

## **GRADUATE COURSES**

The following courses are available to those preparing for degree language examinations or for improvement in reading ability:

### **FREN505 (5)**

#### ***Reading French***

For students without a working knowledge in French; an introduction to the grammar and syntax of French for the purpose of translating written French into English. May count toward a general elective only.

### **GRMN505 (5)**

#### ***Reading German***

For students without a working knowledge in German; an introduction to the grammar and syntax of German for the purpose of translating written German into English. May count toward a general elective only.

### **INLS575 (1-3)**

#### ***Topics in \_\_\_\_\_***

A study of selected topics in language, literature, or civilization. Topics and credits to be announced. Repeatable with different topics.

389, 405, 408, 426, 431, 432, 441, 442, 475, 487, 495, CPTR436.  
This major is available only as a second major, to those taking a major in another field.

### **Minor in Mathematics—20**

MATH141, 142, 215 and at least 9 credits in additional courses chosen in consultation with a departmental advisor from MATH240, 286, 315, 355, 389, 405, 408, 426, 431, 432, 441, 442, 475, 487, 495; STAT340, CPTR436. Students in a teacher certification program are required to take MATH355, 475, STAT340.

### **BS: Mathematics Education—30**

MATH141, 142, 215, 240, 355, 475; STAT285, 340 and one additional course chosen in consultation with a Mathematics Department advisor from MATH286, 426. This major is available only to those who are obtaining elementary or secondary teacher certification. Cognate Course: CPTR125.

### **Minor in Mathematics Education—20**

(pending Michigan Department of Education approval)  
MATH145, 167, 182, 215, 220, 355, STAT285. This minor is available only to those obtaining elementary teacher certification. The regular minor listed above will also suffice for elementary certification.

### **Minor in Mathematics of Economics and Finance—20**

MATH141, 142, 215, 286, STAT285, 340. This minor is available only to students obtaining a degree in the School of Business.

### **Behavioral Neuroscience**

The Department of Mathematics is a participant in the Behavioral Neuroscience program funded by the National Science Foundation. For more details, see p. 108.

**SP**



**MATH475**

**Alt (3)**

***Geometry***

Axiomatic development of Euclidean, non-Euclidean, affine, and projective spaces. Relation of these topics to secondary teaching.

Prerequisite: MATH355. *Fall*

**MATH487**

**Alt (1-3)**

***Special Topics in \_\_\_\_\_***

Consult the instructor in regard to the topic to be covered.

Prerequisite: Consent of teacher. Repeatable in different areas.

**MATH495**

**Ths5**

**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

Haughey Hall, Room 222  
 (269) 471-3430, (269) 471-3501  
 physics@andrews.edu  
 gburdick@andrews.edu

### Faculty

Gary W. Burdick, Physics, *Coordinator*  
 David E. Alonso, Chemistry  
 Gordon J. Atkins, Biology  
 Bill Chobotar, Biology  
 H. Thomas Goodwin, Biology  
 James L. Hayward, Biology  
 Shandelle M. Henson, Mathematics  
 Ronald D. Johnson, Mathematics  
 Joon Hyuk Kang, Mathematics  
 Mickey D. Kutzner, Physics  
 Robert E. Kingman, Physics  
 Margarita C. K. Mattingly, Physics  
 David N. Mbungu, Biology  
 Getahun Merga, Chemistry  
 Robert C. Moore, Mathematics  
 Desmond H. Murray, Chemistry  
 Marlene N. Murray, Biology  
 G. William Mutch, Chemistry  
 D. David Nowack, Chemistry  
 S. Clark Rowland, Physics  
 David E. Steen, Biology  
 John F. Stout, Biology  
 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.

### SPECIFIC ADMISSION REQUIREMENTS

1. Students admitted into the MS: Mathematics and Science program must hold a baccalaureate degree with a major in one of the above areas with a cumulative GPA of at least 2.60 (4.00 system) and have 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