

We Are...Marshall

We Are...Mathematics

### Program Highlights:

- Marshall's Mathematics Department has a diverse faculty: 35% of the permanent faculty members are female.
- Students are frequently involved in research projects, presenting at meetings as far away as Corfu, Greece.
- Mathematics majors are encouraged to pursue double majors. Recently students have double-majored in Chemistry, Computer Science, Education, English, History, Latin, Management Information Systems, Physics, Political Science, Psychology, and Spanish.
- Pi Mu Epsilon, the national honorary society for mathematics, meets regularly to discuss mathematics and socialize. They also cosponsor the Marshall Mathematics Competition.

### Marshall University College of Science

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## Your Future with a Mathematics Degree

If you are one of the special people who never asked their algebra teacher, "When will I use this in real life," then you may have what it takes to be a successful math major.

Many people assume the only thing you can do with a math degree is teach — they couldn't be more wrong. With our ever-increasing dependence on technology, many corporations need employees who are not only good with numbers, but who have the problem-solving ability to develop creative solutions to meet the company's needs.

Mathematicians' "real world" experiences include:

- determining fuel needs for airlines and analyzing the efficiency of flight schedules
- determining risk levels for insurance companies to apply in their coverage formulas

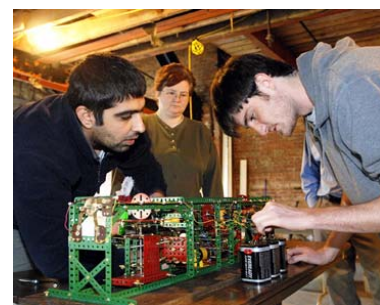
- encoding and decoding data for the National Security Agency (NSA).
- In fact, a degree in mathematics can lead to a career in accounting and finance, computer programming, sales and marketing, actuarial science, computer systems analysis, engineering, or statistics. Many math majors also pursue advanced degrees in a variety of areas including math, science, engineering, medicine, law, bioinformatics, and business.

If you are excited about the vast opportunities that will be available to you upon the completion of a mathematics degree, consider what Marshall has to offer.

**Bachelor of Science in Mathematics or Applied Mathematics:** While these two degree programs are similar,

there are differences in sequence and course selection. An advisor would be more than happy to help you determine which is best for you with your career goals in mind.

**Master of Arts in Mathematics:** Many of our mathematics graduates decide to continue their education at the Masters level, and they can do that at Marshall as well. In fact, with careful advising, you can begin combining Masters and undergraduate work to complete both degrees in about five years!



Marshall mathematics students work on the Differential Analyzer, a machine that solves differential equations and was a precursor to the computer. Marshall has the only publicly-accessible DA in the country.

## Admission Requirements

General Requirements for Admission to Marshall University:

- A diploma from an accredited high school
- An overall grade point average of at least 2.0
- The following high school credits: 4 units of English (including grammar, composition, and literature), 3 units of social studies (including US History), 4 units of math (three units must be at least Alg 1 and higher), 3 units of lab science, 1 unit of fine arts, and 2 consecutive units of a Foreign Language

Additional Requirements for Admission into the College of Science:

- Minimum ACT Composite score of 21 or SAT Composite score of 1000
- Minimum ACT Math score of 21 or SAT Math score of 500.

Students who do not meet the Admission Requirements for the College of Science can enroll as Pre-Science majors. These students may declare their science major after successful completion of ENG 101 and MTH 127.



## Bachelor of Science in Mathematics Curriculum Plan\*



Members of Pi Mu Epsilon visit Ohio State University for a Mathematical Association of America Conference.

### Freshman Year

#### Fall

Course	Hours
MTH 229—Calculus I	5
ENG 101—English Composition	3
UNI 101—New Student Seminar	1
IST 163—Programming with C++	3
Social Science Elective	3
<b>TOTAL HOURS</b>	<b>15</b>

#### Spring

Course	Hours
MTH 230—Calculus II	4
ENG 102—English Composition	3
Social Science Electives	6
CMM 103—Speech Communications	3
<b>TOTAL HOURS</b>	<b>16</b>

### From an Alumnae...

*“My time in the math department helped me grow both intellectually and as a person. The faculty is not only extremely intelligent, but also helpful. They really care about helping students to understand the material. The department is like a big family, and I made amazing friendships that I will always treasure. I only wish I could spend four more years here!”*

—Bonnie Shook, B.S. 2006

### Sophomore Year

#### Fall

Course	Hours
MTH 231—Calculus III	4
Social Science Elective	3
Humanities Elective	3
Natural Science Elective	3
Foreign Language	3
<b>TOTAL HOURS</b>	<b>16</b>

#### Spring

Course	Hours
MTH 300—Intro to Higher Mathematics	4
Minor or Free Elective	3
Social Science Elective	3
Natural Science Elective	3
Foreign Language	3
<b>TOTAL HOURS</b>	<b>16</b>

\* The curriculum plan listed here is taken from the 2007-2008 Undergraduate Catalog. Course requirements may change. See catalog from year of enrollment for official major requirements.

## Did You Know...



Marshall students, who were one of only 60 teams selected to participate in the annual Undergraduate Research Posters on the Hill event, meet with West Virginia Senator John D. Rockefeller during their trip to Washington, D.C.

- Babylonians were solving quadratic equations as early as 1950 BC.
- Using their mathematics skills, the ancient Mayans were able to determine the length of a year to be 365.242 days. The modern assessment? 365.242198 days!
- The first known adding machine was made by Wilhelm Schickard in 1623.
- National Pi Day is celebrated on March 14 at 1:59.
- Everiste Galois, a French mathematician, was challenged to a duel over a woman in 1832. Convinced he would not survive, he spent the night before the duel assembling his notes and writing a cover letter explaining the work to his friend Auguste Chevalier. Galois was killed in the duel, but his papers lead to a new field in mathematics called the Galois Theory, which is used to determine if a polynomial equation has a solution by radicals.
- Actress Teri Hatcher, NBA star David Robinson, authors Lewis Carroll and Bram Stoker, musicians Art Garfunkel and Clifford Brown, and Supreme Court Justice Harry Blackmun are among the notable people who have pursued mathematics degrees.

## Junior Year

Fall		Spring	
Course	Hours	Course	Hours
MTH 331—Linear Algebra	4	MTH Sequence Requirement	3
MTH Sequence Requirement	3	MTH Elective	3
Minor or Free Elective	3	Minor or Free Elective	3
MTH Elective	3	Literature Elective	3
Foreign Language	3	Foreign Language	3
<b>TOTAL HOURS</b>	<b>16</b>	<b>TOTAL HOURS</b>	<b>15</b>



Math majors have many opportunities to present their research findings to other college students and faculty members.

## Senior Year

Fall		Spring	
Course	Hours	Course	Hours
MTH Sequence Requirement	3	MTH 491—Senior Seminar	2
MTH Elective	3	MTH Sequence Requirement	3
Minor or Free Electives	6	MTH Elective	3
Natural Science Elective	3	Minor or Free Elective	3
Free Elective	3	Natural Science Elective	3
		Literature Elective	3
<b>TOTAL HOURS</b>	<b>17</b>	<b>TOTAL HOURS</b>	<b>17</b>

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[www.marshall.edu](http://www.marshall.edu)  
[www.marshall.edu/cos](http://www.marshall.edu/cos)

## Meet Saeed Keshavarzian, Mathematics Major



In a time of high-tech everything, sometimes simple things can have great appeal.

“I don’t have to have expensive equipment to further my skills. All I need is a pencil and a piece of paper,” Saeed Keshavarzian said as he explained one of the many things that appeals to him about studying mathematics.

As a child in Iran, Keshavarzian was encouraged to pursue math and science by his parents. He explained that in a country with limited resources, math and science were ways to not only provide for himself, but also to make a difference for others.

“With the sciences, you can help mankind, not just yourself,” Keshavarzian said.

When he was eight, Keshavarzian came to live in America. Several of his aunts and uncles had come to West Virginia to study at Marshall University and West Virginia Institute of Technology (now WVU-Tech). Keshavarzian recalls attending Marshall

football games while growing up, and loves the atmosphere here in Huntington.

“Part of my decision to attend Marshall was economic—it is less expensive to live at home. But Marshall is also an excellent university. My family members who attended here have been very successful in their careers. Besides, it’s not where you go to school but what you put into it that makes the real difference,” Keshavarzian explained.

Keshavarzian has been happy with his decision to attend Marshall and major in mathematics. “The course layout [for the math major] is great. It provides great fundamentals and basics. Also, every professor is willing to help you, even if they don’t know you. They want to show you that math is not a monster. They love what they do and want to win you over.”

Keshavarzian doesn’t deny that being a math major is challenging, but he wouldn’t change to something easier. There’s a

feeling of satisfaction that comes with finally solving a problem that has been difficult.

“If you enjoy math on some level, getting a degree in math allows you to *understand* it on a level you never would have imagined. It’s useful on a practical level, but you can also further the field through research.”

While Keshavarzian is unsure of what he wants to do once he finishes his degree, he knows that many doors will be open to him, in part because of the mentoring provided by his professors. “They have a great way of finding the diamond in the rough. You can walk in as anything, at any stage, and they will turn you into a mathematician. They will find the diamond inside you.”



The main campus of Marshall University lies in the heart of Huntington, West Virginia, on the banks of the Ohio River. Established as Marshall Academy in 1837, the school was named by John Laidley in honor of his friend, the late Chief Justice of the United States Supreme Court, John Marshall. Marshall College became Marshall University when it was granted university status in 1961, and now offers 66 bachelor's programs and 51 graduate programs through eleven academic units. The College of Science was established in 1976.

Marshall University students enjoy a vibrant campus life while pursuing rigorous academic studies. The first priority of Marshall's faculty is teaching. In the words of one Marshall student, "The professors here are concerned with helping the student. If you make the effort to approach them, they are willing to go to great lengths to assist you."

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## Meet Jessica Briscoe, Mathematics Major

Usually if someone tells you they're going to medical school, you assume they are majoring in biology or chemistry. But that's not the case with Jessica Briscoe.

"I've known I wanted to be a doctor since I was five years old," Briscoe explained. "I was the kid who would bring you soup if you were sick."

And yet, Briscoe has chosen a lesser-traveled path to medical school.

"I was a chemistry major my freshman year, but I couldn't see myself doing chemistry for four years. I already had credit for Calculus I and II coming into Marshall [through AP credits], and I found that I really liked the math department," Briscoe said.

Not only does Briscoe praise the faculty in the math department for their willingness to help their students, she credits her problem-solving ability to her math education.

"Math majors think differently from other majors. You have to develop your own

process to produce the desired result, rather than having the process provided for you," Briscoe said of her thought processes. She believes that this way of thinking will serve her future patients well.

"In medicine, a patient's symptoms are your hypothesis. As a doctor, you go through the process to develop the diagnosis," which Briscoe compares to working mathematical proofs.

"I know how to prove that one is greater than zero. If you ask any other major why, they'll say, 'It just is.' I can prove it. But when doing a proof, sometimes you go in a direction and find something isn't true, so you take a deep breath and try a different approach."

While Briscoe would advise future students not to shy away from taking non-traditional paths to their careers, she does recommend following one college tradition.

"I lived in Marshall Commons for my first two years, and it's a really good experience. You meet a lot of people and learn a

lot more about the world than you would if you lived at home," Briscoe said. And while she could have commuted

from her home in nearby Winfield, West Virginia, she sees another advantage to living on campus.

"You also save a lot of gas money," she said with a smile.



Jessica Briscoe

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