

## 2022 - 2023 Major Map

### Earth and Space Exploration, BS

School/College: [The College of Liberal Arts and Sciences](#)  
LASESBS

Term 1 0 - 14 Credit Hours Critical course signified by ⚠	Hours	Minimum Grade	Notes
⚠ Mathematics (MA)	3	C	<ul style="list-style-type: none"> <li>• Students who place into MAT 265 should take the course in term 1 to complete the MA requirement.</li> <li>• LIA 101 is mandatory for all incoming first-year students.</li> <li>• SESE will accept Calculus with Analytic Geometry I, II and III (MAT 270/271/272) in place of MAT 265/266/267.</li> <li>• SESE requires first and second-year students to seek faculty mentoring at least once during the academic year. Each student will be assigned a SESE faculty mentor. Students can find their faculty mentor on the <a href="#">SESE advising website</a>.</li> <li>• Select your <a href="#">career interest area</a> and play <a href="mailto:me3@ASU">me3@ASU</a>.</li> </ul>
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		
SES 121: Earth, Solar System and Universe (SQ) AND SES 123: Earth, Solar System and Universe Laboratory (SQ)	4	C	
Social-Behavioral Sciences (SB) AND Cultural Diversity in the U.S. (C)	3		
Term hours subtotal:	14		

Term 2 14 - 28 Credit Hours Critical course signified by ⚠	Hours	Minimum Grade	Notes
⚠ MAT 265: Calculus for Engineers I (MA)	3	C	<ul style="list-style-type: none"> <li>• Students in this major have a choice between taking SES 122/SES 124 or SES 126/SES 128 in their second semester. SES 122/124 has an earth-based focus and SES 126/128 has a space-based focus. Students should take SES 122/SES 124 if they are interested in exploring the Earth and other objects in our solar system, or take SES 126/SES 128 if their interests are in exploration outside of the solar system.</li> <li>• SESE will accept Calculus with Analytic Geometry I, II and III (MAT 270/271/272) in place of MAT 265/266/267.</li> <li>• SESE requires first and second-year students to seek faculty mentoring at least once during the academic year. Each student will be assigned a SESE faculty mentor. Students can find their faculty mentor on the <a href="#">SESE advising website</a>.</li> <li>• Join a <a href="#">student club</a> or professional organization.</li> </ul>
CHM 114: General Chemistry for Engineers (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	
SES 122: History of the Earth and Solar System AND SES 124: History of the Earth and Solar System Laboratory OR SES 126: Exploration of the Universe AND SES 128: Exploration of the Universe Lab	4	C	
⚠ Complete ENG 101 OR ENG 105 OR ENG 107 course(s).			
Milestone: Complete SESE faculty mentoring.			
Term hours subtotal:	14		

Term 3 28 - 44 Credit Hours Critical course signified by ⚠	Hours	Minimum Grade	Notes
⚠ MAT 266: Calculus for Engineers II (MA)	3	C	

◆ PHY 121: University Physics I: Mechanics (SQ) AND PHY 122: University Physics Laboratory I (SQ)	4	C
SES 230: Coding for Exploration (CS)	3	C
Literacy and Critical Inquiry (L)	3	
Social-Behavioral Sciences (SB) AND Global Awareness (G)	3	
◆ Complete First-Year Composition requirement.		
Complete Mathematics (MA) requirement.		
Term hours subtotal:	16	

- SESE will accept Calculus with Analytic Geometry I, II and III (MAT 270/271/272) in place of MAT 265/266/267.
- SESE requires first and second-year students to seek faculty mentoring at least once during the academic year. Each student will be assigned a SESE faculty mentor. Students can find their faculty mentor on the [SESE advising website](#).
- Develop your **skills**.

Term 4 44 - 60 Credit Hours Critical course signified by ◆	Hours	Minimum Grade	Notes
◆ MAT 267: Calculus for Engineers III (MA)	3	C	<ul style="list-style-type: none"> <li>• SESE will accept Calculus with Analytic Geometry I, II and III (MAT 270/271/272) in place of MAT 265/266/267.</li> <li>• SESE requires first and second-year students to seek faculty mentoring at least once during the academic year. Each student will be assigned a SESE faculty mentor. Students can find their faculty mentor on the <a href="#">SESE advising website</a>.</li> </ul>
◆ PHY 131: University Physics II: Electricity and Magnetism (SQ) AND PHY 132: University Physics Laboratory II (SQ)	4	C	
Science and Society Elective	3	C	
Humanities, Arts and Design (HU) AND Historical Awareness (H)	3		
Elective	3		
Milestone: Complete SESE faculty mentoring.			
Term hours subtotal:	16		

Term 5 60 - 75 Credit Hours Necessary course signified by ★	Hours	Minimum Grade	Notes
★ SES 350: Engineering Systems and Experimental Problem Solving	3	C	<ul style="list-style-type: none"> <li>• Students need two upper-division electives for the major (six credits total). Electives may be chosen from the branch course list or students may take any other upper-division GLG or SES or AST courses offered by the School of Earth and Space Exploration, excluding GLG 300 or GLG 400/SES 401.</li> <li>• Students should meet with faculty advisor to discuss research opportunities.</li> </ul>
MAT 275: Modern Differential Equations (MA)	3	C	
Upper Division SES Branch Course	3	C	
SES OR GLG OR AST Upper Division Elective	3	C	
Elective	3		
Term hours subtotal:	15		

Term 6 75 - 90 Credit Hours Necessary course signified by ★	Hours	Minimum Grade	Notes
★ Upper Division SES Branch Course	3	C	<ul style="list-style-type: none"> <li>• Explore a research or <b>internship</b> opportunity. In order to earn credits for research or an internship, students should work with their SESE advisor for approval. Students who hope to go to graduate school should consider getting involved in research. Students should talk to faculty mentors about how to find research opportunities.</li> <li>• Students interested in graduate school should be researching programs and preparing application materials. Continue to meet with faculty advisor for input along the way.</li> <li>• Students should meet with an advisor to do a graduation check.</li> <li>• Research <b>career opportunities</b>.</li> </ul>
Upper Division Science and Society Elective	3	C	
SES OR GLG OR AST Upper Division Elective	3	C	
Upper Division Literacy and Critical Inquiry (L)	3		
Upper Division Elective OR SES 484: Internship OR SES 499: Individualized Instruction	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 90 - 106 Credit Hours Necessary course signified by ★	Hours	Minimum Grade	Notes
★ SES 410: Senior Exploration Project I	3	C	<ul style="list-style-type: none"> <li>• Students interested in graduate school should be researching programs and</li> </ul>
SES 401: Earth and Space Exploration Colloquium	1	C	

Upper Division SES Branch Course	3	C
Humanities, Arts and Design (HU)	3	
Upper Division Elective	3	
Elective	3	
Term hours subtotal:	16	

preparing application materials. Continue to meet with faculty advisor for input along the way.

- If not already completed, students should meet with an advisor to do a graduation check.
- Apply for **full-time career opportunities**.

Term 8 106 - 120 Credit Hours Necessary course signified by ★	Hours	Minimum Grade	Notes
★ SES 411: Senior Exploration Project II	3	C	
Upper Division SES Branch Course	3	C	
Upper Division Humanities, Arts and Design (HU) OR Upper Division Social-Behavioral Sciences (SB)	3		
Upper Division Elective	2		
Elective	3		
Term hours subtotal:	14		

- 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/student-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)

Upper Division SES Branch Courses
AST 321: Introduction to Planetary and Stellar Astrophysics
AST 322: Introduction to Galactic and Extragalactic Astrophysics
GLG 310: Structural Geology
GLG 321: Mineralogy
GLG 418: Geophysics
GLG 424: Petrology
GLG 471: Hydrology
GLG 481: Geochemistry
GLG 490: Remote Sensing
SES 311: Essentials of Astrobiology: Exploration for Life in the Universe
SES 330: Practical Electronics and Instrumentation
SES 405: Exploration Systems Engineering

#### 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.