

COMPUTER SCIENCE + ASTRONOMY, BSLAS

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

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A Major Plan of Study Form must be completed and submitted to the LAS Student Affairs Office by the beginning of the fifth semester (60-75 hours). Please see the computer science advisor as well as the astronomy advisor.

General education: Students must complete the Campus General Education (<https://courses.illinois.edu/>) requirements including the campus general education language requirement.

Minimum required major and supporting course work: Normally equates to 68-71 hours. Twelve hours of 300- and 400-level in the major must be taken on this campus.

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Minimum hours required for graduation: 120 hours.

Code	Title	Hours
Required Computer Science Coursework		
CS 100	Computer Science Orientation (recommended; CS 100 is an orientation course aimed at first-year students, so students who declare the major after the freshman year are not required to complete it.)	1
CS 124	Introduction to Computer Science I	3
CS 128	Introduction to Computer Science II	3
CS 173	Discrete Structures	3
CS 225	Data Structures	4
CS 222	Software Design Lab	1
Choose one of the following combinations		8-11
CS 233 & CS 341	Computer Architecture and System Programming	
OR		
CS 340	Introduction to Computer Systems & two CS courses at the 400 level above CS 403, excluding CS 421 and CS 491	
Choose one of the following:		3
STAT 200	Statistical Analysis	
STAT 212	Biostatistics	
CS 361	Probability & Statistics for Computer Science	
CS 374	Introduction to Algorithms & Models of Computation	4

CS 421	Programming Languages & Compilers	3
Mathematics (may also fulfill the General Education Quantitative Reasoning I and II requirements)		
MATH 221 or MATH 220	Calculus I Calculus	4-5
MATH 225 or MATH 257	Introductory Matrix Theory Linear Algebra with Computational Applications	2 or 3
MATH 231	Calculus II	3
Required Astronomy Coursework - Minimum of 27 Hours		
Physics, Mathematics, and Astronomy Foundations		15
PHYS 211	University Physics: Mechanics	4
PHYS 212	University Physics: Elec & Mag	4
MATH 241	Calculus III	4
ASTR 210	Introduction to Astrophysics	3
Advanced Astronomy Courses (Minimum 12 total advanced ASTR 12-13 hours required)		
ASTR 310	Computing in Astronomy	3
Select 2 courses from the following list:		6-7
ASTR 404	Stellar Astrophysics	
ASTR 405	Planetary Systems	
ASTR 406	Galaxies and the Universe	
ASTR 414	Astronomical Techniques	
Additional ASTR course(s) at the 300 level or higher		2-3

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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 General and Education Requirements page (<http://catalog.illinois.edu/general-information/degree-general-education-requirements/>).

First Year

First Semester	Hours	Second Semester	Hours
Free elective course		1 CS 128	3
CS 100		1 CS 173	3
CS 124		3 ASTR 210	3
PHYS 211		4 MATH 220 (or MATH 221)	4
Composition I or General Education course		4 General Education Course or Composition I	3
		13	16

Second Year

First Semester	Hours	Second Semester	Hours
CS 222		1 CS 233 (or CS 340)	3
CS 225		4 STAT 200 (or STAT 212 or CS 361)	3
MATH 231		3 MATH 241	4
MATH 225 (or MATH 257)		3 General Education Course	3
Language Other Than English (3rd level)		4 Language Other Than English (4th level)	4
		15	17

Third Year

First Semester	Hours	Second Semester	Hours
ASTR 310		3 CS 374	4
CS 341 (or CS 400-level course)		4 CS 400-level course or Free elective course	3
PHYS 212		4 Advanced ASTR core course	3
General Education Course		3 General Education Course	3
General Education Course		3 General Education Course	3
		17	16

Fourth Year

First Semester	Hours	Second Semester	Hours
CS 421		3 ASTR 300-400 level course	3
Advanced ASTR core course		3 Free elective course	3
General Education Course		3 Free elective course	2
General Education Course		3 Free elective course	3
Free elective course		1 Free elective course	2
		13	13

Total Hours 120

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Undergraduate Computer Science & Astronomy majors will graduate with a demonstrated ability to:

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.

LO2. Define and use fundamental principles and techniques of astronomy and astrophysics.

- Identify which principles should be applied to a specified situation
- Show familiarity with astronomical observables and their physical origin.
- Understand and apply basic physics and computational techniques to solve problems in astrophysics, and interpret the results.

LO3. Analyze astronomical data, and quantitative data generally.

- Demonstrate the ability to link observation and theory.
- Demonstrate the ability to draw qualitative conclusions from quantitative information, and vice versa.
- Demonstrate the ability to plan observational programs, use astronomical telescopes and instrumentation, and to analyze and present astronomical data.

LO4. Plan and perform guided research, or attain an advanced-level understanding of a topic of contemporary interest in astronomy and astrophysics.

LO5. Demonstrate the ability to communicate effectively both verbally and in writing.

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computer science website: CS + X Degrees (<https://cs.illinois.edu/academics/undergraduate/degree-program-options/cs-x-degree-programs/#requirements>)

astronomy website: CS + Astronomy (<https://astro.illinois.edu/academics/undergraduate-program/computer-science-astronomy-major/>)

Department of Astronomy (<https://astro.illinois.edu/>)

overview of college admissions & requirements: Liberal Arts & Sciences (<http://catalog.illinois.edu/schools/las/academic-units/>)

college websites: <https://las.illinois.edu/> and <https://grainger.illinois.edu> (<https://grainger.illinois.edu/>)

astronomy email: astronomy@illinois.edu

computer science email: undergrad@cs.illinois.edu (academic@cs.illinois.edu)