2022 - 2023 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	• 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) requirement as they also satisfy Related Field requirements. • Meet with your academic advisor to discuss summer internship and/or Research Opportunities for Undergraduates (REU).
❗ 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		

Term 4 46 - 62 Credit Hours Critical course signified by ❗	Hours	Minimum Grade	Notes

	Hours	Minimum Grade	Notes
⚠ MAT 300: Mathematical Structures (L)	3	C	
⚠ 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		

Notes (for the block above):
- 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.

Term 5 62 - 77 Credit Hours Necessary course signified by ⭐	Hours	Minimum Grade	Notes
⭐ MAT 371: Advanced Calculus I	3	C	
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		

Notes:
- 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 is highly recommended.

Term 6 77 - 92 Credit Hours Necessary course signified by ⭐	Hours	Minimum Grade	Notes
⭐ Additional Courses in the Major (ACT, DAT, MAT, STP)	3	C	
⭐ 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		

Notes:
- 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.

Term 7 92 - 107 Credit Hours Necessary course signified by ⭐	Hours	Minimum Grade	Notes
⭐ Additional Courses in the Major (ACT, DAT, MAT, STP)	3	C	
⭐ Upper Division Advanced Courses	3	C	
⭐ Upper Division Depth Course	3	C	
Complete 2 courses: Upper Division Elective	6		
Term hours subtotal:	15		

Notes:
- 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.

Term 8 107 - 120 Credit Hours Necessary course signified by ⭐	Hours	Minimum Grade	Notes
⭐ Upper Division Advanced Courses	3	C	
Related Field	4	C	
Complete 2 courses: Upper Division Elective	6		
Term hours subtotal:	13		

Notes:
- 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.

- 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	Depth Courses	Related Field
ACT 4** Elective	ACT 440: Long-Term Actuarial Mathematics I	ACT 410: Mathematics of Finance
DAT 401: Statistical Modeling and Inference for Data Science	ACT 441: Long-Term Actuarial Mathematics II	ACT 415: Probability for Risk Management
DAT 402: Machine Learning for Data Science	ACT 450: Actuarial Models and Modeling I	ACT 430: Mathematics of Financial Derivatives
MAT 372: Advanced Calculus II	ACT 451: Actuarial Models and Modeling II	ACT 450: Actuarial Models and Modeling I
MAT 410: Introduction to General Topology	MAT 410: Introduction to General Topology	ACT 451: Actuarial Models and Modeling II
MAT 412: Differential Geometry	MAT 412: Differential Geometry	BCH 4** Elective
MAT 415: Introduction to Combinatorics	MAT 415: Introduction to Combinatorics	BME Upper Division Elective
MAT 416: Graph Theory	MAT 416: Graph Theory	CEE Upper Division Elective
MAT 419: Introduction to Linear Optimization (CS)	MAT 423: Numerical Analysis I (CS)	CHE Elective
MAT 420: Scientific Computing	MAT 425: Numerical Analysis II (CS)	CHM 341: Elementary Physical Chemistry
MAT 421: Applied Computational Methods (CS)	MAT 442: Advanced Linear Algebra	CHM 343: Elementary Physical Chemistry Laboratory
MAT 423: Numerical Analysis I (CS)	MAT 444: Intermediate Abstract Algebra	CHM 345: Physical Chemistry I
MAT 425: Numerical Analysis II (CS)	MAT 447: Cryptography I	CHM 346: Physical Chemistry II
MAT 440: Group Theory	MAT 448: Cryptography II	CHM 348: Physical Chemistry Laboratory I (L)
MAT 441: Ring Theory	MAT 472: Intermediate Real Analysis I	CHM 349: Physical Chemistry Laboratory II (L)
MAT 442: Advanced Linear Algebra	MAT 473: Intermediate Real Analysis II	CHM 453: Inorganic Chemistry
MAT 443: Introduction to Abstract Algebra	MAT 475: Differential Equations	CHM 460: Biological Chemistry
MAT 444: Intermediate Abstract Algebra	MAT 476: Partial Differential Equations	CHM 471: Solid-State Chemistry
MAT 445: Theory of Numbers	STP 425: Stochastic Processes	CIS 2** Elective
MAT 447: Cryptography I	STP 427: Mathematical Statistics	CIS Upper Division Elective
MAT 448: Cryptography II		CSE Elective
MAT 451: Mathematical Modeling (CS)		DAT Upper Division Elective
MAT 452: Introduction to Chaos and Nonlinear Dynamics		ECN Upper Division Elective
MAT 460: Vector Calculus		EEE Elective
MAT 461: Applied Complex Analysis		FIN Upper Division Elective
		GLG 418: Geophysics

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)

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

Additional Course in the Major (ACT, DAT, MAT, STP)

ACT Upper Division Elective

DAT Upper Division Elective

MAT 243: Discrete Mathematical Structures

MAT Upper Division Elective

STP Upper Division Elective

Notes:

- First-Year Composition: All students are placed in ENG 101 unless submission of SAT, ACT, Accuplacer, IELTS, or TOEFL score, or college-level transfer credit or test credit equivalent to ASU's first-year composition course(s), determine otherwise. Students on Polytechnic, Downtown Phoenix and West Campuses are encouraged to complete the Directed Self-Placement survey to choose the first-year composition option they believe best suits their needs. Visit: https://cisa.asu.edu/DSP
- Mathematics Placement Assessment score determines placement in first mathematics course.

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 2022 - 2023 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.