

IUPUI School of Science – Bachelor of Science in Physics and Electrical Engineering

FIRST-YEAR EXPERIENCE

Windows on Science SCI I120
or Introduction to the Engineering Profession ENGR 195

1 cr. _____

(With permission another Learning Community may be substituted. Waived only for students who transfer in more than 18 credit hours.)

AREA I - COMMUNICATION

A. English Composition - 6 credits total
(grade of C or better in each course)

English Composition ENG W131 3 cr. _____

Written Comm. in Sci. & Industry TCM 320 3 cr. _____

B. Speech Communication - 3 credits total

Speech Communication COMM R110 3 cr. _____

AREA II - FOREIGN LANGUAGE - *not required*

AREA III - GENERAL REQUIREMENTS

A. Humanities, Social Sciences, & Comparative World Cultures
15 credits total

History of Western Civilization II H114 3 cr. _____

OR: Perspectives on the World H109 3 cr. _____

One course each from Lists H, S, and C (9 cr.):

(See School of Science Course List)

B. Junior/Senior Integrator – *not required*

Replace with general educ. course (3 cr.) _____

C. Physical Sciences – 18 credits total

Principles of Chemistry I CHEM C105 (3 cr.) _____

Experimental Chemistry I CHEM C125 (2 cr.) _____

Principles of Chemistry II CHEM C106 (3 cr.) _____

Experimental Chemistry II CHEM C126 (2 cr.) _____

* Linear Circuit Analysis I ECE 201 (3 cr.) _____

* Elec. Measurement Tech. ECE 207 (1 cr.) _____

* Linear Circuit Analysis II ECE 202 (3 cr.) _____

* Elec. Design & Devices Lab ECE 208 (1 cr.) _____

D. Mathematics & Computer Science – 28 credits total

Analytic Geom. & Calc. I MATH 165 (4 cr.) _____

Analytic Geom. & Calc. II MATH 166 (4 cr.) _____

Multidimensional Math. MATH 171 (3 cr.) _____

Multivariate Calculus MATH 261 (4 cr.) _____

Ordinary Differential Eqns. MATH 266 (3 cr.) _____

Probabilistic Methods in EE ECE 302 (3 cr.) _____

Elementary Linear Algebra MATH 351 (3 cr.) or

Linear Algebra with Apps MATH 511 (3 cr.) _____

Computing I CSCI 230 (4 cr.) _____

or the following two courses:

Intro. to Prog. Concepts ENGR 197 (2 cr.) _____

Advanced C Programming ECE 264 (2 cr.) _____

NOTE: Students must have grades of C– or higher in Area IIID. A grade of D or D+ will be allowed for one course only.

AREA IV - MAJOR COURSES

A. Physics – 32 credits total

Mechanics PHYS 152 (4 cr.) _____

Heat, Electricity, & Optics PHYS 251 (5 cr.) _____

Intermediate Mechanics PHYS 310 (4 cr.) _____

Intermediate E & M PHYS 330 (3 cr.) _____

Modern Physics PHYS 342 (3 cr.) _____

Electronics Laboratory PHYS 353 (2 cr.) _____

Physical Optics PHYS 400 (3 cr.) _____

Physical Optics Lab PHYS 401 (2 cr.) _____

Thermal Physics PHYS 416 (3 cr.) _____

Quantum Mechanics PHYS 442 (3 cr.) _____

B. Electrical Engineering – 36 credits total

Computer Tools for Engr. ENGR 297 (1 cr.) _____

Intro. to Analysis & Design ECE 255 (3 cr.) _____

Digital Logic Design w/ lab ECE 270 (4 cr.) _____

Signals and Systems ECE 301 (3 cr.) _____

Microprocessor Systems ECE 362 (4 cr.) _____

Feedback System Analysis ECE 382 (3 cr.) _____

Senior Seminar ECE 400 (1 cr.) _____

Ethics ECE 401 (1 cr.) _____

Transmission of Info. ECE 440 (4 cr.) _____

ECE Electives (9 cr.) _____

Capstone Experience: satisfied by

Senior Design ECE 492 (3 cr.) _____

A minimum of 139 credits must be completed for graduation. Residence of at least two semesters at the IUPUI campus is also required for graduation.

B.S. in Physics and Electrical Engineering Sample Program (Minimum 139 cr. required)

FRESHMAN YEAR

First Semester

SCI I120 Windows on Science	
<i>or</i> ENGR 195 Introduction to the Engineering Profession	1
CHEM C105 Principles of Chemistry I	3
CHEM C125 Experimental Chemistry I	2
MATH 165 Analytic Geometry and Calculus I	4
MATH 171 Multidimensional Mathematics	3
ENG W131 Elementary Composition I	3
Total	16

Second Semester

PHYS 152 Mechanics	4
CHEM C106 Principles of Chemistry II	3
CHEM C126 Experimental Chemistry II	2
MATH 166 Analytic Geometry and Calculus II	4
One course from List H, S, or C	3
Total	16

Summer 1 Term

HIST H114 History of Western Civilization II	3
Total	3

Summer 2 Term

One course from remaining two Lists H, S, or C	3
Total	3

SOPHOMORE YEAR

Third Semester

PHYS 251 Heat, Electricity, and Optics	5
MATH 261 Multivariate Calculus	4
CSCI 230 Computing I	4
ECE 201 Linear Circuit Analysis I	3
ECE 207 Electronic Measurement Techniques	1
ENGR 297 Computer Tools for Engineering	1
Total	18

Fourth Semester

PHYS 342 Modern Physics	3
MATH 266 Ordinary Differential Equations	3
ECE 202 Circuit Analysis II	3
ECE 208 Electronic Design and Devices Lab	1
ECE 270 Digital Logic with lab	4
ECE 255 Introduction to Electronic Analysis and Design	3
Total	17

JUNIOR YEAR

Fifth Semester

PHYS 310 Intermediate Mechanics	4
MATH 351 Elementary Linear Algebra	
<i>or</i> MATH 511 Linear Algebra with Applications	3
ECE 301 Signals and Systems	3
ECE 362 Microprocessor Systems and Interfacing	4
One course from remaining List H, S, or C	3
Total	17

Sixth Semester

PHYS 330 Intermediate Electricity and Magnetism	3
PHYS 353 Electronics Laboratory	2
ECE 302 Probabilistic Methods in Electrical Engineering	3
ECE 382 Feedback System Analysis	3
TCM 320 Written Communication in Science and Industry	3
General Education Elective	3
Total	17

SENIOR YEAR

Seventh Semester

PHYS 400 Physical Optics	3
PHYS 401 Physical Optics Laboratory	2
PHYS 442 Quantum Mechanics	3
ECE 400 Senior Seminar	1
ECE 440 Introduction to Comm. Systems Analysis	4
ECE Elective	3
Total	16

Eighth Semester

PHYS 416 Thermal Physics	3
ECE 401 Ethics	1
ECE 492 Senior Design	3
ECE Elective	3
ECE Elective	3
COMM R110 Fundamentals of Speech Communication	3
CAND 991 Candidate for Graduation	0
Total	16

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