








2023 - 2024 Major Map

Earth and Space Exploration (Astrobiology and Biogeosciences), BS

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

Term 1 0 - 14 Credit Hours Critical course signified by 	Hours	Minimum Grade	Notes
 Mathematics (MA)	3	C	<ul style="list-style-type: none"> Students who place into MAT 265 should take the course in term 1 to complete the MA requirement. LIA 101 is mandatory for all incoming first-year students. SESE will accept Calculus with Analytic Geometry I, II and III (MAT 270/271/272) in place of MAT 265/266/267. SESE majors are strongly encouraged to meet with their faculty mentor at least once during their first and second year. Students can find their faculty mentor on the SESE advising website. Select your career interest area and play me3@ASU. Activate your Handshake account and build out your profile.
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 Global Awareness (G)	3		
Term hours subtotal:	14		

Term 2 14 - 28 Credit Hours Critical course signified by 	Hours	Minimum Grade	Notes
 CHM 113: General Chemistry I (SQ)	4	C	<ul style="list-style-type: none"> 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 interested in exoplanets and the potential for life on other worlds should take SES 126/SES 128. Students interested in life in extreme environments and the origins of life should take SES 122/SES 124. SESE will accept Calculus with Analytic Geometry I, II and III (MAT 270/271/272) in place of MAT 265/266/267. SESE majors are strongly encouraged to meet with their faculty mentor at least once during their first and second year. Students can find their faculty mentor on the SESE advising website. Join a student club or professional organization. Create a first draft resume.
 MAT 265: Calculus for Engineers I (MA)	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	
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 - 42 Credit Hours Critical course signified by 	Hours	Minimum Grade	Notes

❗ CHM 116: General Chemistry II (SQ)	4	C	
❗ MAT 266: Calculus for Engineers II (MA)	3	C	
BIO 181: General Biology I (SQ)	4	C	
SES 230: Coding for Exploration (CS)	3	C	
❗ Complete First-Year Composition requirement.			
Complete Mathematics (MA) requirement.			
Term hours subtotal:	14		

- SESE will accept Calculus with Analytic Geometry I, II and III (MAT 270/271/272) in place of MAT 265/266/267.
- SESE majors are strongly encouraged to meet with their faculty mentor at least once during their first and second year. Students can find their faculty mentor on the [SESE advising website](#).
- Develop your [skills](#).

Term 4 42 - 59 Credit Hours Critical course signified by ❗	Hours	Minimum Grade	Notes
❗ MAT 267: Calculus for Engineers III (MA)	3	C	
BIO 182: General Biology II (SG)	4	C	
PHY 121: University Physics I: Mechanics (SQ) AND PHY 122: University Physics Laboratory I (SQ)	4	C	
Humanities, Arts and Design (HU) AND Historical Awareness (H)	3		
Science and Society Elective	3	C	
Milestone: Complete SESE faculty mentoring.			
Term hours subtotal:	17		

- SESE will accept Calculus with Analytic Geometry I, II and III (MAT 270/271/272) in place of MAT 265/266/267.
- SESE majors are strongly encouraged to meet with their faculty mentor at least once during their first and second year. Students can find their faculty mentor on the [SESE advising website](#).
- Explore an [internship](#).

Term 5 59 - 75 Credit Hours Necessary course signified by ★	Hours	Minimum Grade	Notes
★ GLG 321: Mineralogy	3	C	
PHY 131: University Physics II: Electricity and Magnetism (SQ) AND PHY 132: University Physics Laboratory II (SQ)	4	C	
Upper Division Astrobiology & Biogeosciences Major Elective	3	C	
Literacy and Critical Inquiry (L)	3		
Social-Behavioral Sciences (SB) AND Cultural Diversity in the U.S. (C)	3		
Term hours subtotal:	16		

- Students should start meeting with faculty to discuss research opportunities

Term 6 75 - 90 Credit Hours Necessary course signified by ★	Hours	Minimum Grade	Notes
★ GLG 481: Geochemistry	3	C	
SES 311: Essentials of Astrobiology: Exploration for Life in the Universe	3	C	
Humanities, Arts and Design (HU)	3		
Elective	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		

- Explore a research or [internship](#) 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.
- Use Handshake to research [employment opportunities](#).
- Students interested in graduate school should be researching programs and preparing application materials. Continue to meet with faculty for input along the way.
- Students should meet with an advisor to do a graduation check.

Term 7 90 - 105 Credit Hours Necessary course signified by ★	Hours	Minimum Grade	Notes
★ SES 410: Senior Exploration Project I	3	C	
Upper Division Astrobiology & Biogeosciences Major Elective	3	C	

- Students interested in graduate school should be researching programs and

Upper Division Literacy and Critical Inquiry (L)	3	
Upper Division Science and Society Elective	3	C
Upper Division Elective	3	
Term hours subtotal:	15	

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

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

Term 8 105 - 120 Credit Hours Necessary course signified by ★	Hours	Minimum Grade	Notes
★ SES 411: Senior Exploration Project II	3	C	
Upper Division Humanities, Arts and Design (HU) OR Upper Division Social-Behavioral Sciences (SB)	3		
Complete 3 courses:	9		
Upper Division Elective			
Term hours subtotal:	15		

- 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 Astrobiology & Biogeosciences Major Electives

AST 321: Introduction to Planetary and Stellar Astrophysics

BIO 320: Fundamentals of Ecology

BIO 340: General Genetics

BIO 345: Evolution

GLG 404: Fundamentals of Planetary Geology

GLG 430: Paleontology

GLG 435: Sedimentology and Stratigraphy

GLG 460: Astrobiology

GLG 461: Geomicrobiology

GLG 485: Meteorites and Cosmochemistry

GLG 489: Field Geochemistry (L)

GLG 490: Remote Sensing

SES 350: Engineering Systems and Experimental Problem Solving

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.