









2024 - 2025 Major Map

Earth and Environmental Sciences, BS

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

Term 1 0 - 14 Credit Hours Critical course signified by 	Hours	Minimum Grade	Notes
 GLG 110: Dangerous World (SCIT OR SQ & G) AND GLG 111: Dangerous World Laboratory (SCIT OR SQ)	4	C	<ul style="list-style-type: none"> If students don't place into MAT 251, 265, or 270, they should enroll in the appropriate math prerequisite course in Term 1. ASU 101 or college-specific equivalent First-Year Seminar required of all first-year students. SESE majors are strongly encouraged to seek faculty mentoring 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		
Governance and Civic Engagement (CIVI)	3		
Mathematics (MATH)	3	C	
Term hours subtotal:	14		
Term 2 14 - 28 Credit Hours Critical course signified by 	Hours	Minimum Grade	Notes
 MAT 251: Calculus for Life Sciences (MATH OR MA) OR MAT 265: Calculus for Engineers I (MATH OR MA) OR MAT 270: Calculus with Analytic Geometry I (MATH OR MA)	3-4	C	<ul style="list-style-type: none"> SESE majors are strongly encouraged to seek faculty mentoring 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.
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	
GLG 108: Water Planet (SCIT OR SQ)	4	C	
PHY 101: Introduction to Physics (SCIT OR SQ) OR PHY 111: General Physics (SCIT OR SQ) AND PHY 113: General Physics Laboratory (SCIT OR SQ)	4	C	
 Complete ENG 101 OR ENG 105 OR ENG 107 course(s).			
Milestone: Complete SESE faculty mentoring.			
Term hours subtotal:	14-15		
Term 3 28 - 44 Credit Hours Critical course signified by 	Hours	Minimum Grade	Notes
 CHM 113: General Chemistry I (SCIT OR SQ)	4	C	<ul style="list-style-type: none"> If students choose to take STP 231 for their statistics requirement, they will not need an additional Quantitative Reasoning (QTRS) course. Students can take an elective instead. SESE majors are strongly encouraged to seek faculty mentoring at least once
SES 220: Biology of a Changing Earth	3	C	
STP 231: Statistics for Life Science (QTRS OR CS) OR GIS 270: Statistics for Geography and Planning	3	C	
Science and Society Elective	3	C	
Quantitative Reasoning (QTRS)	3		
 Complete First-Year Composition requirement.			

❗ Complete Mathematics (MATH) requirement.

Term hours subtotal: 16

during their first and second year.

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
❗ CHM 116: General Chemistry II (SCIT OR SQ)	4	C	<ul style="list-style-type: none"> • SESE majors are strongly encouraged to seek faculty mentoring at least once during their first and second year. Students can find their faculty mentor on the SESE advising website. • Explore an internship.
SES 225: Global Biogeochemical Cycles	3	C	
Global Communities, Societies and Individuals (GCSI)	3		
Humanities, Arts and Design (HUAD)	3		
Social and Behavioral Sciences (SOBE)	3		
Milestone: Complete SESE faculty mentoring.			
Term hours subtotal:	16		

Term 5 60 - 75 Credit Hours Necessary course signified by ★	Hours	Minimum Grade	Notes
★ CHM 231: Elementary Organic Chemistry (SCIT OR SQ) OR CHM 233: General Organic Chemistry I	3	C	<ul style="list-style-type: none"> • Students are strongly encouraged to meet with SESE faculty advisors to discuss career options.
GLG 325: Oceanography	3	C	
Upper Division Science and Society Elective	3	C	
Humanities, Arts and Design (HUAD)	3		
Elective	3		
Term hours subtotal:	15		

Term 6 75 - 90 Credit Hours Necessary course signified by ★	Hours	Minimum Grade	Notes
★ GLG 305: Dynamic Earth	3	C	<ul style="list-style-type: none"> • Students have a choice between ERM 406 or CHM 302. Currently, ERM 406 is a spring course only and CHM 302 is a fall course only. If a student wishes to take CHM 302, they should plan to take it in Term 7 and move one of their Term 7 courses to Term 6, such as one of the EES Major Track Electives or their Sustainability (SUST) course. • For the Earth and Environmental Studies Track Electives, students are encouraged to choose a track but they also have the option to choose any combination of courses across multiple tracks. • The list of approved major track electives along with their prerequisites may be viewed on the SESE website. • Research career opportunities. • Students should meet with an advisor to do a graduation check.
ERM 406: Environmental Chemistry OR CHM 302: Environmental Chemistry	3	C	
Complete 2 courses:			
Upper Division Earth and Environmental Sciences (EES) Major Track Electives	6	C	
Upper Division Elective	3		
Term hours subtotal:	15		

Term 7 90 - 105 Credit Hours Necessary course signified by ★	Hours	Minimum Grade	Notes
★ GLG 327: Earth's Critical Zone	3	C	<ul style="list-style-type: none"> • If not already completed, students should meet with an advisor to do a graduation check. • For the Earth and Environmental Studies Track Electives, students are encouraged to choose a track but they also have the option to choose any combination of courses across multiple tracks. Regardless of the chosen
Complete 2 courses:			
4** (400-level) Earth and Environmental Sciences (EES) Major Track Electives	6	C	
Sustainability (SUST)	3		
Upper Division Elective	3		
Term hours subtotal:	15		

track, at least two of the Earth and Environmental Studies Track Electives must be 400-level.

- 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.
- Use Handshake to research **employment opportunities**.
- The list of approved major track electives along with their prerequisites may be viewed on the **SESE website**.

Term 8 105 - 120 Credit Hours Necessary course signified by ★	Hours	Minimum Grade	Notes
★ GLG 464: Solving Environmental Problems	3	C	<ul style="list-style-type: none"> • The list of approved major track electives along with their prerequisites may be viewed on the SESE website.
American Institutions (AMIT)	3		
Complete 3 courses:			
Upper Division Elective	9		
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.
- For the Earth and Environmental Studies Track Electives, students are encouraged to choose a track but they also have the option to choose any combination of courses across multiple tracks. Regardless of the chosen track, at least two of the Earth and Environmental Studies Track Electives must be 400-level.
- Each of the focused tracks has overlap with a related **certificate program** that students can choose to pursue along with the chosen track. Students should discuss this option and how to add a certificate with their academic advisor.
- Students interested in further study in the field of sustainability are encouraged to speak with their academic advisor and contact the **College of Global Futures** about additional program opportunities.

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

Earth and Environmental Sciences General Elective Track	Climate/Environmental Change Track	Earth Resources Track
<p>This track includes all of the courses in the following tracks: 1) Climate/Environmental Change, 2) Earth Resources, 3) Environmental Education, 4) Environmental Management, 5) Environmental Policy and 6) Sustainability. While students are encouraged to pick a focused track, students may choose not to focus on one of the above tracks and may select courses across multiple tracks. Regardless of the chosen track, at least two of the courses must be 400-level.</p>	ABS 350: Applied Statistics (QTRS OR CS)	ABS 350: Applied Statistics (QTRS OR CS)
	ASB 326: Human Impacts on Ancient Environments (SUST OR SB & H)	ERM 428: International Environmental Management (G)
	ASB 375: Humans and the Environment: What's the Connection? ((L or SB) & G) or SOS 375: Humans and the Environment: What's the Connection? ((L or SB) & G)	GCU 364: Energy in the Global Arena
	ERM 426: Environmental Issues	GIS 311: Geographic Information Science III (QTRS OR CS)
	ERM 428: International Environmental Management (G)	GIS 322: Programming Principles in GIS II
	FIS 444: Environment and Justice (L & C) or JUS 444: Environment and Justice (L & C)	GIS 341: Cartography and Georepresentation (QTRS OR CS)
		GIS 470: Advanced Statistics for Geography and Planning (QTRS OR CS)

	GIS 470: Advanced Statistics for Geography and Planning (QTRS OR CS)	GLG 301: Earth Science in Arizona and the Southwest or SOS 372: Earth Science in Arizona and the Southwest
	GLG 362: Geomorphology	
	GLG 435: Sedimentology and Stratigraphy	GLG 304: Minerals, Energy, and Society or SOS 373: Minerals, Energy, and Society
	GLG 470: Hydrogeology	GLG 310: Structural Geology
	GPH 314: Global Change (SUST OR HU & G)	GLG 321: Mineralogy
	GPH 414: Climate Change (SUST OR G)	GLG 424: Petrology
	JUS 332: Politics of Energy Policy and Justice	GLG 435: Sedimentology and Stratigraphy
	PUP 442: Environmental Planning	GLG 441: Ore Deposits
	SOS 314: Basic Energy Science	GLG 470: Hydrogeology
	SOS 320: Society and Sustainability (SOBE OR L or SB)	GPH 314: Global Change (SUST OR HU & G)
	SOS 324: Sustainable Energy Technology and Systems	GPH 381: Geography of Natural Resources (SUST OR G)
	SOS 326: Sustainable Ecosystems	GPH 414: Climate Change (SUST OR G)
	SOS 444: Climate Change, Society and Sustainability	PUP 442: Environmental Planning
	STP 420: Introductory Applied Statistics (QTRS OR CS)	SOS 320: Society and Sustainability (SOBE OR L or SB)
		SOS 324: Sustainable Energy Technology and Systems
		SOS 325: The Economics of Sustainability
		STP 420: Introductory Applied Statistics (QTRS OR CS)
Environmental Education Track	Environmental Management Track	Environmental Policy Track
ABS 302: Ethical and Policy Issues in Biology	ABS 350: Applied Statistics (QTRS OR CS)	ABS 302: Ethical and Policy Issues in Biology
BIO 324: Environmental Ethics (SUST OR HU) or PHI 310: Environmental Ethics (SUST OR HU)	BIO 324: Environmental Ethics (SUST OR HU) or PHI 310: Environmental Ethics (SUST OR HU)	ABS 350: Applied Statistics (QTRS OR CS)
ENG 371: Rhetoric of the Environmental Movement	BIO 412: Conservation in Practice	BIO 324: Environmental Ethics (SUST OR HU) or PHI 310: Environmental Ethics (SUST OR HU)
ERM 426: Environmental Issues	CEE 400: Earth Systems Engineering and Management (SUST OR (L or HU) & H)	BIO 412: Conservation in Practice
FIS 444: Environment and Justice (L & C) or JUS 444: Environment and Justice (L & C)	ERM 426: Environmental Issues	ENG 371: Rhetoric of the Environmental Movement
GIS 470: Advanced Statistics for Geography and Planning (QTRS OR CS)	ERM 428: International Environmental Management (G)	ERM 426: Environmental Issues
GPH 314: Global Change (SUST OR HU & G)	GIS 311: Geographic Information Science III (QTRS OR CS)	ERM 428: International Environmental Management (G)
GPH 381: Geography of Natural Resources (SUST OR G)	GIS 322: Programming Principles in GIS II	FIS 334: Science, Technology and Inequality (GCSI OR C) or JUS 334: Science, Technology and Inequality (GCSI OR C)
GPH 414: Climate Change (SUST OR G)	GIS 341: Cartography and Georepresentation (QTRS OR CS)	FIS 444: Environment and Justice (L & C) or JUS 444: Environment and Justice (L & C)
JUS 332: Politics of Energy Policy and Justice	GIS 470: Advanced Statistics for Geography and Planning (QTRS OR CS)	GIS 470: Advanced Statistics for Geography and Planning (QTRS OR CS)
	GLG 304: Minerals, Energy, and Society or SOS 373: Minerals, Energy, and Society	

JUS 456: Human Rights and Sustainability (L or SB) & G) or SOS 456: Human Rights and Sustainability (L or SB) & G)	GLG 362: Geomorphology	GPH 314: Global Change (SUST OR HU & G)
POS 300: Contemporary Global Controversies (GCSI OR SB & G)	GLG 470: Hydrogeology	GPH 414: Climate Change (SUST OR G)
PUP 442: Environmental Planning	GPH 314: Global Change (SUST OR HU & G)	HST 345: Environmental History (SUST OR L)
SCN 300: Foundations of Environmental Education	GPH 381: Geography of Natural Resources (SUST OR G)	JUS 332: Politics of Energy Policy and Justice
SCN 302: Environmental Education: A Global Perspective (SUST OR L & G)	GPH 414: Climate Change (SUST OR G)	POS 300: Contemporary Global Controversies (GCSI OR SB & G)
SCN 307: Biomimicry: Nature's Sustainable Solutions (SUST OR G)	HST 345: Environmental History (SUST OR L)	PUP 442: Environmental Planning
SCN 308: Urban Environmental Education	POS 300: Contemporary Global Controversies (GCSI OR SB & G)	SOC 331: Environmental Sociology (SUST OR SB & G)
SCN 310: Biodiversity Conservation: An Educational Inquiry	PUP 301: Introduction to Urban Planning (L)	SOS 315: Energy Policy
SCN 401: Sustainability Science, Technology, and Society	PUP 442: Environmental Planning	SOS 320: Society and Sustainability (SOBE OR L or SB)
SOS 444: Climate Change, Society and Sustainability	STP 420: Introductory Applied Statistics (QTRS OR CS)	SOS 321: Policy and Governance in Sustainable Systems
STP 420: Introductory Applied Statistics (QTRS OR CS)		SOS 323: Sustainable Urban Dynamics
		SOS 324: Sustainable Energy Technology and Systems
		SOS 444: Climate Change, Society and Sustainability
		STP 420: Introductory Applied Statistics (QTRS OR CS)
Sustainability Track		
ABS 350: Applied Statistics (QTRS OR CS)		
ASB 326: Human Impacts on Ancient Environments (SUST OR SB & H)		
FIS 444: Environment and Justice (L & C) or JUS 444: Environment and Justice (L & C)		
GCU 364: Energy in the Global Arena		
GIS 470: Advanced Statistics for Geography and Planning (QTRS OR CS)		
GLG 304: Minerals, Energy, and Society or SOS 373: Minerals, Energy, and Society		
GPH 314: Global Change (SUST OR HU & G)		
GPH 414: Climate Change (SUST OR G)		
HST 345: Environmental History (SUST OR L)		
JUS 332: Politics of Energy Policy and Justice		
JUS 456: Human Rights and Sustainability (L or SB) & G) or SOS 456: Human Rights and Sustainability (L or SB) & G)		
PUP 442: Environmental Planning		

SCN 401: Sustainability Science,
Technology, and Society

SOS 300: Advanced Concepts and Integrated
Approaches in Sustainability

SOS 310: Equity, Justice and Sustainability

SOS 314: Basic Energy Science

SOS 315: Energy Policy

SOS 320: Society and Sustainability (SOBE
OR L or SB)

SOS 321: Policy and Governance in
Sustainable Systems

SOS 323: Sustainable Urban Dynamics

SOS 324: Sustainable Energy Technology
and Systems

SOS 325: The Economics of Sustainability

SOS 326: Sustainable Ecosystems

SOS 327: Sustainable Food & Farms

SOS 444: Climate Change, Society and
Sustainability

STP 420: Introductory Applied Statistics
(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.