

BIOLOGY B.S. WITH A CONCENTRATION IN BIOMEDICAL

Requirements

Code	Title	Units
Core Curriculum Requirements (https://catalog.vanguard.edu/college/core-curriculum/)		44-42
Biology Major Core Requirements		52
Concentration in Biomedical (p. 1)		30-29
Total Units		126-123

Biology Core Major Requirements

Code	Title	Units
Lower Division Requirements		
BIOL-111 & 111L	Principles of Cell and Molecular Biology and Principles of Biology Lab, Principles of Cell/ Molecular Biology Lab	4
BIOL-112 & 112L	Principles of Organismal Biology and Principles of Organismal Biology Lab	4
BIOL-220 & 220L	Cell Biology and Cell 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
MATH-180C	Calculus 1	4
PSCI-223C & 223CL or PSCI-130 & 130CL	Mechanics of Solids and Fluids and Mechanics of Solids and Fluids Lab Introduction to Physics I and General Physics I Lab	4
PSCI-225 & 225L or PSCI-131 & 131L	Electricity and Magnetism and Electricity and Magnetism Lab General Physics II and General Physics II Lab	4
Upper Division Requirements		
BIOL-309 & 309L	Microbiology and Microbiology Laboratory	4
BIOL-311 & 311L	Genetics and Genetics Laboratory	4
CHEM-304 & 304L	Organic Chemistry I and Organic Chemistry Techniques I	4
BIOL-485 or BIOL-488 or BIOL-450	Undergrad Biological Research Biology Senior Project UG Research or Internship Program	2
BIOL-499C	Capstone Seminar in Biology	2
Select one of the following Ecology Focus courses:		4
BIOL-315 & 315L	General Ecology and Ecology Field and Lab Practicum	

BIOL-345C	Mountain Field Biology	
BIOL-346C	Desert Field Ecology	
BIOL-348C	Coastal Ecology	
Total Units		52

Concentration in Biomedical Science

Code	Title	Units
PSYC-103C	Introduction to Psychology ¹	3
MATH-181C	Calculus II	4
MATH-270C	Health Professions Statistical Methods	3
BIOL-302 & 302L	Comparative Vertebrate Anatomy and Comp Vertebrate Anatomy Lab	4
BIOL-304 & 304L	Human Physiology and Human Physiology Lab	4
CHEM-305 & 305L	Organic Chemistry II and Organic Chemistry Technqs II	4
CHEM-430 & 430L	Biochemistry and Experimental Tech/Biochemistry	4
Electives		
Select a lecture/laboratory courses from BIOL ²		3-4
Total Units		29-30

¹ PSYC-103C Introduction to Psychology is both a program requirement and fulfills a CORE Curriculum requirement.

² In consultation with your academic advisor, select one lecture/lab combination that best aligns with your career goals. Additional course selections in Kinesiology or Psychology may be approved on a case-by-case basis.

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 Biological Sciences.

Course	Title	Units
Year 1 Term 1		
CORE-100C	Cornerstone	1
BIOL-111	Principles of Cell and Molecular Biology	3
BIOL-111L	Principles of Biology Lab, Principles of Cell/ Molecular Biology Lab	1
CHEM-120	General Chemistry I	3
CHEM-120L	General Chemistry I Lab	1
NT-101C	New Testament Survey	3
ENGL-120C	Persuasive Writing	3
Units		15



Year 1 Term 2		
BIOL-112	Principles of Organismal Biology	3
BIOL-112L	Principles of Organismal Biology Lab	1
CHEM-121	General Chemistry II	3
CHEM-121L	General Chemistry II Lab	1
PSYC-103C	Introduction to Psychology	3
KINE-146C	Lifetime Fitness/Well Activity	1
FINA-PLCR	Fine Arts Core Curriculum Requirement	3
Units		15

Year 2 Term 1		
BIOL-220	Cell Biology	3
BIOL-220L	Cell Biology Lab	1
CHEM-304	Organic Chemistry I	3
CHEM-304L	Organic Chemistry Techniques I	1
ENGL-220C	Researched Writing	3
THEO-PLHD	Theology Core Requirement	3
KINE-145C	Lifetime Fitness/Wellness Lect	1
Units		15

Year 2 Term 2		
MATH-180C	Calculus 1	4
CHEM-305	Organic Chemistry II	3
CHEM-305L	Organic Chemistry Technqs II	1
OT-201C	Old Testament Survey	3
BIOL-PLHD4	Biology Elective	4
HIST-PLCR1	History Core Requirement (US History)	3
Units		18

Year 3 Term 1		
BIOL-302	Comparative Vertebrate Anatomy	3
BIOL-302L	Comp Vertebrate Anatomy Lab	1
PSCI-223C	Mechanics of Solids and Fluids	3
PSCI-223CL	Mechanics of Solids and Fluids Lab	1
MATH-181C	Calculus II	4
SOC-PLCR	Social Science Core Curriculum Req'm't	3
Units		15

Year 3 Term 2		
THEO-300C	Developing a Christian World View	3
PSCI-225	Electricity and Magnetism	3
PSCI-225L	Electricity and Magnetsm Lab	1
BIOL-311	Genetics	3
BIOL-311L	Genetics Laboratory	1
BIOL-PLHD4	Biology Elective	4
Units		15

Year 4 Term 1		
BIOL-309	Microbiology	3
BIOL-309L	Microbiology Laboratory	1
ENGL-220C	Researched Writing	3
CHEM-430	Biochemistry	3
CHEM-430L	Experimental Tech/Biochemistry	1

HIST-PLCR2	History Core Requirement (World Civ)	3
Units		14
Year 4 Term 2		
BIOL-PLHD4	Biology Elective	4
BIOL-348C	Coastal Ecology	4
BIOL-499C	Capstone Seminar in Biology	2
COMM-201C	Speech Composition and Presentation	3
CHIS-400C	Christian Heritage	3
Units		16
Total Units		123

