

MAED521 (2)***Informal Geometry and Measurement for Middle Grades Educators***

This course is the first of two which lead prospective mathematics teachers through a series of explorations to develop competence in geometric reasoning, including conjecture, proving, and disproving. Prospective teachers develop a deeper understanding of the role of proof in geometry. The pedagogy of this course models that of effective middle school mathematics teachers.

MAED522 (2)***Formal Geometry for Middle Grades Educators***

This course is the second of two which lead prospective mathematics teachers through a series of explorations to develop competence in geometric reasoning, including conjecturing, proving, and disproving. Prospective teachers refine their understanding of the role of proof in geometry. The pedagogy of the course models that of effective middle school mathematics teachers.

MAED600 (2)***Discrete Mathematics and Number Theory for Middle Grades Educators***

Students investigate concepts of number theory, discrete mathematics, and logic as they apply to middle grades mathematical education. Each topic includes a study of graphic representation of concepts and applications in technology. The pedagogy of the course models that of effective middle school mathematics teachers.

MAED610 (4)***Mathematical Modeling for Middle Grades Educators***

Investigation of concepts and practices of mathematical modeling with an emphasis on application to middle grades education. The pedagogy of the course models that of effective middle school mathematics teachers.

MAED625 (2)***Mathematical Investigations for Middle Grades Classrooms***

Participants investigate topics in mathematics, including probability, programming, fractals, and chaos theory. Emphasis is placed on participant understanding of these topics and their appropriate use as investigations with middle grades students. The pedagogy of the course models that of effective middle school mathematics teachers.

MAED 630 (1-4)***Seminar:* _____**

Seminar in specific topics relevant to mathematics education. Each seminar examines one topic in detail. Repeatable with different topics. May be graded S/U.

MATHEMATICS AND SCIENCE

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Faculty

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David E. Alonso, Chemistry
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Marlene N. Murray, Biology
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D. David Nowack, Chemistry
Yun Myung Oh, Mathematics
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David A. Steen, Biology
John F. Stout, Biology
Tiffany Z. Summerscales, Physics
Stephen C. Thorman, Physics, Computer Science
Lynelle M. Weldon, Mathematics
Dennis W. Woodland, Biology
Peter A. Wong, Chemistry
Robert E. Zdor, Biology

MS: Mathematics and Science

The Master of Science: Mathematics and Science is designed for students who wish to acquire a breadth of knowledge which cannot be achieved within any one discipline among mathematics, biology, chemistry and physics. Such a degree may be useful for secondary or middle-school teachers who teach mathematics and science subjects, but who do not desire a traditional MAT program; for those who wish to develop skills in areas of overlap in these disciplines; for those who wish to study the interrelationships among the disciplines; and for those who wish further preparation for careers in industry or government.

In addition to the general requirements for admission to and enrollment in graduate degree programs outlined in this bulletin, students must meet departmental requirements.

Admission Requirements

- A bachelor's degree with a major in Mathematics, Biology, Chemistry, or Physics, and a minimum GPA of 3.00 (B) in mathematics and science courses.
- Completed the GRE General Exam for admission to regular student status. Completion of the GRE Subject Exam in one of the four areas of Mathematics, Biology, Chemistry or Physics is recommended.

- Earned credit or demonstrated proficiency in the following prerequisites: CPTR125 (FORTRAN or C++) or CPTR151; MATH141, 142, 240, 286; and two out of three year-long laboratory science courses: BIOL165, 166, CHEM131, 132 and PHYS241, 242, 271, 272. A student may be admitted with deficiencies in the above courses, but this exception requires the student to take additional credits beyond the minimum 32 credits required.

MS Degree Requirements

1. Compliance with all standards as given in the *Graduate Degree Academic Information* section of the bulletin.
2. Completion of a curriculum consisting of 32–40 credits approved by a supervising committee.
3. Passing a comprehensive examination over two areas from among Mathematics, Biology, Chemistry and Physics.

Core Courses

MATH405 (3), MSC1526 (2–3), MSC1575 (1), MSC1670 (0), MSC1698 (1–4), undergraduate prerequisites* (0–8), and other courses recommended by the student’s committee.

Disciplinary Core

For students choosing the Chemistry and/or Physics options: CHEM431, 432 (6) and CHEM441, 442 (2) or PHYS411 (2.5) and PHYS430 (2.5) and PHYS481 (3),

*Up to 8 credits selected from among the prerequisites listed in the specific admission requirements are added to the minimum 32 credits for the degree.

Total MS degree credits required—32–40

- The student must include at least 12 credits in each of the two disciplines selected for the degree.
- A student must complete a minimum of 16 credits in courses numbered 500 and above.

Courses

See Biology for BIOL course descriptions; Chemistry and Biochemistry for CHEM and BCHM; Mathematics for MATH; Physics for PHYS.

MSC1526 (2–3)

Christian Faith and the Sciences

Discussion of science and epistemology in the context of Christian faith, scientific model building, the church-science interface, and ethical considerations.

MSC1575 (1)

Mathematics and Science Seminar

Current research topics in mathematics and physical sciences. Attendance at 12 hours of research presentations, a paper, and a presentation of a current research topic.

MSC1650 \$ (0)

Project Continuation

Student may register for this title while clearing deferred grade (DG) and/or incomplete (I) courses with advisor approval only. Registration for this title indicates full-time status.

MSC1655 \$ (0)

Program Continuation

Students may register for this non-credit continuation course to

maintain active status. For additional information on active status, please refer to p. 48 in the bulletin. Registration does not indicate full-time status.

MSC1665 \$ (0)

Preparation for Comprehensive Examinations

Advisor approval required. Registration for this title indicates full-time status.

MSC1670 (0)

Comprehensive Exams

MSC1698 (1–4)

Research Project

Repeatable to 4 credits.

Procedures

1. Upon acceptance, the student consults with the program coordinator and a graduate advisor to develop a plan of study. Any deficiencies, prerequisites, research, language tools, transfer credits, and residency are discussed to establish the status of the student.
2. The student then submits a plan of study to the program coordinator for approval and identifies three faculty members to serve as a supervisory committee. The approved plan of study becomes the curriculum the student will follow to complete the requirements for the degree. Any changes in the plan of study must therefore be approved by the program coordinator and the committee.
3. All projects must be submitted to the supervising committee at least two months prior to graduation. The student will be expected to give an oral presentation and an oral defense of the project. The program coordinator recommends final project approval after the consent of the committee has been obtained.
4. Comprehensive exams in the two areas of concentration must be completed at least one month prior to graduation.
5. When 50% of all course work has been completed, the student initiates advancement to degree candidacy by submitting the required forms to the program coordinator. When the program coordinator approves the student for graduation, a recommendation is sent to the Records Office and to the Dean of Graduate Studies.
6. Graduation procedures and degree conferral as described in this bulletin.