

ELECTRICAL AND COMPUTER ENGINEERING DEPARTMENT

Engineering Physics Major
(128 Semester Hours)

9/12/2019 ER

REQUIRED COURSES WITHIN THE ENGINEERING COLLEGE

COURSE TITLE NUMBER OFF. HRS. PREREQUISITES

Engineering Physics Core Courses(44 hrs)

Engineering Orientation*a	ENGR 100		0	Admission to the College of Engineering
Properties of Materials	CME 260		3	CHEM 112 and MATH 181 and PHYS 141
Introduction to Computing and Programming	CS 107		4	Credit or concurrent registration in MATH 180
Introduction to Electrical and Computer Eng.	ECE 115	F,Sp	4	Credit or concurrent registration in MATH 180; or grade C or better in MATH 165
Circuit Analysis	ECE 225	F,Sp	4	Credit or concurrent.reg. in MATH 220; and grade C or better in PHYS 142 and ECE 115
Discrete and Continuous Signals and Systems	ECE 310	F,Sp	3	MATH 220; & credit or concurrent registration in ECE 225; ECE 210 for non ECE students)
Solid-State Device Theory	ECE 346	F,Sp	4	MATH 220, grade C or better in ECE 115, and a grade C or better in PHYS 142
Senior Design I	ECE 396	F,Sp	2	ENGL 161; and senior standing
Senior Design II	ECE 397	F,Sp	2	ECE 396
Nanoelectronics	ECE 440	F	3	ECE 346; or consent of the instructor
Molecular Biophysics of the Cell	Bioe/Phys 450		4	PHYS 245; or the equivalent; or approval of the department
Fluid Mechanics	ME 211		4	PHYS 141 abd MATH 220
Professional Development Seminar	ECE 499	F,Sp	0	Open only to seniors; and approval of the department. Must be taken in the students's last semester of study.

Select one of the following two-course sequences:

Introduction to Electromagnetics and Applications	ECE 322	F,Sp	4	ECE 225
& Introduction to Antennas and Wireless Propagation	ECE 421	F	3	ECE 225 and ECE 322

Electromagnetism I	PHYS 401		4	PHYS 215 & MATH 220; or approval of the department
& Electromagnetism II	PHYS 402		4	PHYS 230 & PHYS 401; or approval of the department

Technical Electives(9 hrs)

Select 9 semester hours from a list of technical electives available from the advisor. These courses should be selected in consultation with the advisor and should be chosen from approved sequences in the following areas:

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

Students preparing for the Fundamentals of Engineering Examination, which leads to becoming a Licensed Professional Engineer, are advised to take:

1) CME 201 Statics; and

2) in addition, one of the following:

- a) CME 203 Strength of Materials
- b) CME 260 Properties of Materials
- c) ME 211 Fluid Mechanics I

NONENGINEERING AND GENERAL EDUCATION REQUIREMENTS(72 hrs)

COURSE TITLE	NUMBER	HRS.	PREREQUISITES
Academic Writing I:WAPC	ENGL 160	3	Performance on Dept. Placement Test
Academic Writing II:WIR	ENGL 161	3	ENGL 160 or the equivalent
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 US Society course*a		3	
Calculus I*b	MATH 180	4	C or better in MATH 121 or app. perf. on the dept. pl. test
Calculus II*b	MATH 181	4	C or better in MATH 180
Calculus III*b	MATH 210	3	C or better in MATH 181
Introduction to Differential Equations I	MATH 220	3	C or better in MATH 210
General Physics I (Mechanics)*b	PHYS 141	4	C or better or concurrent registration in MATH 180; or approval of the department; and C or better in PHYS 100 or adequate performance on the departmental placement test
			and C or better in PHYS 100 or adequate performance on the departmental placement test.
General Physics II (Electricity & Magnetism)*b	PHYS 142	4	Grade C or better in MATH 181 & grade of C or better in PHYS 141 or consent of the instructor
Computational and Mathematical Methods for the Physical Sciences	PHYS 215	4	Grade C or better in PHYS 142 or grade C or better in PHYS 107; & grade C or better in
			Math 181; & grade C or better or concurrent registration in MATH 210
Fundamentals of Modern Quantum Theory	PHYS 240	3	Grade C or better in MATH 181; & grade C or better in PHYS 142; or grade B or better in PHYS 107
Introduction to Vibrations, Waves, and Thermal Physics	PHYS 245	4	Grade C or better in MATH 181; & grade C or better in PHYS 142; or grade B or better in PHYS 107. Credit or concurrent registration in MATH 220
Quantum Mechanics	PHYS 411	4	PHYS 215, PHYS 240, PHYS 245; or approval of the department; background of MATH 220
Theoretical Mechanics	PHYS 441	4	PHYS 215 and PHYS 245; or approval of the department
Modern Experimental Physics I	PHYS 481	4	PHYS 240; or approval of the department
Survey of Physics Problems	PHYS 499	1	Grade C or better required to graduate with an undergraduate degree in Physics. Co-requisite(s): concurrent registration in PHYS 481
General Chemistry I Lecture*c	CHEM 122	4	Grade of C or better in CHEM 101 or adequate performance on the UIC Chemistry placement examination; and concurrent registration or grade C or better in CHEM 122
General Chemistry I Laboratory*b,*c	CHEM 123	1	Grade C or better in CHEM 101; and concurrent registration or grade C or better in CHEM 122

*a-Consult General Education section of the catalog for approved courses in this category; *b-Course 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.

Mathematics Elective (3 hrs)

Select one of the following:

Applied Linear Algebra	MATH 310	3	"C" or better in MATH 181
Complex Analysis with Applications	MATH 417	3	"C" or better in MATH 210
Applied Differential Equations	MATH 480	3	"C" or better in MATH 220
Applied Partial Differential Equations	MATH 481	3	"C" or better in MATH 220