2022 - 2023 Major Map

Earth and Space Exploration (Astrophysics), BS

School/College: The College of Liberal Arts and Sciences
LASESABS

Term 1 0 - 15 Credit Hours Critical course signified by	Hours	Minimum Grade	Notes
MAT 270: Calculus with Analytic Geometry I (MA)	4	C	• LIA 101 is mandatory for all first-year students. • SESE will accept Calculus for Engineers I, II and III (MAT 265/266/267) as alternatives although MAT 270, 271 and 272 are encouraged. • 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. • 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 Cultural Diversity in the U.S. (C)	3		
Term hours subtotal:	15		

Term 2 15 - 30 Credit Hours Critical course signified by	Hours	Minimum Grade	Notes
MAT 271: Calculus with Analytic Geometry II (MA)	4	C	• SESE will accept Calculus for Engineers I, II and III (MAT 265/266/267) as alternatives although MAT 270, 271 and 272 are encouraged. • SESE will accept PHY 121/122 and PHY 131/132 as alternatives although PHY 150 and PHY 151 are encouraged. • 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. • Join a student club or professional organization.
PHY 150: Physics I (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 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:	15		

Term 3 30 - 44 Credit Hours Critical course signified by	Hours	Minimum Grade	Notes
MAT 272: Calculus with Analytic Geometry III (MA)	4	C	• SESE will accept Calculus for Engineers I, II and III (MAT 265/266/267) as alternatives although MAT 270, 271 and 272 are encouraged. • SESE will accept PHY 121/122 and PHY 131/132 as alternatives although PHY 150 and PHY 151 are encouraged. • SESE requires first and second-year students to seek faculty mentoring at least once during the academic year. Each student
PHY 151: Physics II (SQ)	4	C	
SES 230: Coding for Exploration (CS)	3	C	
Humanities, Arts and Design (HU)	3		
Complete First-Year Composition requirement.			
Complete Mathematics (MA) requirement.			
Term hours subtotal:	14		

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
PHY 201: Mathematical Methods in Physics I (CS)	3	C	• 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.
PHY 252: Physics III (SQ)	4	C	
Science and Society Elective	3	C	
Literacy and Critical Inquiry (L)	3		
Social-Behavioral Sciences (SB) AND Global Awareness (G)	3		
Milestone: Complete SESE faculty mentoring.			
Term hours subtotal:	16		

Term 5 60 - 75 Credit Hours Necessary course signified by	Hours	Minimum Grade	Notes
AST 321: Introduction to Planetary and Stellar Astrophysics	3	C	• Students should meet with faculty to discuss research opportunities
MAT 275: Modern Differential Equations (MA)	3	C	
PHY 314: Quantum Physics I	3	C	
Humanities, Arts and Design (HU) AND Historical Awareness (H)	3		
Elective	3		
Term hours subtotal:	15		

Term 6 75 - 90 Credit Hours Necessary course signified by	Hours	Minimum Grade	Notes
AST 322: Introduction to Galactic and Extragalactic Astrophysics	3	C	• Explore an internship. In order to earn credits for 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 can talk to faculty mentors about how to find research 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. • Research career opportunities.
AST 421: Astrophysics I	3	C	
Upper Division Astrophysics Major 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
AST 422: Astrophysics II	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. • If not already completed, students should meet with an advisor to do a graduation check. • Apply for full-time career opportunities.
SES 410: Senior Exploration Project I	3	C	
AST 498: Pro-Seminar	1	C	
Upper Division Humanities, Arts and Design (HU) OR Upper Division Social-Behavioral Sciences (SB)	3		
Complete 2 courses: Elective	6		
Term hours subtotal:	16		

Term 8 106 - 120 Credit Hours Necessary course signified by	Hours	Minimum Grade	Notes

SES 411: Senior Exploration Project II	3	C
Upper Division Science and Society Elective	3	C
Complete 3 courses: Upper Division Elective	8	
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.
- The suggested list of electives are highly recommended but not required. Students who plan to take the physics GRE are encouraged to choose electives from the PHY options. There is also an option to choose an elective in other GLG, AST, SES, PHY or MAT areas as long as the subject is relevant to astrophysics and the course is upper division. Students should consult with a SESE advisor if they have questions about which courses would satisfy this requirement.

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

Upper Division Astrophysics Major Elective
GLG OR AST OR SES OR PHY OR MAT Upper Division Elective
GLG 404: Fundamentals of Planetary Geology
PHY 302: Mathematical Methods in Physics II
PHY 310: Classical Particles, Fields, and Matter I
PHY 311: Classical Particles, Fields, and Matter II
PHY 312: Mechanics and Electromagnetism
PHY 315: Quantum Physics II
PHY 361: Introductory Modern Physics
PHY 441: Statistical and Thermal Physics
SES 311: Essentials of Astrobiology: Exploration for Life in the Universe
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.