

BACHELOR OF SCIENCE IN ASTROPHYSICS

The astrophysics program emphasizes the physics celestial bodies including stars, galaxies, planetary systems, and cosmology as well as introducing students to best observational practices and the instrumentation used in modern astrophysics. Graduates continue on to obtain a Ph.D. or move on to jobs in government, military, universities, the private sector, or teaching positions in middle school and high school. The program is designed so that obtaining dual degrees in astrophysics and physics can be accomplished by most students in four years of study.

Required Courses

| Code | Title | Credit Hours |
|---|---|--------------|
| Physics Requirements | | (40) |
| PHYS 100 | Intro to the Profession | 2 |
| PHYS 123 | General Physics I: Mechanics | 4 |
| PHYS 221 | General Physics II: Electricity and Magnetism | 4 |
| PHYS 223 | General Physics III | 4 |
| PHYS 240 | Computational Science | 3 |
| PHYS 301 | Mathematical Methods of Physics | 3 |
| PHYS 304 | Thermodynamics and Statistical Physics | 3 |
| PHYS 308 | Classical Mechanics I | 3 |
| PHYS 309 | Classical Mechanics II | 3 |
| PHYS 405 | Fundamentals of Quantum Theory I | 3 |
| PHYS 413 | Electromagnetism I | 3 |
| PHYS 427 | Advanced Physics Laboratory I | 3 |
| PHYS 485 | Physics Colloquium | 1 |
| PHYS 485 | Physics Colloquium | 1 |
| Astronomy Requirements | | (16) |
| PHYS 360 | Introduction to Astrophysics | 3 |
| PHYS 361 | Observational Astrophysics | 4 |
| PHYS 403 | Relativity | 3 |
| PHYS 460 | Stellar Astrophysics | 3 |
| PHYS 461 | Extragalactic Astrophysics | 3 |
| Technical Elective Requirement | | (3) |
| Select 3 credit hours ¹ | | 3 |
| Mathematics Requirements | | (18) |
| MATH 151 | Calculus I | 5 |
| MATH 152 | Calculus II | 5 |
| MATH 251 | Multivariate and Vector Calculus | 4 |
| MATH 252 | Introduction to Differential Equations | 4 |
| Chemistry Requirements | | (8) |
| CHEM 124 | Principles of Chemistry I with Laboratory | 4 |
| CHEM 125 | Principles of Chemistry II with Laboratory | 4 |
| Computer Science Requirement | | (2) |
| CS 105 | Introduction to Computer Programming | 2 |
| Humanities and Social Science Requirements | | (21) |
| See Illinois Tech Core Curriculum, sections B and C | | 21 |
| Interprofessional Projects (IPRO) | | (6) |
| See Illinois Tech Core Curriculum, section E | | 6 |
| Free Electives | | (12) |
| Select 12 credit hours | | 12 |
| Total Credit Hours | | 126 |

¹ A technical elective is:

1. Any Physics course at or above the 300-level

OR

2. Any College of Science or College of Engineering course at or above the 300-level, chosen with approval of the student's advisor

Bachelor of Science in Astrophysics Curriculum

| | | Year 1 | |
|---------------------------------|--------------|--|--------------|
| Semester 1 | Credit Hours | Semester 2 | Credit Hours |
| PHYS 100 | | 2 PHYS 221 | 4 |
| PHYS 123 | | 4 MATH 152 | 5 |
| MATH 151 | | 5 CHEM 125 | 4 |
| CHEM 124 | | 4 Humanities or Social Sciences Elective | 3 |
| | | 15 | 16 |
| | | Year 2 | |
| Semester 1 | Credit Hours | Semester 2 | Credit Hours |
| PHYS 223 | | 4 PHYS 240 | 3 |
| MATH 251 | | 4 PHYS 304 | 3 |
| CS 105 | | 2 PHYS 360 | 3 |
| Humanities 200-level Course | | 3 MATH 252 | 4 |
| Social Sciences Elective | | 3 Humanities Elective (300+) | 3 |
| | | 16 | 16 |
| | | Year 3 | |
| Semester 1 | Credit Hours | Semester 2 | Credit Hours |
| PHYS 301 | | 3 PHYS 309 | 3 |
| PHYS 308 | | 3 PHYS 460 ³ | 3 |
| PHYS 361 ¹ | | 4 Free Elective | 3 |
| PHYS 405 ² | | 3 IPRO Elective I | 3 |
| Social Sciences Elective (300+) | | 3 Social Sciences Elective (300+) | 3 |
| | | 16 | 15 |
| | | Year 4 | |
| Semester 1 | Credit Hours | Semester 2 | Credit Hours |
| PHYS 413 | | 3 PHYS 403 ³ | 3 |
| PHYS 427 | | 3 PHYS 485 | 1 |
| PHYS 461 ³ | | 3 Technical Elective ⁴ | 3 |
| PHYS 485 | | 1 IPRO Elective II | 3 |
| Free Elective | | 3 Free Elective | 3 |
| Humanities Elective (300+) | | 3 Free Elective | 3 |
| | | 16 | 16 |

Total Credit Hours: 126

¹ PHYS 361 is offered every other fall semester.

² PHYS 405 can also be taken in the 7th semester with a free elective moved to the 5th semester.

³ These three courses will be offered in a three-semester rotation and taken by 3rd and 4th year students together.

⁴ A technical elective is:

Any Physics course at or above the 300-level

OR

Any College of Science or College of Engineering course at or above the 300-level, chosen with approval of the student's advisor