

Engineering Physics

Sample Curriculum for Chemical Engineering Specialization

Student Information

Name: _____ OSU Email: _____

Suggested Curriculum

This should be used as a **guide** only. Semester offerings are subject to change.

Year	Autumn	Spring
1	___ Physics 1270 ¹ (<i>Intro Physics I</i>) 5 hr ___ Math 1151 (<i>Calculus I</i>) 5 hr ___ Engineering 1181 (<i>Intro Engineering I</i>) 2 hr ___ Engineering 1100 (<i>Engineering Survey</i>) 1 hr ___ Writing & Info Literacy GE 3 hr	___ Physics 1271 ¹ (<i>Intro Physics II</i>)..... 5 hr ___ Math 1172 (<i>Eng Mathematics A</i>)..... 5 hr ___ Engineering 1182 (<i>Intro Engineering II</i>)..... 2 hr ___ Chemistry 1210 (<i>General Chemistry I</i>)..... 5 hr ___ GenEd 1201 ³ 1 hr
2	___ Physics 2300 (<i>Mechanics I</i>)..... 4 hr ___ Physics 2095 (<i>Physics Seminar</i>)..... 1 hr ___ Math 2173 (<i>Eng Mathematics B</i>)..... 3 hr ___ Physics 3700 (<i>Data Analysis Lab</i>)..... 3 hr ___ CBE 2200 (<i>Process Fundamentals</i>)..... 3 hr ___ CSE 1222 ² (<i>C++ Programming</i>)..... 3 hr	___ Physics 2301 (<i>Mechanics II</i>)..... 4 hr ___ Math 2174 ⁴ (<i>Differential Eq./Linear Algebra</i>)..... 3 hr ___ CBE Elective 3 hr ___ Social and Behavioral Sciences GE 3 hr ___ Historical and Cultural Studies GE 3 hr
3	___ Physics 5500 (<i>Quantum Mechanics</i>)..... 4 hr ___ CBE Elective 3 hr ___ CBE Elective 3 hr ___ CBE Elective 3 hr ___ Literary, Visual and Performing Arts GE 3 hr	___ Physics 5400 (<i>Electromagnetism</i>)..... 4 hr ___ Physics 4700 (<i>Electronics Lab</i>)..... 3 hr ___ CBE Elective 3 hr ___ Targeted Elective ⁶ 3 hr ___ Race, Ethnicity, Gender Diversity GE 3 hr
4	___ Physics 5800 ⁸ (<i>Eng Phy Capstone I</i>)..... 3 hr ___ CBE Elective 3 hr ___ CBE Elective 3 hr ___ Targeted Elective ⁶ 3 hr ___ Citizenship Theme GE ⁷ 4 hr	___ Physics 5801 ⁸ (<i>Eng Phy Capstone II</i>)..... 3 hr ___ CBE Elective 3 hr ___ Targeted Elective ⁶ 3 hr ___ Physics Elective ⁵ 4 hr ___ Student Choice Theme GE ⁷ 4 hr

Total Hours to complete the degree program = 131; Courses printed in **bold** are taught only during the term shown.

¹ Students can take Physics 1250-1251, 1250H-1251H, 1260-1261, or 1270-1271

² Students can take CSE 1222, CSE 1223, CSE 1224, Engr 1221, Astronomy 1221, or Engr 1281H as their programming course

³ GenEd 1201 must be taken within the first three semesters

⁴ Or (Math 2415 and 2568) or (Math 2255 and 2568) or (Math 5520H) can be completed in place of Math 2174. Those pursuing the ECE concentration should take Math 2415 and 2568.

⁵ Physics Elective options are Physics 3470, 5300, 5401H, 5501, 5600, 5680, and 5810

⁶ A list of Targeted Electives options is available at go.osu.edu/targeted-electives

⁶⁷ Take either two 3-credit hour classes or one 4-credit hour class for each of the two GE Thematic Pathways requirements. If two 3-hour courses are taken, they must be from different subjects.

⁸ Students can take the College of Engineering Multidisciplinary Capstone Design sequence, Engineering 5901.01-5902.01 in place of Physics 5800-5801. Enrollment in ENGR 5901.01 requires approval. More information about ENGR 5901.01, including the

enrollment request details, can be found on the [Department of Engineering Education website](#).

Engineering Specializations

Engineering Physics students are required to take at least 27 hours from one of the following engineering specializations.

Note: this document outlines the requirements for the **Chemical Engineering** specialization.

Aerospace Engineering
Chemical Engineering
Computer Science & Engineering
Electrical Engineering
Industrial & Systems Engineering
Materials Science & Engineering
Mechanical Engineering
Nuclear Engineering

Requirements for each specialization can be found below and at physics.osu.edu/engineering-physics-program/engineering-physics-degree-requirements

Chemical Engineering Specialization

Required course (3 hours)

Course	Course title	Credits	Term	Prerequisites
CBE 2200	Process Fundamentals	3	Au, Sp	Chem 1210, and Engr 1181 or 1281H. Concur: Math 1172

Electives courses (choose 24 hours)

Course	Course title	Credits	Term	Prerequisites
CBE 2345	Comp. Methods for Chem Engr.	3	Au, Sp	CBE 2200
CBE 2420	Transport Phenomena I	3	Au, Sp	CBE 2200; and Math 2173 or 2415
CBE 2523	Separation Processes	3	Au, Sp	CBE 2200; prereq or concur: CBE 2420
CBE 3421	Transport Phenomena II - Heat Transfer	3	Au, Sp	CBE 2420
CBE 3422	Transport Phenomena III - Mass Transfer	3	Au, Sp	CBE 3421
CBE 3508	Chem Engr Thermodynamics I	3	Au, Sp	CBE 2200
CBE 3509	Chem Engr Thermodynamics II	3	Au, Sp	CBE 3508
CBE 3610	Kinetics and Reactor Design	3	Au, Sp	CBE 3508
CBE 3730	Unit Operations I	1	Au, Sp	CBE 2200
CBE 3731	Unit Operations II	1	Au, Sp	CBE 3730
CBE 3732	Unit Operations III	2	Au, Sp	CBE 3731

CBE 4624	Chem Process Dynamics, Control	3	Au, Sp	CBE 2523 or 3610
CBE 4755	Chemical Process Safety	2	Au, Sp	CBE 3422 or 3521
CBE 4760	Chem Engr Economy & Strategy	3	Au, Sp	CBE 3610 and (GenEd 1201 or 2601)
CBE 5200	Intro to Petroleum Engineering	3	Sp	CBE 2200
CBE 5210	Petroleum Reservoir Engineering	3	Au	Junior Standing (rank 3)
CBE 5230	Petroleum Drilling and Production Engineering	3	Sp	CBE 5200 and Earth Sci 5661
CBE 5260	Petroleum Project Evaluation	3	Au	Junior Standing (rank 3)
CBE 5550	Engineering Principles in Cancer	3	Sp	CBE 2420
CBE 5713	Fuel Cells and Catalysis	3	Sp	CBE 3508 or 3610
CBE 5715	Particle Technology	3	Au	CBE 2523 and (Math 2174 or 2415 or 2255)
CBE 5730	Industrial Biopharmaceuticals	3	Au	CBE 2200
CBE 5734	Molecular Informatics	3	Sp	CBE 2345
CBE 5735	Cellular Nanotechnology	3	Sp	Rank 3 or 4 in the College of Engineering
CBE 5740	Quantitative Cell Biology for Engineers and Scientists	3	TBA	None
CBE 5765	Principles of Biochemical Engr	3	Au	CBE 2523 or 3610
CBE 5773	Intro to High Polymer Engr	3	Au	CBE 3610
CBE 5774	Polymer Membranes	3	Au	CBE 3508
CBE 5775	Rheology of Fluids	3	Sp	CBE 2420

General Education Requirement

A list of approved general education courses can be found at advising.engineering.osu.edu/current-students/curriculum/general-education