

BIOCHEMISTRY B.S.

Requirements

Code	Title	Units
	Core Curriculum Requirements (https://catalog.vanguard.edu/college/core-curriculum/)	47-45
	Major Core Requirements	71
	Electives	
Total Units		118-116

Biochemistry Major Core Requirements

Code	Title	Units
Lower Division Biochemistry Core Courses		
BIOL-111 & 111L	Principles of Cell and Molecular Biology and Principles of Biology Lab, Principles of Cell/ Molecular Biology Lab	4
CHEM-120 & 120L	General Chemistry I and General Chemistry I Lab	4
CHEM-121 & 121L	General Chemistry II and General Chemistry II Lab	4
CHEM-252 & 252L	Analytical Chemistry and Analytical Chem Techniques	4
MATH-180C	Calculus I	4
MATH-181C	Calculus II	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 Biochemistry Core Classes		
CHEM-304 & 304L	Organic Chemistry I and Organic Chemistry Techniques I	4
CHEM-305 & 305L	Organic Chemistry II and Organic Chemistry Technqs II	4
CHEM-430 & 430L	Biochemistry and Experimental Tech/Biochemistry	4
CHEM-435	Advanced Biochemistry	3
CHEM-440 & 440L	Instrumental Analysis and Instrumental Analysis Lab	4
CHEM-456 & 456L	Physical Chemistry: Thermodynamics and Physical Chemistry Technique Lab	4
CHEM-457	Physical Chemistry: Kinetics	2
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
Upper Division Biochemistry Electives		
	Select any two biology lecture/lab combinations.	8
Total Units		71

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
ENGL-120C	Persuasive Writing	3
CHEM-120	General Chemistry I	3
CHEM-120L	General Chemistry I Lab	1
MATH-180C	Calculus I	4
THEO-PLHD	Theology Core Requirement	3
KINE-145C	Lifetime Fitness/Wellness Lect	1
Units		16
Year 1 Term 2		
CHEM-121	General Chemistry II	3
CHEM-121L	General Chemistry II Lab	1
BIOL-111	Principles of Cell and Molecular Biology	3
BIOL-111L	Principles of Biology Lab, Principles of Cell/ Molecular Biology Lab	1
MATH-181C	Calculus II	4
NT-101C	New Testament Survey	3
KINE-146C	Lifetime Fitness/Well Activity	1
Units		16
Year 2 Term 1		
PSCI-223C	Mechanics of Solids and Fluids	3
PSCI-223CL	Mechanics of Solids and Fluids Lab	1
CHEM-304	Organic Chemistry I	3
CHEM-304L	Organic Chemistry Techniques I	1
HIST-PLCR1	History Core Requirement (US History)	3
BIOL-PLHD4	Biology Elective	4
Units		15
Year 2 Term 2		
SOC-PLCR	Social Science Core Curriculum Reqmt	3



PSCI-225	Electricity and Magnetism	3
PSCI-225L	Electricity and Magnetsm Lab	1
OT-201C	Old Testament Survey	3
CHEM-305	Organic Chemistry II	3
CHEM-305L	Organic Chemistry Technqs II	1

Units **14**

Year 3 Term 1

CHEM-252	Analytical Chemistry	3
CHEM-252L	Analytical Chem Techniques	1
THEO-300C	Developing a Christian World View	3
FINA-PLCR	Fine Arts Core Curriculum Requirement	3
CHEM-430	Biochemistry	3
CHEM-430L	Experimental Tech/Biochemistry	1

Units **14**

Year 3 Term 2

BIOL-PLHD4	Biology Elective	4
COMM-201C	Speech Composition and Presentation	3
CHEM-485	Undergraduate Research	1-4
ENGL-230C	Literature and the Human Experience	3
CHEM-435	Advanced Biochemistry	3

Units **14-17**

Year 4 Term 1

CHEM-440	Instrumental Analysis	2
CHEM-440L	Instrumental Analysis Lab	2
CHEM-456	Physical Chemistry: Thermodynamics	2
HIST-PLCR2	History Core Requirement (World Civ)	3
ENGL-220C	Researched Writing	3
CHEM-PLUD4B	Upper Division STEMBIO Elect (4 Units)	4

Units **16**

Year 4 Term 2

CHEM-457	Physical Chemistry: Kinetics	2
CHEM-456L	Physical Chemistry Technique Lab	1-2
CHIS-400C	Christian Heritage	3
CHEM-499C	Chemistry Capstone Seminar	2
CHEM-PLUD4B	Upper Division STEMBIO Elect (4 Units)	4

Units **12-13**

Total Units **117-121**

