meeting with an advisor, we recommend bringing the following:
  • Your degree audit from Degree Works
  • A draft schedule, if appropriate
  • A list of your questions
Where Do I Go?

For Help with My Math Classes

- The University supports **Math Services**, a free-drop in tutoring service, located on the first floor of the Maxwell Library, for all students. If you are struggling with your courses, it is best to seek help in Math Services sooner rather than later. See their website for hours.

- Your professor is always a good source of help. Contact him/her and set up a time to meet during office hours.

For Help with My Academic Plan

- The shortest answer is “**your advisor**.”

- He/she will be able to help you determine if you should add/drop/withdraw from a course, if a minor is appropriate, and help you consider employment and graduate school opportunities.
Where Do I Go?

For More Information about the Department

- The Department webpage: https://my.bridgew.edu/departments/Mathematics/SitePages/Home.aspx


- The Math Department Office:  
  Ms. Judi Morin  
  431 Dana Mohler-Faria Science and Mathematics Center

- The Math Department Chairperson:  
  Dr. Becky Metcalf  
  rmetcalf@bridgew.edu  
  433 Dana Mohler-Faria Science and Mathematics Center
What do We Want?

The Best for You

• We want you to see a purpose for your time in the Mathematics Department at BSU.

• We want you to be an active member of our Mathematics Community.

• We want to help you take full advantage of the opportunities we offer.

• We want to see you succeed in your studies and future careers.

• We want you to see the beauty and scope of mathematics.

• We want to inspire you!