

MATHEMATICS

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Faculty

Donald H. Rhoads, *Chair*
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Lecturers

Keith G. Calkins
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Emeriti

Kenneth L. Franz
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Mathematics is foundational to physics, engineering, and computer science, and is increasingly important in many fields of study such as finance, accounting, economics, biology, medicine, and environmental science. Students majoring in these and other fields will find that acquiring an additional major in mathematics or mathematical studies greatly enhances the marketability of their degree.

Undergraduate Programs

BS: Mathematics—39

MATH141, 142, 215, 240, 286, 315; STAT340 and at least 15 credits in additional courses chosen in consultation with a Mathematics Department advisor from MATH271, 355, 389, 405, 408, 425, 431, 432, 441, 442, 475, 487, 495.

Cognate Course: CPTR125

Major in Mathematical Studies—30

MATH141, 142, 215, 240 and at least 15 credits in additional courses chosen in consultation with a Mathematics Department advisor from STAT340, CPTR125, MATH271, 286, 315, 355, 389, 405, 408, 425, 431, 432, 441, 442, 475, 487, 495. 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, 425, 431, 432, 441, 442, 475, 487, 495; 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, 405, 425. 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, 355, 475, STAT285. This minor is available only to those obtaining elementary teacher certification. The regular minor listed above will also suffice for elementary certification.

SPECIAL REQUIREMENTS AND PLACEMENT TEST

Sequential Course Numbering. All courses with more than one course number must be taken sequentially.

Non-overlapping Credit Restrictions. Because there is substantial overlap in material covered in the following groups of courses, no student is granted credit (other than general elective credit) in more than one course from each group:

1. MATH141, 182 (Calculus I, Calculus with Applications)
2. MATH145, 166 (Reasoning with Functions, Precalculus Algebra)

Minimum grade for prerequisites, except for MATH141, is C-.

Mathematics Placement Examination (MPE). With exceptions specified below, all undergraduate students must take the Mathematics Placement Examination, which tests arithmetic and algebra skills. This is an Andrews University examination and no other placement test results are recognized. The examination takes one hour, no calculators are allowed, and there is an \$11.00 fee which may be charged to the student's account. The MPE is given at Fall registration, at other convenient times throughout the academic year, and at participating Seventh-day Adventist academies each spring. Sample questions and other information about the MPE may be found at <http://www.math.andrews.edu>.

A score of at least P2 on the MPE will fulfill the skills part of the Mathematics General Education requirement. This score is

Graduate Programs

The Mathematics Department collaborates in the Master of Science: Interdisciplinary Studies (Mathematics and Physical Sciences). See the Interdisciplinary Studies section, p. 128.

Mathematics Endorsement Program for Middle School Educators. The Mathematics Department collaborates with the School of Education and the Berrien County Intermediate School District to administer the Alternative Certification Experimental Program (Math Endorsement Program) for Middle School Educators. Courses for this Program are listed under “Mathematics Education.” Inquiries about this program should be directed to Larry Burton (616) 471-3465, burton@andrews.edu; Lynelle Weldon (616) 471-3866, weldon@andrews.edu; or Judy Wheeler (616) 471-7725 ext. 302, jwheele@remc11.k12.mi.us.

Courses

(Credits)

See inside front cover for symbol code.

MATH105

(2)

Mathematical Skills—Arithmetic

Designed to remedy the deficiencies, diagnosed by the

MATH355 (3)

Discrete Mathematics

Selected topics in discrete mathematics, such as logic, set theory, relations, functions, algebraic structures and graph theory.

Prerequisite: MATH141 or 182. *Fall*

MATH389 (0.5)

Mathematics Colloquium

Participation in at least 10 mathematics colloquia or approved colloquia of other departments. Grade is based on attendance and notes taken at the colloquium. Repeatable to 2 credits. S/U. *Fall, Spring*

MATH405 ♦ Alt (3)

Applied Mathematics

Solutions of first and second order partial differential equations, and applications. Prerequisites: MATH240, 286. *Fall*

MATH408 ♦ Alt (3)

Complex Analysis

Elementary complex analysis, contour integrals, complex series.

Prerequisite: MATH240. *Spring*

MATH425 ♦ Alt (3)

Numerical Methods and Modeling

Construction of mathematical models. Implementing such models on a computer. Prerequisites: MATH141 and 215; and a knowledge of computer programming. *Spring*

MATH431, 432 ♦ Alt (3, 3)

Advanced Calculus

Theorems on continuity, differentiation, integration, and convergence; additional selected topics such as topology, differentiable manifolds, and real analysis. Prerequisite: MATH240. *Fall/Spring sequence*

MATH441, 442 ♦ Alt (3, 3)

Algebra

Study of groups, rings, fields, modules, vector spaces, and algebras. Prerequisite: MATH240. *Fall/Spring sequence*

MATH475 ♦ Alt (3)

Geometry

Axiomatic development of Euclidean, non-Euclidean, affine, and projective spaces. Relation of these topics to secondary teaching. Prerequisites: MATH142 or either MATH141 or 182 and 355. *Fall*

MATH487 Alt (1-3)

Special Topics in Mathematics

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

Prerequisite: Consent of teacher.

MATH495 (1-3)

Independent Study

Independent study of selected topics in mathematics to enable advanced students to pursue topics not offered in other scheduled courses. The student will study under the supervision of a

