

Mathematics ! College of Science & Mathematics

About the Program

Overview

Mathematics is an essential part of the dramatic changes occurring in the natural sciences, engineering, computer science and the social sciences. To prepare students to meet the needs of the 21st century, the mathematics faculty encourages students to reason mathematically, be active problem solvers and become independent learners of mathematics.

To enable students to acquire these traits, the teaching and learning of mathematics emphasizes these elements:

- All students are encouraged to pursue worthwhile mathematical tasks.
- Course work includes investigation and verification, reasoning and proof, applications and connections.
- Graphers and computers are used to explore the nature and methods of problem solving.

Unique features

- Dedicated and experienced teachers
- Supportive learning environments
- Small class size promotes interaction between students and teachers
- Opportunities to research topics and communicate ideas

Mathematics Learning Center provides an out-of-class environment where students collaborate on projects, conduct experiments, prepare presentations and work with technology.

Plan of Study - Bachelor's Degree

Mathematics Major (minimum of 31 s.h.)

MTH 2350	Probability and Statistics	4 s.h.
MTH 2510	Calculus with Analytic Geometry I	5 s.h.
MTH 2520	Calculus with Analytic Geometry II	4 s.h.
MTH 3300	Modern Algebra	3 s.h.
MTH 3410	Linear Algebra	3 s.h.
MTH 3510	Calculus with Analytic Geometry III	4 s.h.
MTH 4510	Introduction to Real Analysis	3 s.h.
MTH 4650	Foundations of College Geometry	3 s.h.
MTH 4950	Senior Seminar	<u>2 s.h.</u> 34 s.h.

Required Support (3 s.h.)

CSC 2010 Practical Systems OR
CSC 2080 Computer Science I

Mathematics Minor (minimum of 22 s.h.)

MTH 2350	Probability and Statistics	4 s.h.
MTH 2510	Calculus with Analytic Geometry I	5 s.h.
MTH 2520	Calculus with Analytic Geometry II	4 s.h.
*MTH 3300	Modern Algebra	3 s.h.
*MTH 3410	Linear Algebra	3 s.h.
*MTH 4650	Foundations of College Geometry	<u>3 s.h.</u> 22 s.h.

* Required for teacher preparation.

Transfer and post-degree students

Faculty advisors work one-on-one with students to help them select courses to suit individual needs and satisfy requirements.

Career Opportunities

Careers that require a very strong background in mathematics were listed as the five "best" jobs in the *Jobs Related Almanac*. These include: software engineer, actuary, systems analyst, computer programmer and mathematician.

The mathematics program is an excellent complement for majors in Computer Science or secondary teacher certification.

For timely and specific information check out the Mathematical Science Career information web site at: <http://www.ams.org/career>

Preparation for Teacher Certification in Mathematics

The mathematics program prepares candidates for initial high school teacher certification, Post-degree students may earn an additional endorsement in mathematics. Call the Education Department for more information, (734) 432-5655.

Recent Student Research

- The Amazing Number e
- Mathematics of Bar Codes
- Periodic Tessellations
- Crystallography
- The Hidden Beauty of Fractals
- Cryptography: Modern Methods
- Harmonious Dance of Music and Mathematics
- The Four Color Problem



For Admissions Information

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For Program Information

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See Advisor/Admissions Office for current information.

Madonna University guarantees the right to equal educational opportunity without discrimination because of race, religion, sex, national origin, age, or disabilities.

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Student Reactions and Comments:

“In Modern Algebra, I developed a better understanding for how to write proofs and to appreciate the finesse and knowledge with which a good proof is written.”

“I am a double major in Chemistry and Mathematics and Modern Algebra has taught me to discipline myself into trying and conquering things that do not come easily. But once a problem was figured out, it was sheer joy.”

“Two of the most valuable things I learned this semester as a prospective high school teacher were the value of presenting material using a multi-sensory approach and the value of learning from others.”

“As a future teacher, I have learned that the way I learned math - rote memorization and learning by the rules - is not the best way I can teach my students math. I have learned that mathematics is really all about patterns and if you can figure out a pattern then you can usually solve the problem.”

“I am not a very good writer but in Senior Seminar I learned to research and answer questions on my topic. The use of Power Point made the long presentation easier.”

“In Senior Seminar, my eyes were opened to the number of resources that are available including electronic databases and the Internet. I was glad I could choose my own topic.”

About the Program

- Acquire mathematical skills and develop mathematical reasoning in an investigation based, technology enhanced environment.
- Learn to do mathematics, ask and research relevant questions, make observations, draw conclusions, and defend your ideas.
- Develop multiple representations of concepts and participate in cooperative learning.
- Collect and generate data, develop and analyze mathematical models, explore patterns, weigh alternatives, deal with uncertainties, make and defend predictions.
- Solve multi-step, opened ended problems; analyze problems with multiple approaches.
- Use technology - graphers, computer software, computer algebra systems, interactive geometry, and statistical capabilities.

The Faculty

Miriam Long
Marvin Weingarden
Sr. Kathleen Wlodarczak