MAJOR IN PHYSICS

ILLINOIS
Physics
GRAINGER COLLEGE OF ENGINEERING

Degree: Bachelor of Science in Physics
College: Grainger Engineering
Minimum hours required for graduation: 128

The Illinois Physics undergraduate program provides you with outstanding opportunities to explore modern scientific mysteries. As a physics major at Illinois, you will develop a deep conceptual and mathematical understanding of the world. Our flexible program is designed to prepare you for a wide range of fulfilling careers or post-graduate paths.

Our curriculum provides a rigorous foundation in physics, mathematics, and laboratory technique. Your selected program track will allow you to fine-tune your individual program of study to suit your interests and career goals. Students may select from a list of preapproved tracks or design a custom track subject to departmental approval.

Whether you plan to enter the private sector, become a teacher, or continue your education through graduate study, a Bachelor of Science in Physics from the University of Illinois Urbana-Champaign can help you meet your goals.

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Senior Academic Advisor

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HOURS	DEGREE REQUIREMENTS FOR THE BACHELOR OF SCIENCE IN PHYSICS
1	**Orientation and Professional Development**
1	ENG 100 – Engineering Orientation *or (for transfer students)* ENG 300 Engineering Transfer Orientation
0	PHYS 110 – Physics Careers

12	Physics Technical Core
2	PHYS 225 – Relativity & Math Applications
3	PHYS 325 – Classical Mechanics I
3	PHYS 435 – Electromagnetic Fields I
4	PHYS 486 – Quantum Mechanics I *or* PHYS 485 – Atomic Physics & Quantum Theory

40 to 41	Foundational Mathematics and Science
4	MATH 221 – Calculus I *or* MATH 220 Calculus[1]
3	MATH 231 – Calculus II
4	MATH 241 – Calculus III
3	MATH 257 – Linear Algebra with Computational Applications
3	MATH 285 – Intro Differential Equations (*May be replaced by both MATH 441 and MATH 442.*)
4	PHYS 211 – University Physics: Mechanics
4	PHYS 212 – University Physics: Electricity & Magnetism
2	PHYS 213 – University Physics: Thermal Physics
2	PHYS 214 – University Physics: Quantum Physics
3	CHEM 102 – General Chemistry I
1	CHEM 103 – General Chemistry Lab I
3	CS 101 – Intro Computing: Engineering & Sciences *or* CS 124 – Intro to Computer Science I

6 to 8	Flexible Physics Core Electives	3 to 10	Physics Lab Electives
Choose at least 2 courses and a minimum of 6 hours.		***Select 1 lab. Graduate Study Track students choose 2 labs.***	
2	PHYS 246 – Physics on the Silicon Prairie: An Inro to Modern Computational Physics	3	PHYS 371 – Project Design and Execution in a Physics Context
3	PHYS 326 – Classical Mechanics II	3	PHYS 401 – Classical Physics Lab
3	PHYS 370 – Intro to Quantum Information and Computing	4	PHYS 402 – Light
4	PHYS 427 – Thermal & Statistical Physics	5	PHYS 403 – Modern Experimental Physics
3	PHYS 436 – Electromagnetic Fields II	5	PHYS 404 – Electronic Circuits
3	PHYS 446 – Modern Computational Physics		
4	PHYS 460 – Condensed Matter Physics		
4	PHYS 470 – Subatomic Physics		
4	PHYS 487 – Quantum Physics II		

49-57	Program Track Requirements plus Free Electives
In consultation with the academic advisor, you will select your Program Track, a minimum of 12 credit hours of technical or professional courses covering a cohesive body of knowledge in line with your professional goals. Physics courses used to satisfy the Flexible Physics Core Electives and Physics Lab Electives may not be used to satisfy the Program Track requirements, except in the Graduate Study Track. Also note restrictions to free electives for Grainger Engineering students.	

128	Total Required Credit Hours to Graduate

[1]*MATH 220* is appropriate for students with no background in calculus. Four of the five credit hours count toward the degree.

SUGGESTED SEQUENCE FOR PHYSICS MAJORS

FALL SEMESTER	HOURS	SPRING SEMESTER	HOURS
Freshman Year	***15–16***	***Freshman Year***	***16–17***
PHYS 110 – Physics Careers	0	CS 101 – Intro Computing *or* CS 124 – Intro to Computer Science I	3
ENG 100 - Engineering Orientation (or ENG 300)	1	MATH 231 – Calculus II	3
MATH 221 (or 220) – Calculus I *Note: Math 220 is appropriate for students with no background in calculus; only 4 of 5 credit hours count toward degree.*	4	PHYS 211 – University Physics: Mechanics	4
CHEM 102 – General Chemistry 1	3	Gen Ed *or* RHET 105 – Writing and Research	3–4
CHEM 103 – General Chemistry Lab 1	1	Gen Ed Elective	3
Gen Ed *or* RHET 105 – Writing and Research	3–4		
Gen Ed Elective	3		
Sophomore Year	***15***	***Sophomore Year***	***16***
MATH 241 – Calculus III	4	MATH 285 – Intro Diff Equations (*or* both MATH 441 and Math 442)	3
PHYS 212 – University Physics: Electricity & Magnetism	4	PHYS 213 – University Physics: Thermal Physics	2
PHYS 225 – Relativity & Math Applications	2	PHYS 214 – University Physics: Quantum Physics	2
Track Elective	2	PHYS 325 – Classical Mechanics I	3
Gen Ed Elective	3	Track Elective	3
		Free Elective	3
Junior Year	***17***	***Junior Year***	***15–16***
MATH 257 – Linear Algebra with Computational Applications	3	PHYS 485 – Atomic Phys & Quantum Theory *or* PHYS 486 – Quantum Mechanics I	3–4
PHYS 435 – Electromagnetic Fields I	3	Track Electives	8
Track Elective	8	Free Electives	4
Free Elective	3		
Senior Year	***16***	***Senior Year***	***16***
Track Elective	4	Track Elective	4
Free Electives	12	Free Electives	12