













2024 - 2025 Major Map

Computational Mathematical Sciences, BS

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

Term 1 0 - 14 Credit Hours Critical course signified by 	Hours	Minimum Grade	Notes
 CSE 110: Principles of Programming (QTRS OR CS)	3	C	<ul style="list-style-type: none"> ASU 101 or college-specific equivalent First-Year Seminar required of all first-year students Select your career interest area and play me3@ASU.
 MAT 270: Calculus with Analytic Geometry I (MATH OR 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		
Global Communities, Societies and Individuals (GCSI)	3		
Maintain 2.50 GPA in Critical Tracking Courses.			
Term hours subtotal:	14		
Term 2 14 - 31 Credit Hours Critical course signified by 	Hours	Minimum Grade	Notes
 CSE 205: Object-Oriented Programming and Data Structures (QTRS OR CS)	3	C	<ul style="list-style-type: none"> Meet with your academic advisor to reflect on your first year of classes and map your coursework towards a timely graduation. Join a student club or professional organization, like Math Club.
 MAT 271: Calculus with Analytic Geometry II (MATH OR 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	
Science Sequence Course AND Scientific Thinking in Natural Sciences (SCIT)	4	C	
Social and Behavioral Sciences (SOBE)	3		
 Complete ENG 101 OR ENG 105 OR ENG 107 course(s).			
Maintain 2.50 GPA in Critical Tracking Courses.			
Minimum 2.00 GPA in MAT and STP.			
Term hours subtotal:	17		
Term 3 31 - 47 Credit Hours Critical course signified by 	Hours	Minimum Grade	Notes
 CSE 240: Introduction to Programming Languages	3	C	<ul style="list-style-type: none"> Minimum grade of C required in all MAT and STP classes; grade of B or better strongly correlated with timely graduation Meet with your academic advisor to discuss summer internship and/or Research Opportunities for Undergraduates (REU) Visit Career and Professional Development Services and meet with a career advisor for assistance with career planning and networking.
 MAT 272: Calculus with Analytic Geometry III (MATH OR MA)	4	C	
 MAT 275: Modern Differential Equations (MATH OR MA)	3	C	
Science and Society Elective	3	C	
Humanities, Arts and Design (HUAD)	3		
 Complete First-Year Composition requirement.			
Complete Mathematics (MATH) requirement.			
Maintain 2.50 GPA in Critical Tracking Courses.			
Minimum 2.00 GPA in MAT and STP.			

Term hours subtotal: 16

Term 4 47 - 63 Credit Hours Critical course signified by ⚠	Hours	Minimum Grade	Notes
⚠ MAT 300: Mathematical Structures (L)	3	C	<ul style="list-style-type: none"> • Minimum grade of C required in all MAT classes; grade of B or better strongly correlated with timely graduation • Meet with your academic advisor to discuss options for adding a minor, certificate, or concurrent major to your degree program. • Develop professional skills • Upper-division MAT/STP courses should be taken through the Tempe campus, unless approved by a SoMSS advisor.
⚠ MAT 342: Linear Algebra OR MAT 343: Applied Linear Algebra	3	C	
Science Sequence Course AND Scientific Thinking in Natural Sciences (SCIT)	4	C	
Governance and Civic Engagement (CIVI)	3		
Humanities, Arts and Design (HUAD)	3		
Maintain 2.50 GPA in Critical Tracking Courses.			
Term hours subtotal:	16		

Term 5 63 - 77 Credit Hours Necessary course signified by ★	Hours	Minimum Grade	Notes
★ MAT 370: Intermediate Calculus OR MAT 371: Advanced Calculus I	3	C	<ul style="list-style-type: none"> • Minimum grade of C required in all MAT and STP classes; grade of B or better strongly correlated with timely graduation • Meet with your academic advisor to discuss post-graduation plans, e.g. graduate school, career preparation. • Develop your professional online presence • Upper-division MAT/STP courses should be taken through the Tempe campus, unless approved by a SoMSS advisor.
★ MAT 420: Scientific Computing	3	C	
Science Sequence Course	4	C	
Elective	4		
Minimum 2.00 GPA in MAT and STP.			
Term hours subtotal:	14		

Term 6 77 - 93 Credit Hours Necessary course signified by ★	Hours	Minimum Grade	Notes
★ MAT 421: Applied Computational Methods (MATH OR CS)	3	C	<ul style="list-style-type: none"> • 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 a career counselor from ASU Career Services for a review of your resume and interviewing tips for success.
Science Sequence Course	4	C	
American Institutions (AMIT)	3		
Complete 2 courses:			
Upper Division Elective	6		
Minimum 2.00 GPA in MAT and STP.			
Term hours subtotal:	16		

Term 7 93 - 108 Credit Hours Necessary course signified by ★	Hours	Minimum Grade	Notes
★ Upper Division Advanced Courses	3	C	<ul style="list-style-type: none"> • 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 to discuss post-graduation plans, e.g. graduate school, career preparation. • Gather professional references.
★ Upper Division Internship/Research/Advanced Science Course	3	C	
Upper Division Science and Society Elective	3	C	
Upper Division Elective	3		
Sustainability (SUST)	3		
Minimum 2.00 GPA in MAT and STP.			
Term hours subtotal:	15		

Term 8 108 - 120 Credit Hours Necessary course signified by ★	Hours	Minimum Grade	Notes
★ Complete 2 courses:			
Upper Division Advanced Courses	6	C	

★ Minimum 2.00 GPA in MAT and STP.

Term hours subtotal: 12

- 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.
- The Computational Mathematical Sciences degree requires students to select and complete two 1-year lecture and lab combinations. Upon advisor approval, two advanced courses for which the first 1-year science and lab sequence is a prerequisite may be substituted for the second 1-year science and lab sequence.

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

Science Sequence Courses	Internship, Research, or Advanced Science	Advanced Courses
AST 111: Introduction to Solar Systems Astronomy (SCIT OR SQ) AND AST 112: Introduction to Stars, Galaxies, and Cosmology (SCIT OR SQ) or AST 321: Stellar and Planetary Astrophysics AND AST 322: Introduction to Galactic and Extragalactic Astrophysics AND BIO 182: General Biology II (SCIT OR SG)	AST Upper Division Elective BIO 320: Fundamentals of Ecology BME Upper Division Elective CEE Upper Division Elective CHE Upper Division Elective	DAT 401: Statistical Modeling and Inference for Data Science DAT 402: Machine Learning for Data Science MAT 415: Introduction to Combinatorics MAT 416: Graph Theory
CHM 113: General Chemistry I (SCIT OR SQ) AND CHM 116: General Chemistry II (SCIT OR SQ)	CHM Upper Division Elective CIS Upper Division Elective	MAT 419: Introduction to Linear Optimization (CS)
CHM 114: General Chemistry for Engineers (SCIT OR SQ) AND CHM 231: Elementary Organic Chemistry (SCIT OR SQ) AND CHM 235: Elementary Organic Chemistry Laboratory (SCIT OR SQ)	CSE Upper Division Elective EEE Upper Division Elective GLG 305: Dynamic Earth GLG 321: Mineralogy	MAT 423: Numerical Analysis I (MATH OR CS) MAT 425: Numerical Analysis II (CS) MAT 447: Cryptography I MAT 448: Cryptography II
GLG 101: Introduction to Geology I (Physical) (SCIT OR SQ) AND GLG 103: Introduction to Geology I: Laboratory (SCIT OR SQ) AND GLG 102: Introduction to Geology II (Historical) (SCIT OR SG) AND GLG 104: Introduction to Geology II: Laboratory (SCIT OR SG)	GLG 362: Geomorphology GLG 4** Elective IEE Upper Division Elective MAE Upper Division Elective	MAT 451: Mathematical Modeling (CS) MAT 452: Introduction to Chaos and Nonlinear Dynamics MAT 461: Applied Complex Analysis
PHY 121: University Physics I: Mechanics (SCIT OR SQ) AND PHY 122: University Physics Laboratory I (SCIT OR SQ) AND PHY 131: University Physics II: Electricity and Magnetism (SCIT OR SQ) AND PHY 132: University Physics Laboratory II (SCIT OR SQ)	MAT 484: Internship MAT 493: Honors Thesis (L) MAT 495: Undergraduate Research MIC Upper Division Elective MSE Upper Division Elective	MAT 462: Applied Partial Differential Equations MAT 475: Differential Equations MAT 476: Partial Differential Equations STP 420: Introductory Applied Statistics (QTRS OR CS)
PHY 150: Physics I (SCIT OR SQ) AND PHY 151: Physics II (SCIT OR SQ)	PHI 413: Advanced Symbolic Logic	STP 421: Probability

PHY Upper Division Elective

STP 425: Stochastic Processes

PLB Upper Division Elective

STP 427: Mathematical Statistics

STP 429: Applied Regression (QTRS OR CS)

- **Total Hours:** 120
- **Upper Division Hours:** 45 minimum
- **University Undergraduate Graduation Requirements**

Notes:

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.

General Studies designations listed next to courses on the major map were valid for the 2024 - 2025 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.