Curriculum - Mathematics, BS

Catalog Year: 2026 - 2027 **General Studies Gold**

Degree: Bachelor of Science, BS

College/School: The College of Liberal Arts and Sciences

Plan Code: LAMATBS

Minimum credit hours: 120

Upper division minimum credit hours: 45

Requirement	Minimum grade	Credit hours
Major Requirements		
A minimum of 12 upper-division credit hours used toward the major requirements must be taken from The College of Liberal Arts and Sciences. When selecting courses, the college offering the course can be identified by viewing the course details in Class Search.		
Mathematics Core Courses		
MAT 270 Calculus with Analytic Geometry I (MATH) **OR** **MAT 265 Calculus for Engineers I (MATH)**	C	3 - 4
MAT 271 Calculus with Analytic Geometry II (MATH) **OR** **MAT 266 Calculus for Engineers II (MATH)**	C	3 - 4
MAT 272 Calculus with Analytic Geometry III (MATH) **OR** **MAT 267 Calculus for Engineers III (MATH)**	C	3 - 4
MAT 300 Mathematical Structures	C	3
MAT 343 Applied Linear Algebra **OR** **MAT 342 Linear Algebra**	C	3
MAT 371 Advanced Calculus I	C	3

Requirement	Minimum grade	Credit hours
CSE 110 Principles of Programming	C	3
CSE 205 Object-Oriented Programming and Data Structures	C	3

Mathematics Major Courses

MAT 274 Elementary Differential Equations (MATH) OR MAT 275 Modern Differential Equations (MATH)	C	3
Upper Division Depth Courses	C	6

- ACT 440 Single Life Mortality
- ACT 441 Long-Term Actuarial Mathematics
- ACT 450 Actuarial Models
- ACT 451 Short-Term Actuarial Mathematics
- MAT 410 Introduction to General Topology
- MAT 412 Differential Geometry
- MAT 415 Introduction to Combinatorics
- MAT 416 Graph Theory
- MAT 423 Numerical Analysis I (MATH)
- MAT 425 Numerical Analysis II
- MAT 442 Advanced Linear Algebra
- MAT 444 Intermediate Abstract Algebra
- MAT 447 Cryptography I
- MAT 448 Cryptography II
- MAT 472 Intermediate Real Analysis I
- MAT 473 Intermediate Real Analysis II
- MAT 475 Differential Equations

Requirement	Minimum grade	Credit hours
MAT 476 Partial Differential Equations		
STP 425 Stochastic Processes		
STP 427 Mathematical Statistics		
Courses used to fulfill the Upper Division Depth requirement serve as the capstone experience and must be taken from the School of Mathematical and Statistical Sciences.		
Upper Division Advanced Courses	C	6
400-Level ACT Elective		
DAT 401 Statistical Modeling and Inference for Data Science		
DAT 402 Machine Learning for Data Science		
MAT 372 Advanced Calculus II		
MAT 410 Introduction to General Topology		
MAT 412 Differential Geometry		
MAT 415 Introduction to Combinatorics		
MAT 416 Graph Theory		
MAT 419 Introduction to Linear Optimization		
MAT 420 Scientific Computing		
MAT 421 Applied Computational Methods (MATH)		
MAT 423 Numerical Analysis I (MATH)		
MAT 425 Numerical Analysis II		
MAT 440 Group Theory		
MAT 441 Ring Theory		
MAT 442 Advanced Linear Algebra		
MAT 443 Introduction to Abstract Algebra		

Requirement	Minimum grade	Credit hours
MAT 444 Intermediate Abstract Algebra		
MAT 445 Theory of Numbers		
MAT 447 Cryptography I		
MAT 448 Cryptography II		
MAT 451 Mathematical Modeling		
MAT 452 Introduction to Chaos and Nonlinear Dynamics		
MAT 460 Vector Calculus		
MAT 461 Applied Complex Analysis		
MAT 462 Applied Partial Differential Equations		
MAT 472 Intermediate Real Analysis I		
MAT 475 Differential Equations		
MAT 476 Partial Differential Equations		
STP 420 Introductory Applied Statistics (QTRS)		
STP 421 Probability		
STP 425 Stochastic Processes		
STP 427 Mathematical Statistics		
STP 429 Applied Regression (QTRS)		
Upper Division Additional Courses		
Upper Division ACT Elective	C	6
Upper Division DAT Elective		
Upper Division MAT Elective		
Upper Division STP Elective		

Requirement	Minimum grade	Credit hours
Related Area Courses		
Related Field	C	7
ACT 410 Mathematics of Finance		
ACT 415 Probability for Risk Management		
ACT 430 Mathematics of Financial Derivatives		
ACT 450 Actuarial Models		
ACT 451 Short-Term Actuarial Mathematics		
400-Level BCH Elective		
Upper Division BME Elective		
Upper Division CEE Elective		
CHE Elective		
CHM 341 Elementary Physical Chemistry		
CHM 343 Elementary Physical Chemistry Laboratory		
CHM 345 Physical Chemistry I		
CHM 346 Physical Chemistry II		
CHM 348 Physical Chemistry Laboratory I		
CHM 349 Physical Chemistry Laboratory II		
CHM 453 Inorganic Chemistry		
CHM 460 Biological Chemistry		
CHM 471 Solid-State Chemistry		
200-Level CIS Elective		
Upper Division CIS Elective		

Requirement	Minimum grade	Credit hours
CSE Elective		
Upper Division DAT Elective		
Upper Division ECN Elective		
EEE Elective		
Upper Division FIN Elective		
GLG 418 Geophysics		
GLG 419 Geodynamics		
GLG 470 Hydrogeology		
GLG 481 Geochemistry		
Upper Division IEE Elective		
MAE Elective		
Upper Division MAT Elective		
MSE Elective		
PHI 333 Symbolic Logic		
PHI 413 Advanced Symbolic Logic		
PHY 121 University Physics I: Mechanics (SCIT)		
PHY 122 University Physics Laboratory I (SCIT)		
PHY 131 University Physics II: Electricity and Magnetism (SCIT)		
PHY 132 University Physics Laboratory II (SCIT)		
PHY 150 Physics I (SCIT)		
PHY 151 Physics II (SCIT)		
200-Level PHY Elective		
Upper Division PHY Elective		

Requirement	Minimum grade	Credit hours
Upper Division STP Elective		

The College Requirements

Mathematics Proficiency Requirement: All students are required to obtain a grade of "C" or higher in any course that satisfies the ASU General Studies MATH requirement.		
Science and Society Requirement: All students pursuing a BS or BSP degree in The College of Liberal Arts and Sciences must complete two courses from the Science and Society list. At least one of the two courses must be upper division and students must earn a "C" or better in the courses. Both Science and Society courses (i.e., all six credits) may count towards any major, minor, related fields and ASU General Studies requirements.		
Science and Society Elective	C	3
Upper Division Science and Society Elective	C	3

ASU 101 or College-Specific First-Year Seminar

ASU 101 or college-specific equivalent First-Year Seminar required of all first-year students.		
LIA 101 Student Success in The College of Liberal Arts and Sciences **OR** **ASU 101-LA The ASU Experience** Campus immersion students enroll in LIA 101. ASU Online students enroll in ASU 101-LA.		1

First-Year Composition

ENG 101 First-Year Composition **AND** **ENG 102 First-Year Composition** **OR** **ENG 105 Advanced First-Year Composition**	C	6

OR ENG 107 First-Year Composition AND ENG 108 First-Year Composition

Notes:

All baccalaureate degree students must fulfill university graduation requirements, including a minimum of 120 credit hours, with at least 45 credit hours in upper-division courses.

All undergraduate students must complete General Studies requirements.

Mathematics Placement Assessment score determines placement in first mathematics course.

Students should work with their academic advisor, and consider course prerequisites, in order to complete all degree requirements in four years.

General Studies designations listed next to courses were valid for the fall 2026 semester. Please refer to the Course Catalog for current general studies designations at time of class registration. General studies credit is applied according to the designation the course carries at the time the class is taken.