

## MATHEMATICS (MAT)

Degrees offered: B.A. or B.S.

### Requirements for the Mathematics Major

A Major in Mathematics consists of the following 34 hours:

A.	MAT 151	Calculus I	(3 hours)
	MAT 161	Calculus II	(3 hours)
	MAT 231	Introductory Statistics	(3 hours)
	MAT 251	Calculus III	(3 hours)
	MAT 261	Calculus IV	(3 hours)
	MAT 301	Foundations of Mathematics	(3 hours)
	MAT 303	Introduction to Higher Geometry	(3 hours)
	MAT 305	Elementary Linear Algebra	(3 hours)
	MAT 361	Differential Equations	(3 hours)
	MAT 401	Introduction to Real Analysis	(3 hours)
	MAT 403	Introduction to Abstract Algebra	(3 hours)
	MAT 411	Special Studies	(1 hour)

### Requirements for the Mathematics Minor

A Minor in Mathematics consists of the following 18 hours:

A.	MAT 151	Calculus I	(3 hours)
	MAT 161	Calculus II	(3 hours)
	MAT 251	Calculus III	(3 hours)
	MAT 261	Calculus IV	(3 hours)
	MAT 301	Foundations of Mathematics	(3 hours)
	Three (3) hours of electives (300-400 level)		(3 hours)

### Course Descriptions

#### **MAT 103**      **INTRODUCTORY ALGEBRA:** 3 hours

An algebra course to help prepare a student for Intermediate Algebra (MAT 105). Topics include operations with rational numbers, exponents, simplifying algebraic expressions, and solving equations.

#### **MAT 105**      **INTERMEDIATE ALGEBRA:** 3 hours

An algebra course to help prepare a student for MAT 108, Introduction to Mathematics, or MAT 111, Precalculus Algebra. Topics include simplifying

algebraic expressions, factoring, and solving linear and quadratic equations. Does not count toward the mathematics requirement for a B.S. degree except for Elementary Education majors.

*Prerequisite: MAT 103 or satisfactory placement test score*

**MAT 108                    INTRODUCTION TO MATHEMATICS:** 3 hours (QR)

A problem solving approach to the introduction of areas such as sets, geometry, probability, measurement, statistics and consumer mathematics.

*Prerequisite: MAT 105 OR a grade C or better in MAT 103 OR satisfactory placement test score*

**MAT 111                    PRECALCULUS ALGEBRA:** 3 hours (QR)

A brief study of numbers followed by a study of solving equations (linear, quadratic, radical, systems, etc.) as well as of inequalities, exponents, and logarithms.

*Prerequisite: MAT 105 OR satisfactory placement test score*

**MAT 121                    PRECALCULUS TRIGONOMETRY:** 3 hours (QR)

A relatively complete course in trigonometry followed by basic analytic and geometric properties of algebraic and trigonometric functions.

*Prerequisite: MAT 111 OR consent of the instructor*

**MAT 151                    CALCULUS I:** 3 hours (QR)

Differentiation of algebraic and trigonometric functions with applications.

*Prerequisite: MAT 111, MAT 121 OR satisfactory placement test score*

**MAT 161                    CALCULUS II:** 3 hours

Integration of algebraic, trigonometric, logarithmic, and exponential functions with applications.

*Prerequisite: MAT 151*

**MAT 231                    INTRODUCTORY STATISTICS:** 3 hours (QR)

The course topics include descriptive statistics (data analysis, organization, and presentation), probability theory and distributions, and inferential statistics (confidence intervals and hypothesis testing). A course - appropriate technology component is introduced. (*Cross-listed with BUS 231*)

*Prerequisite: MAT 105 OR satisfactory math placement test score OR consent of the instructor*

**MAT 251**            **CALCULUS III:** 3 hours  
Additional methods of integration, improper integrals, and applications.  
*Prerequisite: MAT 161*

**MAT 261**            **CALCULUS IV:** 3 hours  
Infinite series, functions of several variables, partial derivatives, multiple integrals, and applications.  
*Prerequisite: MAT 251*

**MAT 301**            **FOUNDATIONS OF MATHEMATICS (CT):** 3 hours  
An introduction to the techniques and background necessary for abstract mathematical reasoning. Topics covered are elementary theory of logic, direct and indirect techniques of proofs involving the use of logic, elementary set theory, topics from analysis, and algebraic structures.  
*Prerequisite: MAT 251*

**MAT 303**            **INTRODUCTION TO HIGHER GEOMETRY (CT):** 3 hours  
Fundamental concepts of geometry with emphasis given to logical development from basic assumptions.  
*Prerequisite: MAT 161*

**MAT 305**            **ELEMENTARY LINEAR ALGEBRA:** 3 hours    0  
Systems of linear equations, matrices, determinants, vector spaces, and linear transformations.  
*Prerequisite: MAT 161 OR consent of the instructor*

**MAT 361**            **DIFFERENTIAL EQUATIONS:** 3 hours  
A study of first order and linear second order differential equations with applications. An introduction to linear nth order differential equations.  
*Prerequisite: MAT 261 OR concurrent enrollment*

**MAT 401**            **INTRODUCTION TO REAL ANALYSIS:** 3 hours  
An advanced treatment of limits, continuity, sequences and series of functions, and differentiation. Emphasis is on proofs.  
*Prerequisite: MAT 251, MAT 301*

**MAT 403**            **INTRODUCTION TO ABSTRACT ALGEBRA (CT):** 3 hours  
Introduction to algebraic structures, with an emphasis on groups.  
*Prerequisite: MAT 251, MAT 301*

**MAT 411**            **SPECIAL STUDIES:** One to 3 hours

A course for upperclassmen seeking to complete requirements in their major or minor disciplines. Subjects will be taught that do not appear in the College catalog but are of value to a student in her career objectives and/or graduate studies. Instructor has the option of awarding a letter grade or a Pass/Fail grade.

*Prerequisite: Approval of the Department Head*

**MAT 412**            **SPECIAL STUDIES:** 1 to 3 hours

A course for upperclassmen seeking to complete requirements in their major or minor disciplines. Subjects will be taught that do not appear in the College catalog but are of value to a student in her career objectives and/or graduate studies. Instructor has the option of awarding a letter grade or a Pass/Fail grade

*Prerequisite: Approval of the Department Head*

**MAT 413**            **SPECIAL STUDIES:** 1 to 3 hours

A course for upperclassmen seeking to complete requirements in their major or minor disciplines. Subjects will be taught that do not appear in the College catalog but are of value to a student in her career objectives and/or graduate studies. Instructor has the option of awarding a letter grade or a Pass/Fail grade.

*Prerequisite: Approval of the Department Head*

**MAT 414**            **SPECIAL STUDIES:** 1 to 3 hours

A course for upperclassmen seeking to complete requirements in their major or minor disciplines. Subjects will be taught that do not appear in the College catalog but are of value to a student in her career objectives and/or graduate studies. Instructor has the option of awarding a letter grade or a Pass/Fail grade.

*Prerequisite: Approval of the Department Head*

**MAT 449, 450**      **INDEPENDENT STUDY:** 3 hours per course

Tutorial courses designed to meet particular needs of the students.

*Prerequisite: Approval of the Department Head and Academic Dean*

**MAT 471, 472    INTERNSHIP:** One to 6 hours

An educational experience where the student is exposed, through actual observations and participation, to the various aspects of a work situation.

*Prerequisite: Approval of the Department Head and Academic Dean*