

MAJOR IN ENGINEERING PHYSICS

University of Illinois at Urbana-Champaign

Degree: Bachelor of Science in Engineering Physics

College: Engineering

Minimum hours required for graduation: 128

Engineering Physics is the premier physics curriculum for students at the University of Illinois at Urbana-Champaign. It combines a rigorous foundation in physics, mathematics, and laboratory expertise with the freedom to choose from a diverse range of technical options.

Flexible Physics Core Electives options are typically selected in the sophomore or junior year in consultation with the undergraduate academic advisor. These elective courses enable students to customize their program of study and to develop core competencies that match their ambitions. The Engineering Physics major offers several technical elective options, including Biophysics, Business, Computer Engineering, Energy/Sustainability, Materials Science, Nuclear Physics, Professional Physics, and Solid-State Electronics. Students also have room in their schedules for elective options that enable the pursuit of other intellectual subjects of particular interest to them.

Engineering Physics is the recommended program for students planning to pursue a doctoral degree in physics or an allied field. This program also prepares students to enter the workforce in science, engineering, or other fields such as quantitative finance, consulting, data science, and computer programming immediately after graduation. The combination of foundational science with analytical, teamwork, and communication skills developed in this program are in high demand by employers across the job market.

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Engineering Physics Curriculum

Hours	Requirements
27	Fixed Physics Core
	ENG 100 – Engineering Orientation ¹
	PHYS 110 – Physics Careers
	PHYS 211 – University Physics (Mechanics)
	PHYS 212 – University Physics (Electricity & Magnetism)
	PHYS 213 – University Physics (Thermal Physics)
	PHYS 214 – University Physics (Quantum Physics)
	PHYS 225 – Relativity & Math Applications
	PHYS 325 – Classical Mechanics I
	PHYS 435 – Electromagnetic Fields I
	PHYS 486 – Quantum Mechanics I or PHYS 485 – Atomic Physics & Quantum Theory

9-15	Flexible Physics Core Electives (<i>Choose 3 courses including at least one from list B.</i>)	
	List A	List B (lab courses)
	PHYS 326 – Mechanics & Relativity II	PHYS 401 – Classical Physics Lab
	PHYS 427 – Thermo & Statistical Physics	PHYS 402 – Light
	PHYS 436 – Electromagnetic Fields II	PHYS 403 – Modern Experimental Physics
	PHYS 460 – Condensed Matter Physics	PHYS 404 – Electronic Circuits I
	PHYS 470 – Subatomic Physics	
	PHYS 475 – Biological Physics	
	PHYS 487 – Quantum Physics II	

21	Supporting Technical Courses
	MATH 221 – Calculus I ²
	MATH 231 – Calculus II
	MATH 241 – Calculus III
	MATH 285 – Intro Differential Equations
	MATH elective (<i>See list of qualifying math electives on Illinois Physics website.</i>)
	CHEM 102 – General Chemistry I
	CHEM 103 – General Chemistry Lab I
	CS 101 – Intro Computing: Engineering & Sciences

12-27	Department-Approved Technical/Professional Options		
	Acoustical Physics	Computational Physics	Optical Physics
	Astrophysics	Computer Engineering	Professional Physics
	Atmospheric Science	Energy/Sustainability	Solid State Electronics
	Biophysics	Materials Science	Pre-Med
	Business	Nuclear Physics	Pre-Law

¹Off-campus transfer students take ENG 300 – Engineering Transfer Orientation instead.

²MATH 220 may be substituted and is appropriate for students with no background in calculus.