BS in Engineering Physics

Program Codes:
20FQ0121BS

Degree Requirements

To earn a Bachelor of Science in Engineering Physics degree from UIC, students need to complete university and college degree requirements. The course requirements for this program are outlined below. Students should consult the *College of Engineering* section for additional degree requirements and college academic policies. See the ECE Department website for revisions to the Engineering Physics curriculum.

Code	Title	Hours
Summary of Requirements		
Nonengineering and General Education Requirements		72
Required in the College of Engineering		44
Mathematics-Related Elective		3
Technical Electives		9
Total Hours		**128**

Nonengineering and General Education Requirements

Code	Title	Hours
Required Courses		
ENGL 160	Academic Writing I: Writing in Academic and Public Contexts	3
ENGL 161	Academic Writing II: Writing for Inquiry and Research	3
Exploring World Cultures course [a]		3
Understanding the Creative Arts course [a]		3
Understanding the Past course [a]		3
Understanding the Individual and Society course [a]		3
Understanding U.S. Society course [a]		3
MATH 180	Calculus I [b]	4
MATH 181	Calculus II [b]	4
MATH 210	Calculus III [b]	3
MATH 220	Introduction to Differential Equations	3
PHYS 141	General Physics I (Mechanics) [b]	4
PHYS 142	General Physics II (Electricity and Magnetism) [b]	4
PHYS 215	Computational and Mathematical Methods for the Physical Sciences	4
PHYS 240	Fundamentals of Modern Quantum Theory	3
PHYS 245	Introduction to Vibrations, Waves, and Thermal Physics	4
PHYS 411	Quantum Mechanics I	4
PHYS 441	Theoretical Mechanics	4
PHYS 481	Modern Experimental Physics I	4
PHYS 499	Survey of Physics Problems	1
CHEM 122	Matter and Energy [c]	3
CHEM 123	Foundations of Chemical Inquiry I [b,c]	2
Total Hours		**72**

a *Students should consult the General Education section of the catalog for a list of approved courses in this category.*

b *This course is approved for the Analyzing the Natural World General Education category.*

c *General Education credit is given for successful completion of both CHEM 122 and CHEM 123.*

Required in the College of Engineering

Code	Title	Hours
Required Courses		
ENGR 100	Engineering Orientation [a]	1
CME 260	Properties of Materials	3
CS 107	Introduction to Computing and Programming	4
ECE 115	Introduction to Electrical and Computer Engineering	4
ECE 225	Circuit Analysis	4
ECE 310	Discrete and Continuous Signals and Systems	3
ECE 322	Introduction to Electromagnetics and Applications	4
ECE 346	Solid State Device Theory	4
ECE 421	Introduction to Antennas and Wireless Propagation	3
ECE 440	Nanoelectronics	3
ECE 396	Senior Design I	2
ECE 397	Senior Design II	2
BIOE/PHYS 450	Molecular Biophysics of the Cell	4
ME 211	Fluid Mechanics I	4
ECE 499	Professional Development Seminar	0
Total Hours		**44**

a *ENGR 100 is a one-semester-hour course, but the hour does not count toward the total hours required for graduation.*

Mathematics-Related Elective

Code	Title	Hours
Courses		
Select one of the following:		**3**
MATH 310	Applied Linear Algebra	
MATH 417	Complex Analysis with Applications	
MATH 480	Applied Differential Equations	
MATH 481	Applied Partial Differential Equations	
MCS 471	Numerical Analysis	
ECE 341	Probability and Random Processes for Engineers	
Total Hours		**3**

Technical Electives

Code	Title	Hours
Courses		
Select 9 semester hours from a list of technical electives available from the advisor. At most, one 200-level course can be used as a technical elective if said course meets the following two criteria: (a) it is a prerequisite for a 300-level or higher course, and (b) it is outside the ECE or PHYS department. These courses should be selected in consultation with the advisor and should be chosen from approved sequences in the following areas. In addition, at most, one course from outside of the major rubric (ECE or PHYS) may be used to meet the technical elective requirement. [a]		9
Bioengineering		
Civil and Materials Engineering		
Chemical Engineering Design		
Chemical Engineering, Multiphase Transport Phenomena		
Chemical Engineering, Chemical Processes		
Computer Science		
Electrical and Computer Engineering, Circuits and VLSI		
Electrical and Computer Engineering, Communications and Signal and Processing		
Electrical and Computer Engineering, Solid State, MEMS, and Nanotechnology		
Electromagnetics and Optics		
Mechanical Engineering, Thermal/Fluid Science		
Mechanical Engineering, Mechanical Systems		
Modern Physics		
Total Hours		**9**

a *Students preparing for the Fundamentals of Engineering Examination, which leads to becoming a Licensed Professional Engineer, are advised to take CME 201 and one of the following courses: CME 203, CME 260, or ME 211.*

Sample Course Schedule

Course	Title	Hours
Freshman Year		
First Semester		
MATH 180	Calculus I	4
CHEM 122	Matter and Energy	3
CHEM 123	Foundations of Chemical Inquiry I	2
ENGL 160	Academic Writing I: Writing in Academic and Public Contexts	3
General Education Core course		3
ENGR 100	Engineering Orientation [a]	1
	Hours	**15**
Second Semester		
ECE 115	Introduction to Electrical and Computer Engineering	4
MATH 181	Calculus II	4
PHYS 141	General Physics I (Mechanics)	4
ENGL 161	Academic Writing II: Writing for Inquiry and Research	3
	Hours	**15**
Sophomore Year		
First Semester		
MATH 210	Calculus III	3
PHYS 142	General Physics II (Electricity and Magnetism)	4
CME 260	Properties of Materials	3
CS 107	Introduction to Computing and Programming	4
General Education Core course		3
	Hours	**17**
Second Semester		
MATH 220	Introduction to Differential Equations	3
PHYS 215	Computational and Mathematical Methods for the Physical Sciences	4
PHYS 240	Fundamentals of Modern Quantum Theory	3
PHYS 245	Introduction to Vibrations, Waves, and Thermal Physics	4
General Education Core course		3
	Hours	**17**
Junior Year		
First Semester		
ECE 225	Circuit Analysis	4
ECE 346	Solid State Device Theory	4
ME 211	Fluid Mechanics I	4
Mathematics Elective		3
	Hours	**15**
Second Semester		
ECE 310	Discrete and Continuous Signals and Systems	3
BIOE 450 or PHYS 450	Molecular Biophysics of the Cell or Molecular Biophysics of the Cell	4
PHYS 441	Theoretical Mechanics	4
PHYS 481	Modern Experimental Physics I	4
PHYS 499	Survey of Physics Problems	1
	Hours	**16**
Senior Year		
First Semester		
PHYS 411	Quantum Mechanics I	4
ECE 322	Introduction to Electromagnetics and Applications	4
ECE 396	Senior Design I	2
Technical Elective		3
General Education Core course		3
	Hours	**16**
Second Semester		
ECE 440	Nanoelectronics	3
Technical Elective		3
Technical Elective		3

ECE 421	Introduction to Antennas and Wireless Propagation	3
ECE 397	Senior Design II	2
General Education Core course		3
	Hours	**17**
	Total Hours	**128**

a *ENGR 100 is one-semester-hour course, but does not count toward the total hours required for graduation.*