2020 - 2021 Major Map
Mathematics, BS

School/College: The College of Liberal Arts and Sciences
LAMATBS

Term 1 0 - 14 Credit Hours Critical course signified by	Hours	Minimum Grade	Notes
CSE 110: Principles of Programming (CS)	3	C	• An SAT, ACT, Accuplacer, IELTS, or TOEFL score determines placement into first-year composition courses • Mathematics Placement Assessment score determines placement in mathematics course • ASU 101 or college-specific equivalent First-Year Seminar required of all first-year students • Select your Career Interest Communities and play me3@ASU.
MAT 270: Calculus with Analytic Geometry I (MA)	4	C	
ENG 101 or ENG 102: First-Year Composition OR ENG 105: Advanced First-Year Composition OR ENG 107 or ENG 108: First-Year Composition	3	C	
LIA 101: Student Success in The College of Liberal Arts and Sciences	1		
Elective	3		
Maintain 3.00 GPA in Critical Tracking Courses.			
Term hours subtotal:	14		

Term 2 14 - 30 Credit Hours Critical course signified by	Hours	Minimum Grade	Notes
MAT 271: Calculus with Analytic Geometry II (MA)	4	C	• Meet with your academic advisor to reflect on your first year of classes and map your coursework towards a timely graduation. • PHI 103 Principles of Sound Reasoning is recommended to satisfy the Literacy and Critical Inquiry (L) requirement. • Join a student club or professional organization.
CSE 205: Object-Oriented Programming and Data Structures (CS)	3	C	
ENG 101 or ENG 102: First-Year Composition OR ENG 105: Advanced First-Year Composition OR ENG 107 or ENG 108: First-Year Composition	3	C	
Humanities, Arts and Design (HU) AND Cultural Diversity in the U.S. (C)	3		
Literacy and Critical Inquiry (L)	3		
Complete ENG 101 OR ENG 105 OR ENG 107 course(s).			
Maintain 3.00 GPA in Critical Tracking Courses.			
Term hours subtotal:	16		

Term 3 30 - 46 Credit Hours Critical course signified by	Hours	Minimum Grade	Notes
MAT 272: Calculus with Analytic Geometry III (MA)	4	C	• Minimum grade of C required in all MAT and STP classes; grade of B or better strongly correlated with timely graduation. • PHY 121/PHY 122 and/or MSE 208 is recommended to satisfy the Natural Science - Quantitative (SQ)
MAT 275: Modern Differential Equations (MA)	3	C	
Natural Science - Quantitative (SQ)	4		

	Social-Behavioral Sciences (SB) AND Global Awareness (G)	3	
	Elective	2	
❗	Complete First-Year Composition requirement.		
	Complete Mathematics (MA) requirement.		
	Maintain 3.00 GPA in Critical Tracking Courses.		
	Term hours subtotal:	16	

- requirement as they also satisfy Related Field requirements.
- Meet with your academic advisor to discuss summer internship and/or Research Opportunities for Undergraduates (REU)

Term 4 46 - 62 Credit Hours Critical course signified by ❗	**Hours**	**Minimum Grade**	**Notes**
❗ MAT 300: Mathematical Structures (L)	3	C	• Meet with your academic advisor to discuss options for adding a minor, certificate, or concurrent major to your degree program. • Upper-division MAT/STP courses should be taken through the Tempe campus, unless approved by a SoMSS advisor. • Completion of MAT 300 with a B or better by the end of this term is strongly correlated with success in this major and meets prerequisites to continue with MAT 371 in the next term.
❗ MAT 342: Linear Algebra OR MAT 343: Applied Linear Algebra	3	C	
Science and Society Elective	3	C	
Natural Science - Quantitative (SQ) OR Natural Science - General (SG)	4		
Social-Behavioral Sciences (SB)	3		
Maintain 3.00 GPA in Critical Tracking Courses.			
Term hours subtotal:	16		

Term 5 62 - 77 Credit Hours Necessary course signified by ★	**Hours**	**Minimum Grade**	**Notes**
★ MAT 371: Advanced Calculus I	3	C	• Minimum grade of C required in all MAT and STP classes; grade of B or better strongly correlated with timely graduation. • Upper-division MAT/STP courses should be taken through the Tempe campus, unless approved by a SoMSS advisor • MAT 275 highly recommended.
Upper Division Science and Society Elective	3	C	
Upper Division Humanities, Arts and Design (HU) OR Upper Division Social-Behavioral Sciences (SB)	3		
Humanities, Arts and Design (HU) AND Historical Awareness (H)	3		
Upper Division Elective	3		
Term hours subtotal:	15		

Term 6 77 - 92 Credit Hours Necessary course signified by ★	**Hours**	**Minimum Grade**	**Notes**
★ Additional Courses in the Major (ACT, MAT, STP)	3	C	• Minimum grade of C required in all MAT and STP classes; grade of B or better strongly correlated with timely graduation. • Upper-division MAT/STP courses should be taken through the Tempe campus, unless approved by a SoMSS advisor • Develop your professional online presence.
★ Upper Division Depth Course	3	C	
Related Field	3	C	
Upper Division Elective OR MAT 484: Internship	3		
Elective	3		

★	Complete Cultural Diversity in the U.S. (C) AND Global Awareness (G) AND Historical Awareness (H) course(s).		
	Term hours subtotal:	15	

Term 7 92 - 107 Credit Hours Necessary course signified by ★		Hours	Minimum Grade	Notes
★	Additional Courses in the Major (ACT, MAT, STP)	3	C	• Minimum grade of C required in all MAT and STP classes; grade of B or better strongly correlated with timely graduation. • Upper-division MAT/STP courses should be taken through the Tempe campus, unless approved by an academic advisor in the School of Mathematical and Statistical Sciences. • Complete an in person or virtual practice interview.
★	Upper Division Advanced Courses	3	C	
★	Upper Division Depth Course	3	C	
	Complete 2 courses: Upper Division Elective	6		
	Term hours subtotal:	15		

Term 8 107 - 120 Credit Hours Necessary course signified by ★		Hours	Minimum Grade	Notes
★	Upper Division Advanced Courses	3	C	• Minimum grade of C required in all MAT and STP classes; grade of B or better strongly correlated with timely graduation. • Upper-division MAT/STP courses should be taken through the Tempe campus unless approved by a SoMSS advisor • Meet with your academic advisor for final degree check and apply for graduation through your My ASU.
	Related Field	4	C	
	Complete 2 courses: Upper Division Elective	6		
	Term hours subtotal:	13		

- 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 found at https://thecollege.asu.edu/resources/science-society. 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.

Hide Course List(s)/Track Group(s)

Advanced Courses
MAT 410: Introduction to General Topology
MAT 412: Differential Geometry
MAT 415: Introduction to Combinatorics
MAT 416: Graph Theory
MAT 420: Scientific Computing
MAT 421: Applied Computational Methods (CS)
MAT 423: Numerical Analysis I (CS)
MAT 425: Numerical Analysis II (CS)

Additional Courses in the Major (ACT, MAT, or STP)
ACT 415: Probability for Risk Management
ACT 430: Mathematics of Financial Derivatives
MAT 243: Discrete Mathematical Structures
MAT 274: Elementary Differential Equations (MA) or MAT 275: Modern Differential Equations (MA)
MAT Upper Division Elective

Depth Courses
ACT 440: Long-Term Actuarial Mathematics I
ACT 441: Long-Term Actuarial Mathematics II
ACT 450: Actuarial Models and Modeling I
ACT 451: Actuarial Models and Modeling II
MAT 410: Introduction to General Topology
MAT 412: Differential Geometry

MAT 440: Group Theory

MAT 441: Ring Theory

MAT 442: Advanced Linear Algebra

MAT 443: Introduction to Abstract Algebra

MAT 444: Intermediate Abstract Algebra

MAT 445: Theory of Numbers

MAT 447: Cryptography I

MAT 448: Cryptography II

MAT 451: Mathematical Modeling (CS)

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 (CS)

STP 421: Probability

STP 425: Stochastic Processes

STP 427: Mathematical Statistics

STP 429: Applied Regression (CS)

Related Field

ACT 410: Mathematics of Finance

ACT 415: Probability for Risk Management

ACT 430: Mathematics of Financial Derivatives

ACT 450: Actuarial Models and Modeling I

ACT 451: Actuarial Models and Modeling II

BCH 4** Elective

BME Upper Division Elective

CEE Upper Division 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

STP Upper Division Elective

MAT 415: Introduction to Combinatorics

MAT 416: Graph Theory

MAT 423: Numerical Analysis I (CS)

MAT 425: Numerical Analysis II (CS)

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

MAT 476: Partial Differential Equations

STP 425: Stochastic Processes

STP 427: Mathematical Statistics

I (L)

CHM 349: Physical Chemistry Laboratory II (L)

CHM 453: Inorganic Chemistry

CHM 460: Biological Chemistry

CHM 471: Solid-State Chemistry

CIS 2** Elective

CIS Upper Division Elective

CSE Elective

ECN Upper Division Elective

EEE Elective

FIN Upper Division Elective

GLG 418: Geophysics

GLG 419: Geodynamics

GLG 470: Hydrogeology

GLG 481: Geochemistry

IEE Upper Division Elective

MAE Elective

MAT Upper Division Elective

MSE Elective

PHI 333: Symbolic Logic

PHI 413: Advanced Symbolic Logic

PHY 121: University Physics I: Mechanics (SQ)

PHY 122: University Physics Laboratory I (SQ)

PHY 131: University Physics II: Electricity and Magnetism (SQ)

PHY 132: University Physics Laboratory II (SQ)

PHY 150: Physics I (SQ)

PHY 151: Physics II (SQ)

PHY 2** Elective

PHY Upper Division Elective

STP Upper Division Elective

Notes:
Please keep in mind that the applicability of a specific transfer course toward an ASU degree program depends on the requirements of the department, division, college or school in which you are enrolled at ASU. Transfer agreements that guarantee the completion of university level requirements do not necessarily meet college and major requirements. Please consult with an advisor for more information.

Total Hours: 120
Upper Division Hours: 45 minimum
Major GPA: 2.00 minimum
Cumulative GPA: 2.00 minimum
Total hrs at ASU: 30 minimum
Hrs Resident Credit for Academic Recognition: 56 minimum
Total Community College Hrs: 64 maximum
Total College Residency Hrs: 12 minimum

General University Requirements Legend

General Studies Core Requirements:

- Literacy and Critical Inquiry (L)
- Mathematical Studies (MA)
- Computer/Statistics/Quantitative Applications (CS)
- Humanities, Arts and Design (HU)
- Social-Behavioral Sciences (SB)
- Natural Science - Quantitative (SQ)
- Natural Science - General (SG)

General Studies Awareness Requirements:

- Cultural Diversity in the U.S. (C)
- Global Awareness (G)
- Historical Awareness (H)

First-Year Composition

General Studies designations listed next to courses on the major map were valid for the 2020 - 2021 academic year. 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.