













## 2023 - 2024 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 (CS)	3	C	<ul style="list-style-type: none"> <li>ASU 101 or college-specific equivalent First-Year Seminar required of all first-year students</li> <li>Select your <b>career interest area</b> and play <b>me3@ASU</b>.</li> </ul>
 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 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 (CS)	3	C	<ul style="list-style-type: none"> <li>Meet with your academic advisor to reflect on your first year of classes and map your coursework towards a timely graduation.</li> <li>Join a <b>student club</b> or professional organization, like <b>Math Club</b>.</li> </ul>
 MAT 271: Calculus with Analytic Geometry II (MA)	4	C	
Science Sequence Course AND Natural Science - Quantitative (SQ)	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	
Literacy and Critical Inquiry (L) ( PHI 103 recommended)	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"> <li>Minimum grade of C required in all MAT and STP classes; grade of B or better strongly correlated with timely graduation</li> <li>Meet with your academic advisor to discuss summer <b>internship</b> and/or Research Opportunities for Undergraduates (REU)</li> <li>Visit <b>Career and Professional Development Services</b> and meet with a career advisor for assistance with career planning and networking.</li> </ul>
 MAT 272: Calculus with Analytic Geometry III (MA)	4	C	
 MAT 275: Modern Differential Equations (MA)	3	C	
Science and Society Elective	3	C	
Humanities, Arts and Design (HU) AND Historical Awareness (H)	3		
 Complete First-Year Composition requirement.			
Complete Mathematics (MA) 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"> <li>Minimum grade of C required in all MAT classes; grade of B or better strongly correlated with timely graduation</li> <li>Meet with your academic advisor to discuss options for adding a minor, certificate, or concurrent major to your degree program.</li> <li>Develop professional <b>skills</b></li> <li>Upper-division MAT/STP courses should be taken through the Tempe campus, unless approved by a SoMSS advisor.</li> </ul>
⚠ MAT 342: Linear Algebra OR MAT 343: Applied Linear Algebra	3	C	
Science Sequence Course AND Natural Science - Quantitative (SQ) or Natural Science - General (SG)	4	C	
Humanities, Arts and Design (HU) AND Cultural Diversity in the U.S. (C)	3		
Social-Behavioral Sciences (SB) AND Global Awareness (G)	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"> <li>Minimum grade of C required in all MAT and STP classes; grade of B or better strongly correlated with timely graduation</li> <li>Meet with your academic advisor to discuss post-graduation plans, e.g. graduate school, career preparation.</li> <li>Develop your <b>professional online presence</b></li> <li>Upper-division MAT/STP courses should be taken through the Tempe campus, unless approved by a SoMSS advisor.</li> </ul>
★ 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 (CS)	3	C	<ul style="list-style-type: none"> <li>Minimum grade of C required in all MAT and STP classes; grade of B or better strongly correlated with timely graduation</li> <li>Upper-division MAT/STP courses should be taken through the Tempe campus, unless approved by a SoMSS advisor.</li> <li>Meet with a career counselor from ASU Career Services for a review of your <b>resume</b> and interviewing tips for success.</li> </ul>
Science Sequence Course	4	C	
Social-Behavioral Sciences (SB)	3		
Complete 2 courses: Upper Division Elective	6		
★ Complete Cultural Diversity in the U.S. (C) AND Global Awareness (G) AND Historical Awareness (H) course(s).			
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"> <li>Minimum grade of C required in all MAT and STP classes; grade of B or better strongly correlated with timely graduation</li> <li>Upper-division MAT/STP courses should be taken through the Tempe campus, unless approved by a SoMSS advisor.</li> <li>Meet with your academic advisor to discuss post-graduation plans, e.g. graduate school, career preparation.</li> <li>Gather <b>professional references</b>.</li> </ul>
★ Upper Division Internship/Research/Advanced Science Course	3	C	
Upper Division Science and Society Elective	3	C	
Upper Division Elective	3		
Elective	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
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★ Complete 2 courses:		
Upper Division Advanced Courses	6	C
Upper Division Humanities, Arts and Design (HU) OR Upper Division Social-Behavioral Sciences (SB)	3	
Upper Division Elective	3	
★ 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 (SQ) AND AST 112: Introduction to Stars, Galaxies, and Cosmology (SQ) or AST 321: Introduction to Planetary and Stellar Astrophysics AND AST 322: Introduction to Galactic and Extragalactic Astrophysics AND BIO 182: General Biology II (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 (SQ) AND CHM 116: General Chemistry II (SQ)	CHM Upper Division Elective CIS Upper Division Elective	MAT 419: Introduction to Linear Optimization (CS)
CHM 114: General Chemistry for Engineers (SQ) AND CHM 231: Elementary Organic Chemistry (SQ) AND CHM 235: Elementary Organic Chemistry Laboratory (SQ)	CSE Upper Division Elective EEE Upper Division Elective GLG 305: Dynamic Earth	MAT 423: Numerical Analysis I (CS) MAT 425: Numerical Analysis II (CS) MAT 447: Cryptography I
GLG 101: Introduction to Geology I (Physical) (SQ) AND GLG 103: Introduction to Geology I: Laboratory (SQ) AND GLG 102: Introduction to Geology II (Historical) (SG & H) AND GLG 104: Introduction to Geology II-Laboratory (SG)	GLG 321: Mineralogy GLG 362: Geomorphology GLG 4** Elective IEE Upper Division Elective	MAT 448: Cryptography II MAT 451: Mathematical Modeling (CS) MAT 452: Introduction to Chaos and Nonlinear Dynamics MAT 461: Applied Complex Analysis
PHY 121: University Physics I: Mechanics (SQ) AND PHY 122: University Physics Laboratory I (SQ) AND PHY 131: University Physics II: Electricity and Magnetism (SQ) AND PHY 132: University Physics Laboratory II (SQ)	MAE Upper Division Elective MAT 484: Internship MAT 493: Honors Thesis (L) MAT 495: Undergraduate Research	MAT 462: Applied Partial Differential Equations MAT 475: Differential Equations MAT 476: Partial Differential Equations
PHY 150: Physics I (SQ) AND PHY 151: Physics II (SQ)	MIC Upper Division Elective MSE Upper Division Elective	STP 420: Introductory Applied Statistics (CS)

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 (CS)

#### 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 2023 - 2024 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.