ASTRONOMY, BSLAS

for the degree of Bachelor of Science in Liberal Arts & Sciences Major in Astronomy

The LAS major in **Astronomy** is a flexible program for students who are fascinated by the cosmos and plan to pursue technical or professional careers in areas requiring a solid grounding in physical science and mathematics. It is based upon both a broad and an in-depth exploration into astronomy (https://astro.illinois.edu/) and allied disciplines, and is flexible enough to be paired with many other majors or minors.
STEM designated*; BSLAS Degree (Bachelor of Science in Liberal Arts & Sciences)

The Astronomy Department undergraduate program also includes majors in Astrophysics (http://catalog.illinois.edu/undergraduate/las/astrophysics-bslas/), Computer Science + Astronomy (http://catalog.illinois.edu/undergraduate/eng_las/computer-science-astronomy-bs/), and Astronomy + Data Science (http://catalog.illinois.edu/undergraduate/las/astronomy-data-science-bslas/), as well as a minor in Astronomy (http://catalog.illinois.edu/undergraduate/las/minors/astronomy/).

Astrophysics Major

Astrophysics (http://catalog.illinois.edu/undergraduate/las/astrophysics-bslas/), the study of how the universe works by applying the methods and principles of physics, is the cornerstone of modern astronomy. Students majoring in Astrophysics must complete advanced coursework in both astronomy and physics, allowing them to demonstrate the rigorous preparation necessary for graduate study in astronomy/astrophysics, physics, and planetary and space sciences.
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Computer Science + Astronomy Major

The LAS major in Computer Science + Astronomy (http://catalog.illinois.edu/undergraduate/eng_las/computer-science-astronomy-bs/) is a flexible program for students who wish to combine a solid grounding in computer science with technical knowledge of astronomy. This blended curriculum helps develop a unique approach to problem solving and offers novel perspectives in interdisciplinary work, such as data visualization, data mining, astrophysical simulations, and image processing.
STEM designated*; BSLAS Degree (Bachelor of Science in Liberal Arts & Sciences)

Astronomy + Data Science Major

The Astronomy + Data Science (http://catalog.illinois.edu/undergraduate/las/astronomy-data-science-bslas/) major incorporates simultaneously a strong foundation in Data Science and Astronomy to develop an appreciation and understanding of how big data is transforming science. Graduates of the Astronomy + Data Science program will have gained experience working with modern large data sets using current computational and statistical methods, with a strong grounding in data curation and ethics.
STEM designated*; BSLAS Degree (Bachelor of Science in Liberal Arts & Sciences)

Astronomy Minor

The minor in astronomy (http://catalog.illinois.edu/undergraduate/las/minors/astronomy/) is designed to broaden the student's knowledge of science and our place in the universe. The minor in Astronomy will benefit especially those students who are eager to learn astronomy but who do not anticipate it to be their career. The Astronomy minor is also suitable for students who intend to pursue careers in areas that may benefit from a good knowledge of astronomy such as the aerospace industry, science writing, scientific journalism, or science teaching in schools.

QUESTIONS?

To get answers to your questions about our undergraduate programs in astronomy or to schedule a visit, contact Astronomy Advising (advising@astro.illinois.edu).

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Departmental distinction: A student majoring in astronomy may earn distinction or high distinction by attaining a minimum grade point average of 3.4 or 3.75, respectively, in required major courses (defined in the table below) taken at Illinois. For highest distinction, in addition to meeting the minimum requirements for high distinction, a senior thesis (ASTR 490) must be completed with strong endorsement by the research supervisor. Questions about eligibility for distinction status should be directed to an astronomy advisor before the senior year.

Graduation Requirements

Minimum hours required for graduation: 120 hours.

Minimum required major and supporting course work normally equates to 48-51 hours. Twelve hours of 300- and 400-level in the major must be taken on this campus.

University Requirements

Minimum of 40 hours of upper-division coursework, generally at the 300- or 400-level. These hours can be drawn from all elements of the degree. Students should consult their academic advisor for additional guidance in fulfilling this requirement.

The university and residency requirements can be found in the Student Code (https://studentcode.illinois.edu/article3/part8/3-801/) (§ 3-801) and in the Academic Catalog (http://catalog.illinois.edu/general-information/degree-general-education-requirements/).

General Education Requirements

Follows the campus General Education (Gen Ed) requirements (https://courses.illinois.edu/gened/DEFAULT/DEFAULT/). Some Gen Ed requirements may be met by courses required and/or electives in the program.

Code	Title	Hours
Composition I		4-6
Advanced Composition		3
Humanities & the Arts (6 hours)		6
Natural Sciences & Technology (6 hours)		6
	fulfilled by PHYS 211, PHYS 212	

Social & Behavioral Sciences (6 hours)	6
Cultural Studies: Non-Western Cultures (1 course)	3
Cultural Studies: US Minority Cultures (1 course)	3
Cultural Studies: Western/Comparative Cultures (1 course)	3
Quantitative Reasoning (2 courses, at least one course must be Quantitative Reasoning I)	6-10
fulfilled by MATH 220 or MATH 221; and MATH 231, MATH 241, PHYS 211, PHYS 212	
Language Requirement (Completion of the fourth semester or equivalent of a language other than English is required)	0-20

Code	Title	Hours
Orientation and Professional Development		
LAS 101	Design Your First Year Experience	1
OR		
LAS 100 & LAS 101	Success in LAS for International Students and Design Your First Year Experience	3
OR		
LAS 102	Transfer Advantage	1
Total Hours		1 or 3

Code	Title	Hours
Astronomy Core		
ASTR 210	Introduction to Astrophysics (Students without a background in physics or astronomy are encouraged to take ASTR121 and ASTR122 during their freshman year.)	3
ASTR 310	Computing in Astronomy	3
Select three of the following:		9-10
ASTR 404	Stellar Astrophysics	
ASTR 405	Planetary Systems	
ASTR 406	Galaxies and the Universe	
ASTR 414	Astronomical Techniques	
Select at least an additional 9 hours of 300- or 400-level ASTR or PHYS courses (Other 300- or 400-level technical classes, e.g. chemistry, computer science engineering, or statistics can be substituted with academic adviser approval. Additionally, a maximum of 4 hours of credit in ASTR 390 (or equivalent "Independent Study" course, such as PHYS 497) can be counted towards this requirement.)		9
Supporting Technical Courses		
Physics		12
PHYS 211	University Physics: Mechanics	
PHYS 212	University Physics: Elec & Mag	
PHYS 213	Univ Physics: Thermal Physics	
PHYS 214	Univ Physics: Quantum Physics	
Mathematics		11
MATH 221	Calculus I (MATH 220 may be substituted for MATH 221. MATH 220 is appropriate for students with no background in calculus.)	
MATH 231	Calculus II	
MATH 241	Calculus III	
Total Hours		**47-48**

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Sample Sequence

This sample sequence is intended to be used only as a guide for degree completion. All students should work individually with their academic advisors to decide the actual course selection and sequence that works best for them based on their academic preparation and goals. Enrichment programming such as study abroad, minors, internships, and so on may impact the structure of this four-year plan. Course availability is not guaranteed during the semester indicated in the sample sequence.

Students must fulfill their Language Other Than English requirement by successfully completing a fourth level of a language other than English. See the corresponding section on the Degree and General Education Requirements page *(*http://catalog.illinois.edu/general-information/degree-general-education-requirements/*).*

First Year

First Semester	Hours	Second Semester	Hours
LAS 101	1	MATH 231	3
MATH 220 or 221	5	PHYS 211	4
Language Other than English (3rd level)	4	Language Other than English (4th level)	4
Composition I or General Education course	4	General Education course or Composition I	3
Free elective course	1		
	15		**14**

Second Year

First Semester	Hours	Second Semester	Hours
MATH 241	4	ASTR 210	3
PHYS 212	4	PHYS 213	2
General Education course	3	PHYS 214	2
General Education course	3	General Education course	3
Free elective course	1	General Education course	3
		Free elective course	3
	15		**16**

Third Year

First Semester	Hours	Second Semester	Hours
ASTR 310	3	ASTR 404, 405, 406, or 414	3
Advanced ASTR Elective	3	Advanced ASTR Elective	3
General Education course	3	General Education Course	3
General Education course	3	Free elective course	3

Free elective course	3	Free elective course	3
	15		**15**
Fourth Year			
First Semester	**Hours**	**Second Semester**	**Hours**
ASTR 404, 405, 406, or 414	3	ASTR 404, 405, 406, or 414	3
Advanced ASTR Elective	3	Free elective course	3
Free elective course	3	Free elective course	3
Free elective course	3	Free elective course	3
Free elective course	3	Free elective course	3
	15		**15**

Total Hours 120

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Undergraduate Astronomy majors will graduate with a demonstrated ability to:

1. LO1. Understand the hierarchical architecture of the cosmos, increasing in scale from the Solar System to the Galaxy to the Universe, and decreasing in scale to atoms and their nuclei. Understand the interplay among these scales.
2. LO2. Define and use fundamental principles and techniques of astronomy and astrophysics.
   a. Identify which principles should be applied to a specified situation
   b. Show familiarity with astronomical observables and their physical origin.
   c. Understand and apply basic physics and computational techniques to solve problems in astrophysics, and interpret the results.
3. LO3. Analyze astronomical data, and quantitative data generally.
   a. Demonstrate the ability to link observation and theory.
   b. Demonstrate the ability to draw qualitative conclusions from quantitative information, and vice versa.
   c. Demonstrate the ability to plan observational programs, use astronomical telescopes and instrumentation, and to analyze and present astronomical data.
4. LO4. Plan and perform guided research, or attain an advanced-level understanding of a topic of contemporary interest in astronomy and astrophysics.
5. LO5. Demonstrate the ability to communicate effectively both verbally and in writing.

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Astronomy

Astronomy website (https://astro.illinois.edu/)
Astronomy Undergraduate Programs (https://astro.illinois.edu/academics/undergraduate-program/)
Astronomy email (astronomy@illinois.edu)
Astronomy faculty (https://astro.illinois.edu/directory/faculty/)

College of Liberal Arts & Sciences

LAS College website (https://las.illinois.edu/)

Advising

Astronomy advising email (advising@astro.illinois.edu)
College of LAS Advising (https://las.illinois.edu/academics/advising/college/)

Admissions

Liberal Arts & Sciences Admissions & Requirements (http://catalog.illinois.edu/schools/las/academic-units/)
University of Illinois Urbana-Champaign Undergrad Admissions (https://www.admissions.illinois.edu/)