MAJOR IN INTERDISCIPLINARY PHYSICS - PLANETARY SCIENCE CONCENTRATION

Requirements

(Beginning Spring 2025)

The#Interdisciplinary Physics major is designed for students with an interest in physics and its applications in other fields with high potential for employment and postgraduate opportunities. The program provides students#with a strong foundation in physics along with the freedom#to develop a coherent#academic#program across other disciplines such as computer science, mathematics, astronomy, geology, marketing, and entrepreneurship through concentrations in Computational Physics, Planetary Science and Physics Innovation and Entrepreneurship. The curricular pathways offered through the concentrations in the Interdisciplinary Physics major prepare students for careers in an increasingly technical workforce that values skills across many disciplines.

All Interdisciplinary Physics majors take a core set of physics courses, including a three-course sequence in fundamental classical physics and courses in computational methods, modern physics, and laboratory techniques. Students will be assigned an adviser in the Department of Physics, Astronomy, and Geosciences who will assist them in selecting elective courses within their program to best meet their career goals.

Required Courses for B.S. in Interdisciplinary Physics

Code	Title	Units
Required Physics Courses		
PHYS 185	INTRODUCTORY SEMINAR IN PHYSICS	1
PHYS 241	GENERAL PHYSICS I CALCULUS-BASED A grade of B or better in PHYS 211 is required to substitute for PHYS 241	4
or PHYS 211	GENERAL PHYSICS I; NON CALCULUS-BASED	
PHYS 242	GENERAL PHYSICS II CALCULUS-BASED	4
PHYS 243	GENERAL PHYSICS III	4
PHYS 305	COMPUTERS IN PHYSICS	4
PHYS 311	MODERN PHYSICS I	3
PHYS 341	INTERMEDIATE PHYSICS LABORATORY I	3
PHYS 385	PHYSICS SEMINAR	1
or ASTR 385	ASTROPHYSICS SEMINAR	
PHYS 486	PHYSICS SEMINAR II	1
Non-Physics Requirements		
MATH 273	CALCULUS I	4
MATH 274	CALCULUS II	4
Total Units		**33**

The Planetary Science concentration is appropriate for students considering employment in scientific data analysis or postgraduate studies in the field. This concentration combines physics with astronomy and astrophysics as well as necessary background in geology in preparation for employment or advanced degrees. Course requirements in geography build skills in analysis of mapping and remote sensing data.

Code	Title	Units
Additional Physics and Astronomy Content Requirements		
ASTR 261	INTRODUCTION TO ASTROPHYSICS	4
ASTR 371	PLANETARY ASTRONOMY	3
Additional Non-Physics Content Requirements		
COSC 175	GEN COMPUTER SCI	4
CHEM 131 & 131L	GENERAL CHEMISTRY I LECTURE and GENERAL CHEMISTRY I LABORATORY	4
GEOL 121	PHYSICAL GEOLOGY	4
GEOL 331	MINERALOGY	4
GEOL 333	PETROLOGY OF IGNEOUS AND METAMORPHIC ROCKS	4
GEOG 221	INTRODUCTION TO GEOSPATIAL TECHNOLOGY	3
GEOG 321	INTRODUCTION TO REMOTE SENSING AND PHOTOGRAMMETRY	3
ELECTIVES	300-or 400- level from ASTR, PHYS, CHEM, GEOG, or GEOL	15
Total Units		**48**

Four-Year Plan of Study

Sample Four-Year Plan

The selected course sequence below is an example of the simplest path to degree completion. Based on course schedules, student needs, and student choice, individual plans may vary. Students should consult with their adviser to make the most appropriate elective choices and to ensure that they have completed the required number of units (120) to graduate.

Freshman			
Term 1	**Units**	**Term 2**	**Units**
PHYS 185	1	PHYS 241 (Core 7)	4
CHEM 131	3	GEOL 121	4
CHEM 131L	1	Elective	3
MATH 273 (Core 3)	4	Core 2 (or Core 1)	3
Core 1 (or Core 2)	3		
Elective	3		
	15		**14**
Sophomore			
Term 1	**Units**	**Term 2**	**Units**
COSC 175	4	PHYS 242	4
MATH 274	4	GEOG 221	3
GEOL 331	4	Elective	3
Core 4	3	Core 5	3
		Core 6	3
	15		**16**
Junior			
Term 1	**Units**	**Term 2**	**Units**
ASTR 261	4	ASTR 385	1
PHYS 305	4	PHYS 243	4
Elective	3	GEOG 321	3
Core 9	3	Core 10	3

		Core 11	3
	14		**14**
Senior			
Term 1	**Units**	**Term 2**	**Units**
ASTR 371	3	GEOL 333	4
PHYS 311	3	Elective	3
PHYS 341	3	Elective	3
PHYS 486	1	Core 13	3
Elective	3	Core 14	3
Core 12	3		
	16		**16**
Total Units 120			

Learning Outcomes

The IP program has two overarching student learning outcomes. Upon successful completion of the degree, students in all IP concentrations will be able to:

1. Demonstrate an understanding of fundamental principles of physics and major concepts in a student's chosen concentration and be able to apply these principles to solve quantitative problems.
2. Communicate scientific information effectively in both oral and written formats.
3. Demonstrate an understanding of the interdisciplinary nature of scientific research and theory as they apply to the fields of astronomy, geology, and physics.