

Madonna University

Mathematics for Elementary Certification ! 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 math 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 (30/31 s.h.)

| | | |
|----------|---|---------------|
| MTH 1210 | Pre-Calculus | 5 s.h. |
| MTH 2300 | Business Calculus | 4/5 s.h. |
| MTH 2330 | Teaching & Learning Number Concepts | 3 s.h. |
| MTH 2350 | Probability and Statistics | 4 s.h. |
| MTH 3330 | Algebraic Thinking and Proportional Reasoning | 4 s.h. |
| MTH 3340 | Geometry for Elementary Teachers | 4 s.h. |
| MTH 4330 | Reasoning and Proof in the Elementary Mathematics Classroom | 2 s.h. |
| MTH 4340 | Technology in the Elementary Mathematics Classroom | 2 s.h. |
| MTH 4960 | Senior Seminar | <u>2 s.h.</u> |
| | | 30/31 s.h. |

Mathematics Minor (20 s.h.)

| | | |
|----------|--|---------------|
| MTH 1210 | Pre-Calculus | 5 s.h. |
| MTH 2330 | Teaching & Learning Number Concepts | 3 s.h. |
| MTH 2350 | Probability and Statistics | 4 s.h. |
| MTH 3330 | Algebraic Thinking and Proportional Reasoning | 4 s.h. |
| MTH 3340 | Geometry for Elementary Teachers | <u>4 s.h.</u> |
| | | 20 s.h. |

Recent Student Research

- The Amazing Number e
- Mathematics of Bar Codes
- Periodic Tessellations
- Crystallography
- The Hidden Beauty of Fractals
- The VanHiele Model for Understanding Geometry
- Cryptography: Modern Methods
- Harmonious Dance of Music and Math

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.

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

Preparation for Elementary Teacher Certification in Mathematics

The degree of Bachelor of Science with a major in Mathematics for Elementary Certification is available only at the completion of all requirements for the Elementary (K-8) Provisional Teaching Certificate. A student who begins the program for teacher certification but does not complete it for any reason must change to another major to complete degree requirements.

Call the Education Department for more information, (734) 432-5655.

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.



For Admissions Information

Office of Admissions
Madonna University
36600 Schoolcraft Rd.
Livonia, MI 48150-1173
734/432-5339
Fax 734/432-5393
800-852-4951
TTY 734/432-5643
web:www.munet.edu
e-mail:muinfo@smtp.munet.edu

For Program Information

Sr. Kathleen Wlodarczak, Chair
Mathematics & Computer Science
Madonna University
36600 Schoolcraft Rd.
Livonia, MI 48150-1173
734/432-5528
Fax 734/432-5393
800-852-4951
TTY 734/432-5643
web:www.munet.edu
email:
KATHLEEN@smtp.munet.edu

Madonna University reserves the right to withdraw or modify information in this brochure.

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. 8/00

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 elementary 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.”

“This class for elementary teachers has challenged my problem solving techniques in a positive way. I learned how to do math problems with manipulatives and pictures which is how my son is learning math.”

“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 math, ask and research relevant questions, make observations and draw conclusions, verbalizing your ideas.
- Develop intuitive understanding and collaborative learning strategies.
- 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, interactive geometry, and statistical capabilities.

The Faculty

Wendy Conway
Miriam Long
Marvin Weingarden
Sr. Kathleen Wlodarczak