

# CHEMISTRY B.S.

## 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
<b>Year 1 Term 1</b>		
CORE-100C	Cornerstone	1
CHEM-120	General Chemistry I	3
CHEM-120L	General Chemistry I Lab	1
MATH-180C	Calculus 1	4
ENGL-120C	Persuasive Writing	3
NT-101C	New Testament Survey	3
KINE-146C	Lifetime Fitness/Well Activity	1
<b>Units</b>		<b>16</b>
<b>Year 1 Term 2</b>		
CHEM-121	General Chemistry II	3
CHEM-121L	General Chemistry II Lab	1
MATH-181C	Calculus II	4
FINA-PLCR	Fine Arts Core Curriculum Requirement	3
THEO-101C	Foundations of Christian Life	3
KINE-145C	Lifetime Fitness/Wellness Lect	1
HIST-PLCR2	History Core Requirement (World Civ)	3
<b>Units</b>		<b>18</b>
<b>Year 2 Term 1</b>		
PSCI-223C	Mechanics of Solids and Fluids	3
PSCI-223CL	Mechanics of Solids and Fluids Lab	1
MATH-281	Multivariable Calculus	4
CHEM-252	Analytical Chemistry	3
CHEM-252L	Analytical Chem Techniques	1
CHEM-304	Organic Chemistry I	3

CHEM-304L	Organic Chemistry Techniques I	1
<b>Units</b>		<b>16</b>
<b>Year 2 Term 2</b>		
PSCI-225	Electricity and Magnetism	3
PSCI-225L	Electricity and Magnetism Lab	1
OT-201C	Old Testament Survey	3
CHEM-305	Organic Chemistry II	3
CHEM-305L	Organic Chemistry Technqs II	1
CHEM-PLUD4A	Upper Division STEM Elective (4 units)	4
<b>Units</b>		<b>15</b>
<b>Year 3 Term 1</b>		
CHEM-456	Physical Chemistry: Thermodynamics	2
CHEM-440	Instrumental Analysis	2
CHEM-440L	Instrumental Analysis Lab	2
CHEM-PLUD4A	Upper Division STEM Elective (4 units)	4
THEO-300C	Developing a Christian World View	3
ENGL-220C	Researched Writing	3
<b>Units</b>		<b>16</b>
<b>Year 3 Term 2</b>		
CHEM-456L	Physical Chemistry Technique Lab	1-2
CHEM-457	Physical Chemistry: Kinetics	2
CHEM-458	Physical Chemistry: Quantum Mechanics	2
CHEM-485	Undergraduate Research	1-4
CHEM-PLUD4A	Upper Division STEM Elective (4 units)	4
PSYC-103C	Introduction to Psychology	3
<b>Units</b>		<b>13-17</b>
<b>Year 4 Term 1</b>		
ENGL-230C	Literature and the Human Experience	3
COMM-201C	Speech Composition and Presentation	3
CHEM-430	Biochemistry	3
CHEM-430L	Experimental Tech/Biochemistry	1
HIST-PLCR2	History Core Requirement (World Civ)	3
<b>Units</b>		<b>13</b>
<b>Year 4 Term 2</b>		
CHEM-499C	Chemistry Capstone Seminar	2
CHEM-PLUD4A	Upper Division STEM Elective (4 units)	4
CHIS-400C	Christian Heritage	3
SOC-PLCR	Social Science Core Curriculum Reqmt	3
<b>Units</b>		<b>12</b>
<b>Total Units</b>		<b>119-123</b>

