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)

Requirements for Secondary Mathematics Major Certification

If the student desires certification in Secondary Mathematics by the Alabama Department of Education, the following specific general education curriculum requirements must be met:

A. Social Science. The following must be selected from electives in the general education requirements:

PSY 201	General Psychology	(3 hours)
PSY/SOC 275	Multiculturalism: A Perspective	(3 hours)

B. Professional Studies

EDU 201	Introduction to Education	(3 hours)		
EDU 204	Human Growth and Development	(3 hours)		
EDU 205	Exceptional Children	(3 hours)		
EDU 301	Curriculum Design	(3 hours)	EDU 302	Educational Psychology (3 hours)
EDU 303	Evaluation of Learning and Teach.	(3 hours)		
EDU 313	Behavioral and Classroom Manage.	(3 hours)		
EDU 319	Reading in the Content Areas	(3hours)		
EDU 409	Secondary Clinical Practice	(12 hours)		
EDU 413	Materials and Methods of Teaching Mathematics in Secondary Education	(3 hours)		

A. **Teaching Field**

See course requirements for the Mathematics major 34 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 scores

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 scores

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