

ENGINEERING PHYSICS (B.S.)

Requirements

Code	Title	Units
Core Curriculum Requirements (https://catalog.vanguard.edu/college/core-curriculum/)		54-52
Major Core Requirements		72
Total Units		126-124

Engineering Physics Major Core Requirements

Code	Title	Units
Lower Division Course Requirements		
CHEM-120 & 120L	General Chemistry I and General Chemistry I Lab ¹	4
CHEM-121 & 121L	General Chemistry II and General Chemistry II Lab	4
CSCI-100C & 100CL	Introduction to Computer Science and Introduction to Computer Science Lab	4
MATH-180C	Calculus I	4
MATH-181C	Calculus II	4
MATH-265C	Intro to Statistical Methods	3
MATH-281	Multivariable Calculus	4
PSCI-223C & 223CL	Mechanics of Solids and Fluids and Mechanics of Solids and Fluids Lab	4
PSCI-225 & 225L	Electricity and Magnetism and Electricity and Magnetism Lab	4
Upper Division Course Requirements		
MATH-300	Linear Algebra	3
MATH-310	Differential Equations	3
MATH-390	Numerical Analysis	3
ENGR-310 & 310L	Electronics I and Electronics I Lab	5
ENGR-320 & 320L	Optics and Optics Laboratory	5
ENGR-400 & 400L	Introduction to Materials Science Engr. and Intro/Materials Science Laboratory	4
CHEM-440 & 440L	Instrumental Analysis and Instrumental Analysis Lab	4
CHEM-456 & 456L	Physical Chemistry: Thermodynamics and Physical Chemistry Technique Lab	4
CHEM-458	Physical Chemistry: Quantum Mechanics	2
CHEM-485	Undergraduate Research	2
or CHEM-450	UG Research Or Internship Program	
CHEM-499C	Chemistry Capstone Seminar	2
Total Units		72

¹ See CHEM-120 General Chemistry I course description for prerequisites.

Four Year Plan

Disclaimer: This sample Four Year Plan is provided as a guide for the recommended sequencing of courses. Vanguard University requires that students complete a minimum of 120 units of required course work as outlined on the Requirements tab in order to receive a Bachelor of Arts, Bachelor of Music, Bachelor of Science, or Bachelor of Science in Nursing degree. It is the student's responsibility to confirm with the department the course rotation before enrolling in courses. If applicable, please note the footnotes at the bottom of the page for additional information related to courses listed in a particular year and term. Questions, contact the Department of Chemical and Environmental Sciences.

Study Abroad Participation: Students interested in participating in the university's Study Abroad programs are encouraged to reach out to the Global Education and Outreach Office (studyabroad@vanguard.edu) for more information and collaboration in their academic course planning. Students using Education and Training Benefits through the U.S. Department of Veteran Affairs are encouraged to also reach out to the School Certifying Official (veteranscertifyingofficial@vanguard.edu) for more information regarding how benefits can be applied.

Course	Title	Units
Year 1 Term 1		
CORE-100C	Cornerstone	1
CHEM-120	General Chemistry I	3
CHEM-120L	General Chemistry I Lab	1
MATH-180C	Calculus I	4
NT-101C	New Testament Survey	3
SOC-PLCR	Social Science Core Curriculum Req'm't	3
Units		15
Year 1 Term 2		
CHEM-121	General Chemistry II	3
CHEM-121L	General Chemistry II Lab	1
MATH-181C	Calculus II	4
CSCI-100C	Introduction to Computer Science	3
CSCI-100CL	Introduction to Computer Science Lab	1
MATH-285	Intro to Adv Mathematics	3
Units		15
Year 2 Term 1		
PSCI-223C	Mechanics of Solids and Fluids	3
PSCI-223CL	Mechanics of Solids and Fluids Lab	1
MATH-281	Multivariable Calculus	4
MATH-300	Linear Algebra	3
THEO-101C	Foundations of Christian Life	3
CHEM-252	Analytical Chemistry	3
CHEM-252L	Analytical Chem Techniques	1
Units		18
Year 2 Term 2		
PSCI-225	Electricity and Magnetism	3
PSCI-225L	Electricity and Magnetism Lab	1
MATH-265C	Intro to Statistical Methods	3



MATH-310	Differential Equations	3
OT-201C	Old Testament Survey	3
FINA-PLCR	Fine Arts Core Curriculum Requirement	3
Units		16
Year 3 Term 1		
CHEM-456	Physical Chemistry: Thermodynamics	2
PSCI-227	Waves, Optics and Modern Physics	3
CHEM-440	Instrumental Analysis	2
CHEM-440L	Instrumental Analysis Lab	2
MATH-390	Numerical Analysis	3
ENGL-120C	Persuasive Writing	3
Units		15
Year 3 Term 2		
CHEM-458	Physical Chemistry: Quantum Mechanics	2
CHEM-456L	Physical Chemistry Technique Lab	1-2
ENGR-310	Electronics I	4
ENGR-310L	Electronics I Lab	1
CHEM-PLUGR	Undergraduate Research or Internship	2
HIST-PLCR1	History Core Requirement (US History)	3
COMM-201C	Speech Composition and Presentation	3
Units		16-17
Year 4 Term 1		
THEO-300C	Developing a Christian World View	3
ENGR-400	Introduction to Materials Science Engr.	3
ENGR-400L	Intro/Materials Science Laboratory	1
KINE-145C	Lifetime Fitness/Wellness Lect	1
HIST-PLCR2	History Core Requirement (World Civ)	3
Units		11
Year 4 Term 2		
ENGR-320	Optics	4
ENGR-320L	Optics Laboratory	1
CHEM-499C	Chemistry Capstone Seminar	2
CHIS-400C	Christian Heritage	3
ENGL-230C	Literature and the Human Experience	3
KINE-146C	Lifetime Fitness/Well Activity	1
PSYC-103C	Introduction to Psychology	3
Units		17
Total Units		123-124

