# 2022 - 2023 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 | • Students who place into MAT 265 should take the course in term 1 to complete the MA requirement.<br>• LIA 101 is mandatory for all incoming first-year students.<br>• SESE will accept Calculus with Analytic Geometry I, II and III (MAT 270/271/272) in place of MAT 265/266/267.<br>• 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.<br>• Select your career interest area and play me3@ASU. |
| 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 | • 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.<br>• SESE will accept Calculus with Analytic Geometry I, II and III (MAT 270/271/272) in place of MAT 265/266/267.<br>• 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.<br>• Join a student club or professional organization. |
| 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 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 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 | |
| Science and Society Elective | 3 | C | |
| Humanities, Arts and Design (HU) AND Historical Awareness (H) | 3 | | |
| 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 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.

| **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 | | |

- 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

| | | | |
|---|---|---|---|
| | Upper Division Elective OR<br>SES 484: Internship OR<br>SES 499: Individualized Instruction | 3 | |
| | Elective | 3 | |
| ★ | Complete Cultural Diversity in the U.S. (C) AND Global Awareness (G) AND Historical Awareness (H) course(s). | | |
| | Term hours subtotal: | 15 | |

- faculty mentors about how to find research opportunities.
- Research career 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 | • Students interested in graduate school should be researching programs and preparing application materials. Continue to meet with faculty for input along the way.<br>• Apply for full-time career opportunities.<br>• If not already completed, students should meet with an advisor to do a graduation check. |
| | Upper Division Astrobiology & Biogeosciences Major Elective | 3 | C | |
| | Upper Division Science and Society Elective | 3 | C | |
| | Upper Division Literacy and Critical Inquiry (L) | 3 | | |
| | Upper Division Elective | 3 | | |
| | Term hours subtotal: | 15 | | |

| **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<br>Upper Division Social-Behavioral Sciences (SB) | 3 | | |
| | *Complete 3 courses:*<br>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.

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 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 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.