

ELECTRICAL AND COMPUTER ENGINEERING DEPARTMENT

Engineering Physics Major
(128 Semester Hours)

3/19/2020 ER

REQUIRED COURSES WITHIN THE ENGINEERING COLLEGE

COURSE TITLE NUMBER OFF. HRS. PREREQUISITES

Engineering Physics Core Courses (44 hrs)

Orientation*a	ENGR 100		1	**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
Circuit Analysis	ECE 225	F,Sp	4	credit or concurrent.reg. in MATH 220; and C or better in PHYS 142 and ECE 115
Discrete and Continuous Signals and Systems	ECE 310	F,Sp	3	MATH 220; & cr. or conc. reg. in ECE 225; or cr. or conc. reg. in ECE 210
Introduction to Electromagnetics and Applications	ECE 322	F,Sp	4	ECE 225
Solid-State Device Theory	ECE 346	F,Sp	4	MATH 220, gr. of C or better in ECE 115, and a gr. of 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
& Introduction to Antennas and Wireless Propagation	ECE 421	F	3	ECE 225 and ECE 322
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 dept. Must be taken in the students's last semester of study.

Technical Electives (9 hrs)

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

- 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

^a 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

NONENGINEERING AND GENERAL EDUCATION REQUIREMENTS CONTINUED

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 dept; and C or better in PHYS 100; or adequate performance on the departmental placement test.
General Physics II (Electricity & Magnetism)* ^b	PHYS 142		4	Gr. of C or bett. in MATH 181&Gr. of C or bett. in PHYS 141 or consent of the instructor
Computational and Mathematical Methods for the Physical Sciences	PHYS 215		4	Grade of C or better in PHYS 142; or Grade of B or better in PHYS 107 or Grade of B or better in PHYS 132; and Grade of C or better in MATH 181 and Grade of C or better or concurrent registration in MATH 210.
Fundamentals of Modern Quantum Theory	PHYS 240		3	Grade of C or better in MATH 181; and Grade of C or better in PHYS 142; or Grade of B or better in PHYS 107 or Grade of B or better in PHYS 132 Physics majors (BA and BS) are required to register concurrently for PHYS 241.
Introduction to Vibrations, Waves, and Thermal Physics	PHYS 245		4	Grade of C or better in MATH 181; and Grade of C or better in PHYS 142; or Grade of B or better in PHYS 107 or Grade of B or better in PHYS 132.
Quantum Mechanics I	PHYS 411		4	PHYS 215, PHYS 240, PHYS 245; or approval of the department
Theoretical Mechanics	PHYS 441		4	PHYS 215 and Credit or concurrent registration in 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	Gr. of C or bet. Req. to grad. with an undergrad. degree in physics. Co-req.(s):Conc. Regist. 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 of C or better in CHEM 123
General Chemistry I Laboratory* ^{b,c}	CHEM 123		1	Gr. of C or bet. in CHEM 101; and concurrent registration or Gr. of C or bet. 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.

**ENGR100 is a one-semester-hour course, but does not count toward the total hours required for graduation

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 210
Applied Partial Differential Equations	MATH 481		3	"C" or better in MATH 220