

# Major: Engineering Physics

Accredited by ABET (see inside front cover.)

Offered by: School of Applied and Engineering Physics

212 Clark Hall, 255-5198, [www.aep.cornell.edu](http://www.aep.cornell.edu)

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## Program objectives.

The objectives for the Major in Engineering Physics are to:

1. Provide for our students adequate education in math and physics that they have a basis for a complete understanding of current and future scientific and technological developments.
2. Ensure, through a set of several elective classes, the necessary flexibility for various career objectives, i.e., (1) immediate employment with the B.S. degree, (2) background for entering professional graduate schools like law or medicine or, (3) the appropriate background for Ph.D. graduate work in science and/or engineering.
3. Include throughout the undergraduate program hands-on experience in laboratory as well as design, computational, and research problems.
4. Provide an environment characterized by the highest academic and ethical standards that instills pride in these standards and the program in general.

## Introduction to Engineering Course (recommended)

ENGR1 110 Lasers and Photonics

or

ENGR1 102 Introduction to Nanoscience and Nanoengineering

## Engineering Distributions (recommended)

ENGRD 252 Physics of Life

ENGRD 264 Computer-Instrumentation Design (recommended but not required)

ENGRD XYZ Chose from the list of engineering distribution courses; A&EP 333 may count as the second engineering distribution course for EP majors

## Required Major Courses

A&EP 321-322 Mathematical Physics I and II (MATH 321-422 may be substituted)

A&EP 333 Mechanics of Particles and Solid Bodies (counts as third engineering distribution course)

A&EP 355 Intermediate Electromagnetism

A&EP 356 Intermediate Electrodynamics

A&EP 361 Electronic Circuits (Laboratory)

A&EP 423 Statistical Thermodynamics

A&EP 434 Continuum Physics (Laboratory)

PHYS 410§ Advanced Experimental Physics (Laboratory)

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§Two of the 4 credits of PHYS 410 can be satisfied by successfully completing A&EP/PHYS 330. The remaining 2 credits can be satisfied by taking PHYS 400 for 2 credits provided that the experiments in PHYS 400 do not overlap those in A&EP/PHYS 330. (A list of experiments that are not appropriate will be prepared by A&EP faculty and made available in the A&EP office.) If a student chooses this option, A&EP/PHYS 330 may also count as a technical elective, provided the remaining three technical electives are 4 credits each.



## Engineering Physics Major Checklist

	<i>Min.</i> <i>Credit Hours</i>	<i>✓ When Done</i>
MATH 191 (or 190)	4	n
MATH 192	4	n
MATH 293	4	n
MATH 294	4	n
CHEM 211 (or 207 or 215)	4	n
PHYS 112 (or 116)	4	n
PHYS 213 (or 217)	4	n
PHYS 214 (or 218)	4	n
COM S 100	4	n
Intro. to Engr.: ENGR 110 (recommended)	3	n
Engr. Dist. 1: ENGRD 264 (recommended)	3	n
Engr. Dist. 2: A&EP 333 (recommended)§	3	n
First-Year Writing Seminar 1†	3	n
First-Year Writing Seminar 2	3	n
Liberal Studies Distribution—6 courses (18-credit minimum)‡		
Lib. Studies 1		n
Lib. Studies 2		n
Lib. Studies 3		n
Lib. Studies 4		n
Lib. Studies 5		n
Lib. Studies 6		n
Approved Elective (2 courses; 6-credit minimum)		n
Approved Elective		n
Physical Education (2 semesters) and swim test		
<b>Required Major Courses (58-credit minimum)‡</b>		
A&EP 321 or MATH 321	4	n
A&EP 322 or MATH 422	4	n
A&EP 333§	4	n
A&EP 355	4	n
A&EP 356	4	n
A&EP 361	4	n
A&EP 363	4	n
A&EP 423	4	n
A&EP 434	4	n
PHYS 410**	4	n
Major-Approved Elective	3	n
Major-Approved Elective	3	n
Major-Approved Elective	3	n
Major-Approved Elective	3	n
Major-Approved Elective	3	n
Major-Approved Elective	3	n
(Six (6) Major-approved electives, five (5) of which must be technical)		n
Total Required Credits	127 min.	_____
Additional Elective Courses (0 credits min., no max.)		n
†Technical Writing Course: ENGRD 264 (rec.)		n

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†In addition to the first-year writing seminars, a technical writing course must be taken as an engineering distribution, liberal studies, approved elective or major course. (ENGRD 264 satisfies this requirement.)

‡Approved courses must be chosen from at least three of the following six groups: (1) Cultural Analysis (CA), (2) Historical Analysis (HA), (3) Literature and the Arts (LA), (4) Knowledge, Cognition, and Moral Reasoning (KCM), (5) Social and Behavioral Analysis (SBA), (6) Foreign Languages (not literature courses). At least two courses must be from the first three groups (CA, HA, LA). At least two of the six courses must be at 200-level or higher.

#Nine credits of major-complementary courses must be outside the Major.

§A&EP 333 may simultaneously satisfy major and distribution requirements. In this case, the total number of credits required for the degree is 130.

\*\*Two of the 4 credits of PHYS 410 can be satisfied by successfully completing A&EP/PHYS 330. The remaining 2 credits can be satisfied by taking PHYS 400 for 2 credits provided that the experiments in PHYS 400 do not overlap with those in A&EP/PHYS 330. (A list of experiments that are not appropriate will be prepared by A&EP faculty and made available in the A&EP office.) If a student chooses this option, A&EP/PHYS 330 may also count as a technical elective, provided the remaining three technical electives are 4 credits each.