Natural Science, B.S. - California State University, Los Angeles - Acalo...

	Catalog: Semester Catal					
Student Name: Adviser Name:	Program: Natural Science, B.S. Minimum Credits Required:					
Natural Science, B.S.						
The Bachelor of Science Degree in Natural Science provides broad training across several science di Science (Option III). Natural Science majors choose one option. Majors choosing the Interdisciplin majors choosing the Applied Science option must select an emphasis area in food science, medical 4 students to be eligible to apply for post-baccalaureate training programs in clinical laboratory scien and/or have obtained a medical laboratory technician license in the State of California. Students sh High school preparation is recommended in algebra (two years), chemistry, geometry, physics, and In each option students must earn a grade of C or higher in all courses that satisfy the following un The total number of units required for the Bachelor of Science degree in Natural Science. Interdisci The total number of units required for the Bachelor of Science degree in Natural Science. Applied S <b>Consult with an advisor for the specific number of units required in all areas of the do units needed to complete the major.</b>	ary Science or Teaching option must science, or bridge to clinical laborator (see and is limited to students who hav ould speak with a Natural Science ad trigonometry. iversity, general education or major r plinary Science Option is 120 units, o Option is 120 units, of which 81 units cience Option is 120 units, of which 7	select an emphasis area (biology, chem y science. The bridge to clinical laborat e already completed a medical laborat viser before choosing an option. equirements. f which 71-79 units are in the major de are in the major. 0-76 units are in the major, depending	istry, geoscience, c cory science emph- pry technician prop pending on the em on the emphasis s	or physics), and asis area prepares gram of coursework uphasis selected.		
Options						
Option I - Bachelor of Science Degree in Natural Science (Interdisciplinary Science) Option II - Bachelor of Science Degree in Natural Science (Teaching) Option III - Bachelor of Science Degree in Natural Science (Applied Science)						
Option I - Bachelor of Science Degree in Natural Science (Interd The Interdisciplinary Science Option of the Bachelor of Science degree in Natural Science is of value government, law, medicine, nonprofit organizations, and other fields. Students study multiple natu chemistry, geoscience, and physics as an emphasis area of study. Total number of units required for	e to those seeking careers where a br ral science disciplines (i.e., biology, c					
Requirements for the Major (71-79 units)						
Core Requirements (39-46 units)						
Students must choose one emphasis area from among biology, chemistry, geology, or physics as a fe	ocus of study that determines addition	nai Core requirements specific to each	emphasis area.			
Core requirements for all emphasis areas (18 units) Course Name	Credits:	Term Taken	Grade	Gen Ed		
BIOL 1100 - Principles of Biology I	(5)					
BIOL 1200 - Principles of Biology II MATH 2110 - Calculus I	(5)					
MATH 210 - Calculus I	(4)					
Capstone Course (3 units)						
Course Name	Credits:	Term Taken	Grade	Gen Ed		
NATS 4950 - Natural Science Field Studies Additional Core requirements based on Emphasis area (18-25 units)	(3)					
CHEM 1100 - General Chemistry I (5)     CHEM 1110 - General Chemistry II (5) Choose two sets of courses from the following three sets: Course Name Course Course Course of Astronomy	Credits:	Term Taken	Grade	Gen Ed		
ASTR 1510 - Principles of Astronomy ASTR 1520 - Principles of Astronomy: Laboratory	(2)			-		
GEOL 1500 - Earth Revealed GEOL 2520 - Historical Geology	(3)					
SECE 2520 - Historical Octology	(4)					
PHYS 1100 - Physics	(4)					
PHYS 1200 - Physics						
	(4)					
Chemistry Emphasis (20-25 units) Course Name	I - D	Term Taken	Grada	Gen Fd		
Course Name CHEM 1100 - General Chemistry I	Credits: (5)	Term Taken	Grade	Gen Ed		
Course Name CHEM 1100 - General Chemistry I CHEM 1110 - General Chemistry II	Credits:	Term Taken	Grade	Gen Ed		
Course Name CHEM 1100 - General Chemistry I CHEM 1110 - General Chemistry II Choose two sets of courses from the following three sets:	Credits: (5) (5)					
Course Name CHEM 1100 - General Chemistry I CHEM 1110 - General Chemistry II Choose two sets of courses from the following three sets: Course Name	Credits: (5) (5) Credits:	Term Taken	Grade	Gen Ed		
Course Name CHEM 1100 - General Chemistry I CHEM 1110 - General Chemistry II Choose two sets of courses from the following three sets:	Credits: (5) (5)					
Course Name CHEM 1100 - General Chemistry I CHEM 1100 - General Chemistry II Choose two sets of courses from the following three sets: Course Name ASTR 1510 - Principles of Astronomy ASTR 1520 - Principles of Astronomy: Laboratory	Credits:           (5)           (5)           (2)           (1)					
Course Name CHEM 1100 - General Chemistry I CHEM 1110 - General Chemistry II Choose two sets of courses from the following three sets: Course Name ASTR 1510 - Principles of Astronomy	Credits: (5) (5) Credits: (2)					
Course Name CHEM 1100 - General Chemistry I CHEM 1100 - General Chemistry II Choose two sets of courses from the following three sets: Course Name ASTR 1510 - Principles of Astronomy ASTR 1520 - Principles of Astronomy: Laboratory GEOL 1500 - Earth Revealed GEOL 2520 - Historical Geology	Credits:           (5)           (5)           (2)           (1)           (3)           (4)					
Course Name CHEM 1100 - General Chemistry I CHEM 1110 - General Chemistry II Choose two sets of courses from the following three sets: Course Name ASTR 1510 - Principles of Astronomy ASTR 1520 - Principles of Astronomy: Laboratory GEOL 1500 - Earth Revealed	Credits:         (5)           (5)         (5)           Credits:         (2)           (1)         (3)					
Course Name CHEM 1100 - General Chemistry I CHEM 1110 - General Chemistry II Choose two sets of courses from the following three sets: Course Name ASTR 1510 - Principles of Astronomy ASTR 1520 - Principles of Astronomy: Laboratory GEOL 1500 - Earth Revealed GEOL 2520 - Historical Geology PHYS 1100 - Physics Note: PHYS 2100 - Physics A is recommended in lieu of PHYS 1100.	Credits:           (5)           (5)           (5)           (2)           (1)           (3)           (4)           (4)					
Course Name CHEM 1100 - General Chemistry I CHEM 1110 - General Chemistry II Choose two sets of courses from the following three sets: Course Name ASTR 1510 - Principles of Astronomy ASTR 1520 - Principles of Astronomy: Laboratory GEOL 1500 - Earth Revealed GEOL 2520 - Historical Geology PHYS 1100 - Physics	Credits:           (5)           (5)           (2)           (1)           (3)           (4)					
Course Name CHEM 1100 - General Chemistry I CHEM 1110 - General Chemistry II Choose two sets of courses from the following three sets: Course Name ASTR 1510 - Principles of Astronomy ASTR 1520 - Principles of Astronomy: Laboratory GEOL 1500 - Earth Revealed GEOL 2520 - Historical Geology PHYS 1100 - Physics Note: PHYS 2100 - Physics A is recommended in lieu of PHYS 1100. PHYS 1200 - Physics	Credits:           (5)           (5)           (5)           (2)           (1)           (3)           (4)           (4)					
Course Name CHEM 1100 - General Chemistry I CHEM 1110 - General Chemistry II Choose two sets of courses from the following three sets: Course Name ASTR 1510 - Principles of Astronomy ASTR 1520 - Principles of Astronomy: Laboratory GEOL 1500 - Earth Revealed GEOL 2520 - Historical Geology PHYS 1100 - Physics Note: PHYS 2100 - Physics A is recommended in lieu of PHYS 1100. PHYS 1200 - Physics Note: PHYS 2200 - Physics B is recommended in lieu of PHYS 1200.	Credits:           (5)           (5)           (5)           (2)           (1)           (3)           (4)           (4)					
Course Name         CHEM 1100 - General Chemistry I         CHEM 1110 - General Chemistry II         Choose two sets of courses from the following three sets:         Course Name         ASTR 1510 - Principles of Astronomy         ASTR 1520 - Principles of Astronomy         ASTR 1520 - Principles of Astronomy: Laboratory         GEOL 1500 - Earth Revealed         GEOL 2520 - Historical Geology         PHYS 1100 - Physics         Note: PHYS 2100 - Physics A is recommended in lieu of PHYS 1100.         PHYS 1200 - Physics B is recommended in lieu of PHYS 1200.         Geoscience Emphasis (18-25 units)         Course Name         GEOL 1500 - Earth Revealed	Credits:           (5)           (5)           (5)           (1)           (2)           (1)           (3)           (4)           (4)           (4)           (4)           (4)           (3)           (4)           (3)           (4)           (3)           (4)           (3)           (3)	Term Taken	Grade	Gen Ed		
Course Name         CHEM 1100 - General Chemistry I         CHEM 1110 - General Chemistry II         Choose two sets of courses from the following three sets:         Course Name         ASTR 1510 - Principles of Astronomy         ASTR 1520 - Principles of Astronomy         ASTR 1520 - Principles of Astronomy: Laboratory         GEOL 1500 - Earth Revealed         GEOL 2520 - Historical Geology         PHYS 1100 - Physics         Note: PHYS 2100 - Physics A is recommended in lieu of PHYS 1100.         PHYS 1200 - Physics B is recommended in lieu of PHYS 1200.         Geoscience Emphasis (18-25 units)         Course Name         GEOL 1500 - Earth Revealed         GEOL 2520 - Historical Geology	Credits:           (5)           (5)           (1)           (3)           (4)           (4)           (4)           (5)           (1)           (2)           (1)           (2)           (1)           (2)           (4)           (4)           (4)           (2)           (2)           (3)           (4)           (4)           (4)           (4)           (4)	Term Taken	Grade	Gen Ed		
Course Name         CHEM 1100 - General Chemistry I         CHEM 1110 - General Chemistry II         Choose two sets of courses from the following three sets:         Course Name         ASTR 1510 - Principles of Astronomy         ASTR 1520 - Principles of Astronomy         ASTR 1520 - Principles of Astronomy: Laboratory         GEOL 1500 - Earth Revealed         GEOL 2520 - Historical Geology         PHYS 1100 - Physics         Note: PHYS 2100 - Physics A is recommended in lieu of PHYS 1100.         PHYS 1200 - Physics B is recommended in lieu of PHYS 1200.         Geoscience Emphasis (18-25 units)         Course Name         GEOL 1500 - Earth Revealed         GEOL 1500 - Earth Revealed         Geoscience Emphasis (18-25 units)         Course Name         GEOL 2520 - Historical Geology         Cherse Name         GEOL 2520 - Earth Revealed         GEOL 2520 - Historical Geology	Credits:           (5)           (5)           (5)           (1)           (2)           (1)           (3)           (4)           (4)           (4)           (4)           (3)           (4)           (4)           (4)           (4)           (4)           (4)           (2)           (3)           (4)           (4)           (4)           (4)           (4)           (2)           (3)           (4)	Term Taken	Grade	Gen Ed		
Course Name         CHEM 1100 - General Chemistry I         CHEM 1110 - General Chemistry II         Choose two sets of courses from the following three sets:         Course Name         ASTR 1510 - Principles of Astronomy         ASTR 1520 - Principles of Astronomy         ASTR 1520 - Principles of Astronomy: Laboratory         GEOL 1500 - Earth Revealed         GEOL 2520 - Historical Geology         PHYS 1100 - Physics         Note: PHYS 2100 - Physics A is recommended in lieu of PHYS 1100.         PHYS 1200 - Physics B is recommended in lieu of PHYS 1200.         Geoscience Emphasis (18-25 units)         Course Name         GEOL 1500 - Earth Revealed         GEOL 2520 - Historical Geology	Credits:           (5)           (5)           (5)           (1)           (2)           (1)           (3)           (4)           (4)           (4)           (4)           (4)           (3)           (4)           (3)           (4)           (3)           (4)           (3)           (3)	Term Taken	Grade	Gen Ed		
Course Name CHEM 1100 - General Chemistry I CHEM 1100 - General Chemistry II Choose two sets of courses from the following three sets: Course Name ASTR 1510 - Principles of Astronomy ASTR 1520 - Principles of Astronomy: Laboratory GEOL 1500 - Earth Revealed GEOL 2520 - Historical Geology PHYS 1100 - Physics Note: PHYS 2100 - Physics A is recommended in lieu of PHYS 1100. PHYS 1200 - Physics Note: PHYS 2200 - Physics B is recommended in lieu of PHYS 1200. Geoscience Emphasis (18-25 units) Course Name GEOL 1500 - Earth Revealed GEOL 2520 - Historical Geology PHYS 100 - Physics B is recommended in lieu of PHYS 1200. Geoscience Emphasis (18-25 units) Course Name GEOL 1500 - Earth Revealed GEOL 2520 - Historical Geology Choose two sets of courses from the following three sets: Course Name	Credits:           (5)           (5)           (5)           (1)           (2)           (1)           (3)           (4)           (4)           (4)           (4)           (3)           (4)           (4)           (4)           (4)           (4)           (4)           (2)           (3)           (4)           (4)           (4)           (1)           (2)           (3)           (4)           (4)           (2)           (3)           (4)           Credits:           (2)           (2)	Term Taken	Grade	Gen Ed		
Course Name         CHEM 1100 - General Chemistry I         CHEM 1110 - General Chemistry II         Choose two sets of courses from the following three sets:         Course Name         ASTR 1510 - Principles of Astronomy         ASTR 1520 - Principles of Astronomy         ASTR 1520 - Principles of Astronomy         ASTR 1520 - Principles of Astronomy: Laboratory         GEOL 1500 - Earth Revealed         GEOL 2520 - Historical Geology         PHYS 1100 - Physics         Note: PHYS 2100 - Physics A is recommended in lieu of PHYS 1100.         PHYS 1200 - Physics B is recommended in lieu of PHYS 1200.         Geoscience Emphasis (18-25 units)         Course Name         GEOL 1500 - Earth Revealed         GEOL 2520 - Historical Geology         Cher Name         GEOL 2520 - Historical Geology         Cher Name         GEOL 2520 - Historical Geology         Choose two sets of courses from the following three sets:         Course Name         Astra 1510 - Principles of Astronomy	Credits:           (5)           (5)           (2)           (1)           (3)           (4)           (4)           (4)           (4)           (4)           (5)           (1)           (2)           (1)           (2)	Term Taken	Grade	Gen Ed		

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PHYS 1100 - Physics PHYS 1200 - Physics		(4)				
Physics Emphasis (20-23 units)			I			
Course Name		Credits:	Term Ta	kon	Grade	Gen Ed
ASTR 1510 - Principles of Astronomy		(2)		Kell	Graue	Gen Eu
ASTR 1520 - Principles of Astronomy: Laboratory		(1)				
PHYS 2100 - General Physics I: Mechanics		(5)				
PHYS 2200 - General Physics II: Electromagnetism and Circuit	s	(5)				
Choose one set of courses from the following two sets:						
Course Name		Credits:	Term Ta	ken	Grade	Gen Ed
CHEM 1100 - General Chemistry I		(5)				
CHEM 1110 - General Chemistry II		(5)				
					_	
GEOL 1500 - Earth Revealed		(3)			_	
GEOL 2520 - Historical Geology		(4)				
Select One Emphasis						
Students must choose the same emphasis area that was chosen	to determine their additional Co	ore requirements.				
Biology Emphasis (32 units)						
Required (20 units)						
Course Name		Credits:	Term Ta	ram	Grade	Gen Ed
BIOL 3000 - Biostatistics		(3)	Term Ta	ken	Grade	Gen Eu
BIOL 3200 - Professional Writing in the Life Sciences		(3)				
BIOL 3400 - Cell Biology and Genetics		(3)			1	1
BIOL 3800 - Ecology and Evolution		(3)	İ			
CHEM 2200 - Organic Chemistry I		(4)				
MICR 3100 - General Microbiology		(4)				
Upper Division Electives (12 units)						
Select upper division electives with advisor approval from the for	llowing: upper division BIOL, G	CHEM, GEOG, GEOL, MATH, P	HYS or NATS courses. A maximum	of 3 units of dire	ected study is a	llowed.
Free Electives (3-10 units)						
Select lower and/or upper division electives with advisor approv	al Completion of additional Co	ore courses in ASTP (a 1 unite)	CHEM (E E units) CEOI (a 4 unita	and/or PHVC (	1 4 unite) ie et	ongly recommon
	completion of additional of	(2,1 units),		,, 01 1 1110 (4	1,-1 anno <i>j</i> 15 sti	-i.g., recomment
Chemistry Emphasis (32 units)						
Required Courses (22 units)						
Course Name		Credits:	Term Ta	kon	Grade	Gen Ed
CHEM 2200 - Organic Chemistry I		(4)		KCII	Grade	Joen Eu
CHEM 3100 - Writing for Chemists		(3)				
CHEM 3200 - Organic Chemistry II		(4)				
CHEM 3500 - Quantitative Analysis †						
		(4)				
CHEM 3600 - Inorganic Chemistry		(4)				
CHEM 4300 - Introduction to Biochemistry						
CHEM 4300 - Introduction to Biochemistry Upper Division Electives (10 units)		(4)				
CHEM 4300 - Introduction to Biochemistry	ollowing: upper division BIOL, C	(4)	HYS or NATS courses. A maximum	of 3 units of dire	ected study is a	llowed.
CHEM 4300 - Introduction to Biochemistry Upper Division Electives (10 units)	llowing: upper division BIOL, 6	(4)	HYS or NATS courses. A maximum	of 3 units of dire	ected study is a	llowed.
CHEM 4300 - Introduction to Biochemistry Upper Division Electives (10 units) Select upper division electives with advisor approval from the fo		(4) (3) CHEM, GEOG, GEOL, MATH, P				llowed.
CHEM 4300 - Introduction to Biochemistry Upper Division Electives (10 units) Select upper division electives with advisor approval from the for Free Electives (3-8 units) Select lower and/or upper division electives with advisor approv		(4) (3) CHEM, GEOG, GEOL, MATH, P				illowed.
CHEM 4300 - Introduction to Biochemistry Upper Division Electives (10 units) Select upper division electives with advisor approval from the for Free Electives (3-8 units) Select lower and/or upper division electives with advisor approv Geoscience Emphasis (32 units)		(4) (3) CHEM, GEOG, GEOL, MATH, P				illowed.
CHEM 4300 - Introduction to Biochemistry Upper Division Electives (10 units) Select upper division electives with advisor approval from the for Free Electives (3-8 units) Select lower and/or upper division electives with advisor approv		(4) (3) CHEM, GEOG, GEOL, MATH, P				illowed.
CHEM 4300 - Introduction to Biochemistry Upper Division Electives (10 units) Select upper division electives with advisor approval from the for Free Electives (3-8 units) Select lower and/or upper division electives with advisor approv Geoscience Emphasis (32 units) Required (19 units) Course Name		(4) (3) CHEM, GEOG, GEOL, MATH, P		nits) is strongly r		illowed.
CHEM 4300 - Introduction to Biochemistry Upper Division Electives (10 units) Select upper division electives with advisor approval from the for Free Electives (3-8 units) Select lower and/or upper division electives with advisor approv Geoscience Emphasis (32 units) Required (19 units) Course Name BIOL 3200 - Professional Writing in the Life Sciences		(4) (3) CHEM, GEOG, GEOL, MATH, P ore courses in ASTR (3 units), G: Credits: (3)	EOL (3, 4 units), and/or PHYS (8 u	nits) is strongly r	recommended.	
CHEM 4300 - Introduction to Biochemistry Upper Division Electives (10 units) Select upper division electives with advisor approval from the for Free Electives (3-8 units) Select lower and/or upper division electives with advisor approv Geoscience Emphasis (32 units) Required (19 units) Course Name BIOL 3200 - Professional Writing in the Life Sciences GEOG 2680 - Introduction to Geospatial Sciences		(4) (3) CHEM, GEOG, GEOL, MATH, P ore courses in ASTR (3 units), G Credits: (3) (4)	EOL (3, 4 units), and/or PHYS (8 u	nits) is strongly r	recommended.	
CHEM 4300 - Introduction to Biochemistry Upper Division Electives (10 units) Select upper division electives with advisor approval from the for Free Electives (3-8 units) Select lower and/or upper division electives with advisor approv Geoscience Emphasis (32 units) Required (19 units) Course Name BIOL 3200 - Professional Writing in the Life Sciences GEOG 2680 - Introduction to Geospatial Sciences GEOG 4100 - Applied Climatology		(4) (3) CHEM, GEOG, GEOL, MATH, P ore courses in ASTR (3 units), G Credits: (3) (4) (3)	EOL (3, 4 units), and/or PHYS (8 u	nits) is strongly r	recommended.	
CHEM 4300 - Introduction to Biochemistry Upper Division Electives (10 units) Select upper division electives with advisor approval from the for Free Electives (3-8 units) Select lower and/or upper division electives with advisor approv Geoscience Emphasis (32 units) Required (19 units) Course Name BIOL 3200 - Professional Writing in the Life Sciences GEOG 2680 - Introduction to Geospatial Sciences GEOG 4100 - Applied Climatology GEOL 3010 - Mineralogy and Petrology		(4) (3) CHEM, GEOG, GEOL, MATH, P ore courses in ASTR (3 units), G ore courses in (3 units), G (4) (4) (3) (4) (4) (4)	EOL (3, 4 units), and/or PHYS (8 u	nits) is strongly r	recommended.	
CHEM 4300 - Introduction to Biochemistry Upper Division Electives (10 units) Select upper division electives with advisor approval from the for Free Electives (3-8 units) Select lower and/or upper division electives with advisor approv Geoscience Emphasis (32 units) Required (19 units) Course Name BIOL 3200 - Professional Writing in the Life Sciences GEOG 2680 - Introduction to Geospatial Sciences GEOG 2680 - Introduction to Geospatial Sciences GEOG 3010 - Applied Climatology GEOL 3010 - Mineralogy and Petrology GEOL 3010 - Geology of Southern California		(4) (3) CHEM, GEOG, GEOL, MATH, P ore courses in ASTR (3 units), Gi Credits: (3) (4) (3) (4) (3) (4) (3)	EOL (3, 4 units), and/or PHYS (8 u	nits) is strongly r	recommended.	
CHEM 4300 - Introduction to Biochemistry Upper Division Electives (10 units) Select upper division electives with advisor approval from the for Free Electives (3-8 units) Select lower and/or upper division electives with advisor approv Geoscience Emphasis (32 units) Required (19 units) Course Name BIOL 3200 - Professional Writing in the Life Sciences GEOG 2680 - Introduction to Geospatial Sciences GEOG 2680 - Introduction to Geospatial Sciences GEOG 3010 - Applied Climatology GEOL 3010 - Mineralogy and Petrology GEOL 3210 - Geology of Southern California GEOL 4350 - Coastal Processes and Environments		(4) (3) CHEM, GEOG, GEOL, MATH, P ore courses in ASTR (3 units), G ore courses in (3 units), G (4) (4) (3) (4) (4) (4)	EOL (3, 4 units), and/or PHYS (8 u	nits) is strongly r	recommended.	
CHEM 4300 - Introduction to Biochemistry Upper Division Electives (10 units) Select upper division electives with advisor approval from the for Free Electives (3-8 units) Select lower and/or upper division electives with advisor approv Geoscience Emphasis (32 units) Required (19 units) Course Name BIOL 3200 - Professional Writing in the Life Sciences GEOG 2680 - Introduction to Geospatial Sciences GEOG 2680 - Introduction to Geospatial Sciences GEOG 3010 - Applied Climatology GEOL 3210 - Geology of Southern California GEOL 4350 - Coastal Processes and Environments Upper Division Electives (13 units)	val. Completion of additional Co	(4) (3) CHEM, GEOG, GEOL, MATH, P ore courses in ASTR (3 units), G Credits: (3) (4) (3) (4) (3) (3) (3)	EOL (3, 4 units), and/or PHYS (8 u	nits) is strongly 1	Grade	Gen Ed
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CHEM 4300 - Introduction to Biochemistry Upper Division Electives (10 units) Select upper division electives with advisor approval from the for Free Electives (3-8 units) Select lower and/or upper division electives with advisor approv Geoscience Emphasis (32 units) Required (19 units) Course Name BIOL 3200 - Professional Writing in the Life Sciences GEOG 2680 - Introduction to Geospatial Sciences GEOG 4100 - Applied Climatology GEOL 3010 - Mineralogy and Petrology GEOL 3210 - Geology of Southern California GEOL 4350 - Coastal Processes and Environments Upper Division Electives (13 units) Select upper division electives with advisor approval from the fo	val. Completion of additional Co	(4) (3) CHEM, GEOG, GEOL, MATH, P ore courses in ASTR (3 units), G Credits: (3) (4) (3) (4) (3) (3) (3)	EOL (3, 4 units), and/or PHYS (8 u	nits) is strongly 1	Grade	Gen Ed
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Upper division major core	3	3		3	3	
Emphasis specific required courses	20	22		19	10	
Upper division elective courses	12	10		13	25	
<sup>2</sup> Free electives	3-10	3-8		3-10	2-5	
	120 120					
Total units	majors are required to take lower division core courses in science and math that also mee		the requirements for	120 Block B Natural Sciences and Mathematics (0	120	
2It is strongly recommended that Natural Science majors					units).	
Option II - Bachelor of Science Degree The Teaching Option of the Bachelor of Science degree in for a California Single Subject Teaching Credential in Sci the State of California as a teacher preparation program ( option is not a credential program. Students should consi teaching credential in California. Students should consi teaching credential in California. Students selecting the T degree is 120. Requirements for the Major (81 units)	n Natural Science is designed spe ence. In order to earn the Single S (credential program). Although th ult with a Natural Science progra	cifically for pre-se Subject Teaching O he Teaching Optio m adviser and wit	Credential, individuals n in Natural Science n h a credential adviser	must complete a separate program of profess neets the subject matter requirement for obtain in the Charter College of Education for addition	sional education of ning a teaching of onal requirements	courses approved b redential, this degr s for earning a
Core Requirements (50-52 units)		l fan Olaamiataa D				
* PHYS 2100 and 2200 (5,5) is required for Physics Emp	masis students and recommended	1 for Chemistry El	<u>`</u>	1	Creada	Con Ed
Course Name ASTR 1510 - Principles of Astronomy			Credits: (2)	Term Taken	Grade	Gen Ed
ASTR 1510 - Principles of Astronomy: Laboratory			(1)	1		1
BIOL 1100 - Principles of Biology I			(5)			
BIOL 1200 - Principles of Biology II			(5)			
CHEM 1100 - General Chemistry I			(5)			
CHEM 1110 - General Chemistry II			(5)			
GEOL 1500 - Earth Revealed			(3)			_
GEOL 1550 - Oceanography			(3)			
GEOL 2520 - Historical Geology			(4)			
MATH 2110 - Calculus I MATH 2120 - Calculus II			(4)			+
MATH 2120 - Calculus II NATS 3980 - Field Observations in Science Education			(4)			+
* PHYS 1100 - Physics			(1)			
* PHYS 1200 - Physics			(4)			1
Capstone Courses (4 units)		I	12	1		•
•						1
Course Name			Credits:	Term Taken	Grade	Gen Ed
NATS 4960 - Natural Science Field Studies and Pedagog	<u>y</u>		(4)	1	I	1
Select One Emphasis						
Biology Emphasis ( 31 units)						
Required (20 units)			[			1
Course Name			Credits:	Term Taken	Grade	Gen Ed
BIOL 3000 - Biostatistics			(3)			
BIOL 3200 - Professional Writing in the Life Sciences BIOL 3400 - Cell Biology and Genetics			(3)			-
BIOL 3400 - Cell Biology and Evolution			(3)			
CHEM 2200 - Organic Chemistry I			(4)			
MICR 3100 - General Microbiology			(4)			1
Required Upper Division courses (6 units)						
Choose two courses from the following:						
0						
			Credits:	Term Taken		
Course Name			( )	Term Taken	Grade	Gen Ed
NATS 4000 - Crosscutting Concepts in Natural Science			(3)		Grade	Gen Ed
NATS 4000 - Crosscutting Concepts in Natural Science NATS 4100 - The Nature of Science			(3)		Grade	Gen Ed
NATS 4000 - Crosscutting Concepts in Natural Science NATS 4100 - The Nature of Science NATS 4200 - Cultures of Science			(3) (3)		Grade	Gen Ed
NATS 4000 - Crosscutting Concepts in Natural Science NATS 4100 - The Nature of Science NATS 4200 - Cultures of Science NATS 4540 - Current Topics in Natural Science			(3)		Grade	Gen Ed
NATS 4000 - Crosscutting Concepts in Natural Science NATS 4100 - The Nature of Science NATS 4200 - Cultures of Science NATS 4540 - Current Topics in Natural Science <b>Upper Division Electives (5 units)</b> Select upper division BIOL course(s) as electives with adv <b>Chemistry Emphasis ( 31 units)</b>	visor approval. A maximum of 3 t	units of directed st	(3) (3) (3)		Grade	Gen Ed
NATS 4000 - Crosscutting Concepts in Natural Science NATS 4100 - The Nature of Science NATS 4200 - Cultures of Science NATS 4540 - Current Topics in Natural Science Upper Division Electives (5 units) Select upper division BIOL course(s) as electives with adv Chemistry Emphasis ( 31 units) Required (23 units)	visor approval. A maximum of 3 t	inits of directed st	(3) (3) (3) tudy is allowed.			
NATS 4000 - Crosscutting Concepts in Natural Science NATS 4100 - The Nature of Science NATS 4200 - Cultures of Science NATS 4540 - Current Topics in Natural Science <b>Upper Division Electives (5 units)</b> Select upper division BIOL course(s) as electives with adv <b>Chemistry Emphasis ( 31 units)</b> <b>Required (23 units)</b> <b>Course Name</b>	visor approval. A maximum of 3 t	inits of directed st	(3) (3) (3) tudy is allowed. Credits:	Term Taken	Grade	Gen Ed
NATS 4000 - Crosscutting Concepts in Natural Science NATS 4100 - The Nature of Science NATS 4200 - Cultures of Science NATS 4540 - Current Topics in Natural Science Upper Division Electives (5 units) Select upper division BIOL course(s) as electives with adv Chemistry Emphasis ( 31 units) Required (23 units) Course Name CHEM 2201 - Organic Chemistry Laboratory I †	visor approval. A maximum of 3 t	mits of directed st	(3) (3) (3) tudy is allowed. Credits: (1)			
NATS 4000 - Crosscutting Concepts in Natural Science NATS 4100 - The Nature of Science NATS 4200 - Cultures of Science NATS 4540 - Current Topics in Natural Science Upper Division Electives (5 units) Select upper division BIOL course(s) as electives with adv Chemistry Emphasis ( 31 units) Required (23 units) Course Name CHEM 2201 - Organic Chemistry Laboratory I † CHEM 2200 - Organic Chemistry I	visor approval. A maximum of 3 t	inits of directed st	(3) (3) (3) tudy is allowed. Credits: (1) (4)			
NATS 4000 - Crosscutting Concepts in Natural Science NATS 4100 - The Nature of Science NATS 4200 - Cultures of Science VATS 4540 - Current Topics in Natural Science Upper Division Electives (5 units) Select upper division BIOL course(s) as electives with adv Chemistry Emphasis ( 31 units) Required (23 units) Course Name CHEM 2201 - Organic Chemistry Laboratory I † CHEM 2200 - Organic Chemistry I CHEM 3100 - Writing for Chemists	visor approval. A maximum of 3 1	inits of directed st	(3) (3) (3) tudy is allowed. Credits: (1) (4) (3)			
NATS 4000 - Crosscutting Concepts in Natural Science NATS 4100 - The Nature of Science NATS 4200 - Cultures of Science NATS 4540 - Current Topics in Natural Science Upper Division Electives (5 units) Select upper division BIOL course(s) as electives with adv Chemistry Emphasis ( 31 units) Required (23 units) Course Name CHEM 2201 - Organic Chemistry Laboratory I † CHEM 2200 - Organic Chemistry I CHEM 3200 - Writing for Chemists CHEM 3200 - Organic Chemistry I	visor approval. A maximum of 3 1	inits of directed st	(3) (3) (3) tudy is allowed. Credits: (1) (4) (3) (4)			
NATS 4000 - Crosscutting Concepts in Natural Science NATS 4100 - The Nature of Science NATS 4200 - Cultures of Science NATS 4200 - Cutrent Topics in Natural Science Upper Division Electives (5 units) Select upper division BIOL course(s) as electives with adv Chemistry Emphasis ( 31 units) Required (23 units) Course Name CHEM 2201 - Organic Chemistry Laboratory I † CHEM 2200 - Organic Chemistry I CHEM 3100 - Writing for Chemists CHEM 3200 - Organic Chemistry II CHEM 3500 - Quantitative Analysis †	visor approval. A maximum of 3 1	inits of directed st	(3) (3) (3) tudy is allowed. Credits: (1) (4) (4) (4)			
NATS 4000 - Crosscutting Concepts in Natural Science NATS 4100 - The Nature of Science NATS 4200 - Cultures of Science NATS 4540 - Current Topics in Natural Science Upper Division Electives (5 units) Select upper division BIOL course(s) as electives with adv Chemistry Emphasis ( 31 units) Required (23 units) Course Name CHEM 2201 - Organic Chemistry Laboratory I † CHEM 2200 - Organic Chemistry I CHEM 3100 - Writing for Chemists CHEM 3200 - Organic Chemistry II CHEM 3200 - Quantitative Analysis † CHEM 3600 - Inorganic Chemistry	visor approval. A maximum of 3 i	Inits of directed st	(3) (3) (3) tudy is allowed. Credits: (1) (4) (3) (4)			
NATS 4000 - Crosscutting Concepts in Natural Science NATS 4100 - The Nature of Science NATS 4200 - Cultures of Science Upper Division Electives (5 units) Select upper division BIOL course(s) as electives with adv Chemistry Emphasis ( 31 units) Required (23 units) Chemistry Emphasis ( 31 units) Required (23 units) CHEM 2201 - Organic Chemistry Laboratory I † CHEM 2200 - Organic Chemistry I CHEM 3200 - Organic Chemists CHEM 3200 - Organic Chemists CHEM 3200 - Organic Chemists CHEM 3200 - Organic Chemistry I CHEM 3200 - Organic Chemistry I CHEM 3200 - Inorganic Chemistry CHEM 3200 - Inorganic Chemistry CHEM 3600 - Inorganic Chemistry CHEM 4300 - Introduction to Biochemistry Required Upper Division courses (6 units)	visor approval. A maximum of 3 1	Inits of directed st	(3) (3) (3) tudy is allowed. <b>Credits:</b> (1) (4) (4) (4) (4) (4)			
NATS 4000 - Crosscutting Concepts in Natural Science NATS 4100 - The Nature of Science NATS 4200 - Cultures of Science Upper Division Electives (5 units) Select upper division BIOL course(s) as electives with adv Chemistry Emphasis ( 31 units) Required (23 units) Course Name CHEM 2201 - Organic Chemistry Laboratory I † CHEM 2200 - Organic Chemistry I CHEM 3200 - Organic Chemists CHEM 3200 - Organic Chemists CHEM 3200 - Organic Chemists CHEM 3200 - Organic Chemistry I CHEM 3200 - Organic Chemistry I CHEM 3200 - Inorganic Chemistry CHEM 3600 - Inorganic Chemistry CHEM 3600 - Inorganic Chemistry CHEM 4300 - Introduction to Biochemistry Required Upper Division courses (6 units) Choose two courses from the following:	visor approval. A maximum of 3 1	inits of directed st	(3) (3) (3) tudy is allowed. (4) (4) (4) (4) (4) (4) (3)	Term Taken	Grade	Gen Ed
NATS 4000 - Crosscutting Concepts in Natural Science VATS 4100 - The Nature of Science VATS 4200 - Cultures of Science VATS 4540 - Current Topics in Natural Science Upper Division Electives (5 units) Belect upper division BIOL course(s) as electives with adv Chemistry Emphasis ( 31 units) Required (23 units) Course Name CHEM 2201 - Organic Chemistry Laboratory I † HEM 2200 - Organic Chemistry I CHEM 3100 - Writing for Chemists CHEM 3200 - Organic Chemistry I CHEM 3200 - Organic Chemistry II CHEM 3500 - Quantitative Analysis † CHEM 3500 - Inorganic Chemistry HEM 3500 - Inorganic Chemistry CHEM 4300 - Introduction to Biochemistry Required Upper Division courses (6 units) Choose two courses from the following: Course Name	visor approval. A maximum of 3 i	inits of directed st	(3) (3) (3) tudy is allowed. Credits: (1) (4) (3) (4) (4) (4) (4) (3) (3) Credits:			
NATS 4000 - Crosscutting Concepts in Natural Science VATS 4100 - The Nature of Science NATS 4200 - Cultures of Science VATS 4200 - Current Topics in Natural Science Upper Division Electives (5 units) Select upper division BIOL course(s) as electives with adv Chemistry Emphasis ( 31 units) Required (23 units) Course Name HEM 2201 - Organic Chemistry Laboratory I † CHEM 2200 - Organic Chemistry I HEM 3200 - Organic Chemistry I HEM 3200 - Organic Chemistry I HEM 3200 - Organic Chemistry II CHEM 3200 - Organic Chemistry II CHEM 3200 - Inorganic Chemistry CHEM 3600 - Inorganic Chemistry CHEM 3600 - Inorganic Chemistry CHEM 4300 - Introduction to Biochemistry Required Upper Division courses (6 units) Choose two courses from the following: Course Name	visor approval. A maximum of 3 i		(3) (3) (3) tudy is allowed. Credits: (1) (4) (4) (4) (4) (4) (4) (4) (4	Term Taken	Grade	Gen Ed
NATS 4000 - Crosscutting Concepts in Natural Science NATS 4100 - The Nature of Science NATS 4200 - Cultures of Science NATS 4540 - Current Topics in Natural Science Upper Division Electives (5 units) Select upper division BIOL course(s) as electives with adv Chemistry Emphasis ( 31 units) Required (23 units) Course Name CHEM 2201 - Organic Chemistry Laboratory I † CHEM 2200 - Organic Chemistry I CHEM 3100 - Writing for Chemists CHEM 3200 - Organic Chemistry I CHEM 3500 - Quantitative Analysis † CHEM 3600 - Inorganic Chemistry CHEM 3600 - Inorganic Chemistry CHEM 3600 - Inorganic Chemistry CHEM 3600 - Inorganic Chemistry CHEM 300 - Introduction to Biochemistry Chem 4300 - Introduction to Biochemistry Choose two courses from the following: Course Name NATS 4000 - Crosscutting Concepts in Natural Science NATS 4100 - The Nature of Science	visor approval. A maximum of 3 i		(3) (3) (3) tudy is allowed. Credits: (1) (4) (4) (4) (4) (4) (4) (3) Credits: (3) (3)	Term Taken	Grade	Gen Ed
NATS 4000 - Crosscutting Concepts in Natural Science NATS 4100 - The Nature of Science NATS 4200 - Cultures of Science Upper Division Electives (5 units) Select upper division BIOL course(s) as electives with adv Chemistry Emphasis ( 31 units) Required (23 units) Course Name CHEM 2201 - Organic Chemistry Laboratory I † CHEM 2200 - Organic Chemistry I CHEM 3200 - Organic Chemists CHEM 3200 - Organic Chemists CHEM 3200 - Organic Chemists CHEM 3200 - Organic Chemistry I CHEM 3200 - Organic Chemistry I CHEM 3200 - Inorganic Chemistry CHEM 3000 - Inorganic Chemistry CHEM 3000 - Inorganic Chemistry CHEM 4300 - Introduction to Biochemistry Required Upper Division courses (6 units) Choose two courses from the following: Course Name NATS 4000 - Crosscutting Concepts in Natural Science NATS 4200 - Cultures of Science	visor approval. A maximum of 3 i	Inits of directed st	(3) (3) (3) tudy is allowed.	Term Taken	Grade	Gen Ed
NATS 4000 - Crosscutting Concepts in Natural Science NATS 4100 - The Nature of Science NATS 4200 - Cultures of Science NATS 4200 - Cultures of Science Upper Division Electives (5 units) Select upper division BIOL course(s) as electives with adv Chemistry Emphasis ( 31 units) Required (23 units) Course Name CHEM 2201 - Organic Chemistry Laboratory I † CHEM 2200 - Organic Chemistry I CHEM 3200 - Organic Chemistry I CHEM 3200 - Organic Chemistry I CHEM 3500 - Quantitative Analysis † CHEM 3500 - Quantitative Analysis † CHEM 3600 - Inorganic Chemistry CHEM 3600 - Introduction to Biochemistry CHEM 3600 - Introduction to Biochemistry CHATS 4000 - Crosscutting Concepts in Natural Science NATS 400 - The Nature of Science NATS 400 - Cultures of Science NATS 4540 - Current Topics in Natural Science	visor approval. A maximum of 3 i		(3) (3) (3) tudy is allowed.	Term Taken	Grade	Gen Ed
NATS 4000 - Crosscutting Concepts in Natural Science NATS 4100 - The Nature of Science NATS 4200 - Cultures of Science NATS 4540 - Current Topics in Natural Science <b>Upper Division Electives (5 units)</b> Select upper division BIOL course(s) as electives with adv			(3) (3) (3) tudy is allowed. <b>Credits:</b> (1) (4) (4) (4) (4) (4) (4) (4) (3) <b>Credits:</b> (3) (3) (3) (3)	Term Taken	Grade	Gen Ed
NATS 4000 - Crosscutting Concepts in Natural Science NATS 4100 - The Nature of Science NATS 4200 - Cultures of Science NATS 4540 - Current Topics in Natural Science Upper Division Electives (5 units) Select upper division BIOL course(s) as electives with adv Chemistry Emphasis ( 31 units) Required (23 units) Course Name CHEM 2201 - Organic Chemistry Laboratory I † CHEM 2200 - Organic Chemistry I CHEM 3200 - Organic Chemistry CHEM 3200 - Inorganic Chemistry CHEM 3200 - Inorganic Chemistry CHEM 3200 - Inorganic Chemistry CHEM 4300 - Introduction to Biochemistry CHEM 4300 - Introduction to Biochemistry CHEM 4300 - Introduction to Biochemistry Chem 4300 - Crosscutting Concepts in Natural Science NATS 4000 - Consecuting Concepts in Natural Science NATS 4000 - Current Topics in Natural Science NATS 4540 - Current Topics in Natural Science Upper Division Electives (2 units)			(3) (3) (3) tudy is allowed. <b>Credits:</b> (1) (4) (4) (4) (4) (4) (4) (4) (3) <b>Credits:</b> (3) (3) (3) (3)	Term Taken	Grade	Gen Ed
NATS 4000 - Crosscutting Concepts in Natural Science NATS 4100 - The Nature of Science NATS 4200 - Cultures of Science NATS 4200 - Current Topics in Natural Science Upper Division Electives (5 units) Select upper division BIOL course(s) as electives with adv Chemistry Emphasis ( 31 units) Required (23 units) Course Name CHEM 2201 - Organic Chemistry Laboratory I † CHEM 2200 - Organic Chemistry I CHEM 3200 - Organic Chemists CHEM 3200 - Organic Chemists CHEM 3200 - Organic Chemistry II CHEM 3200 - Organic Chemistry II CHEM 3500 - Quantitative Analysis † CHEM 3600 - Inorganic Chemistry CHEM 3600 - Inorganic Chemistry CHEM 3600 - Introduction to Biochemistry Required Upper Division courses (6 units) Choose two courses from the following: COurse Name NATS 4000 - Crosscutting Concepts in Natural Science NATS 4000 - Current Topics in Natural Science NATS 4200 - Current Topics in Natural Science Upper Division Electives (2 units) Select upper division CHEM course(s) as electives with a			(3) (3) (3) tudy is allowed. <b>Credits:</b> (1) (4) (4) (4) (4) (4) (4) (4) (3) <b>Credits:</b> (3) (3) (3) (3)	Term Taken	Grade	Gen Ed

					1	1	1
GEOG 2680 - Introduction to Geospatial Sciences GEOG 4100 - Applied Climatology			(4) (3)				
GEOL 3010 - Mineralogy and Petrology			(4)				
GEOL 3210 - Geology of Southern California			(3)				
GEOL 4350 - Coastal Processes and Environments			(3)				
Required Upper Division courses (6 units) Choose two courses from the following:							
Course Name			Credits:		Term Taken	Grade	Gen Ed
NATS 4000 - Crosscutting Concepts in Natural Science			(3)				
NATS 4100 - The Nature of Science		(3)					
NATS 4200 - Cultures of Science NATS 4540 - Current Topics in Natural Science			(3)				
Upper Division Electives (6 units)			1 (3)			1	1
Select upper division GEOL or GEOG course(s) as elective	s with advisor approval. A maxin	num of 3 units of	directed study is al	lowed.			
Physics Emphasis (29 units)							
Required (6 units)					1	1	1
Course Name CHEM 3100 - Writing for Chemists			Credits: (3)		Term Taken	Grade	Gen Ed
MATH 2130 - Calculus III			(3)				
Required Upper Division courses (6 units)							
Choose two courses from the following:							
Course Name			Credits:		Term Taken	Grade	Gen Ed
NATS 4000 - Crosscutting Concepts in Natural Science			(3)				
NATS 4100 - The Nature of Science NATS 4200 - Cultures of Science			(3)				
NATS 4200 - Current Topics in Natural Science			(3)		<u> </u>		1
Upper Division Electives (17 units)							
Select upper division PHYS or MATH course(s) as elective	s with advisor approval. Must in	clude one PHYS	lab course. A maxim	num of two MATH cou	rses is allowed. A maximu	ım of 3 units of dir	ected study is
allowed.							
The table below summarizes the various unit requ	-		aching Option of	the Bachelor of Sci	ence degree in Natura	l Science	
Table 2. Unit distribution for Teaching option (Op	tion II) for each emphasis a	rea.					
	Option II	Option II		Option II (Geoscier	nce Emphasis)	Option I	
Leves division CC*	(Biology Emphasis)	(Chemistry En	nphasis)				Emphasis)
Lower division GE* Upper division GE	30	30		30		30	
	9	9		9		9	
Lower division major core	45	45		45		47	
Upper division major core	5	5		5		5	
Upper division major core Emphasis specific required courses	5 26	5 29		5 25		5 12	
Upper division major core Emphasis specific required courses Upper division elective courses	5 26 5	5 29 2		5 25 6		5 12 17	
Upper division major core Emphasis specific required courses Upper division elective courses Total units *Natural Science majors are required to take lower divisio	5       26       5       120       n core courses in science and ma	5 29 2 120 ath that also meet	-	5 25 6 120	nces and Mathematics (9	5 12 17 120	
Upper division major core Emphasis specific required courses Upper division elective courses Total units *Natural Science majors are required to take lower divisio <b>Option III - Bachelor of Science Degre</b> The Applied Science Option of the Bachelor of Science deg human behavior. Total number of units required for the de Writing Intensive (WI).	5 26 5 120 n core courses in science and ma ce in Natural Science ree in Natural Science is designe rere is 120. A minimum of 24 ac	5 29 2 120 ath that also meet (Applied So	cience)	5 25 6 120 cor Block B Natural Scie	uiring application of a ge	5 12 17 120 9 units).	ce background to designated as GE
Upper division major core Emphasis specific required courses Upper division elective courses Total units *Natural Science majors are required to take lower divisio <b>Option III - Bachelor of Science Degre</b> The Applied Science Option of the Bachelor of Science deg human behavior. Total number of units required for the de Writing Intensive (WI).	5 26 5 120 n core courses in science and ma ce in Natural Science ree in Natural Science is designe rere is 120. A minimum of 24 ac	5 29 2 120 ath that also meet (Applied So	cience)	5 25 6 120 cor Block B Natural Scie	uiring application of a ge	5 12 17 120 9 units).	ce background to designated as GE
Upper division major core Emphasis specific required courses Upper division elective courses Total units *Natural Science majors are required to take lower divisio <b>Option III - Bachelor of Science Degre</b> The Applied Science Option of the Bachelor of Science deg human behavior. Total number of units required for the do Writing Intensive (WI). <b>Requirements for the Major (70-76 units</b> )	5 26 5 120 n core courses in science and ma ce in Natural Science ree in Natural Science is designe rere is 120. A minimum of 24 ac	5 29 2 120 ath that also meet (Applied So	cience)	5 25 6 120 cor Block B Natural Scie	uiring application of a ge	5 12 17 120 9 units).	ce background to designated as GE
Upper division major core Emphasis specific required courses Upper division elective courses Total units *Natural Science majors are required to take lower divisio <b>Option III - Bachelor of Science Degre</b> The Applied Science Option of the Bachelor of Science deg human behavior. Total number of units required for the de Writing Intensive (WI). <b>Requirements for the Major (70-76 units)</b> <b>Core Requirements (49 units)</b>	5 26 5 120 n core courses in science and ma ee in Natural Science in Natural Science is designe gree is 120. A minimum of 24 ac	5 29 2 120 ath that also meet (Applied So	cience)	5 25 6 120 cor Block B Natural Scie	uiring application of a ge	5 12 17 120 9 units).	ce background to designated as GE
Upper division major core Emphasis specific required courses Upper division elective courses Total units *Natural Science majors are required to take lower divisio <b>Option III - Bachelor of Science Degre</b> The Applied Science Option of the Bachelor of Science deg human behavior. Total number of units required for the do Writing Intensive (WI). <b>Requirements for the Major (70-76 units)</b> <b>Core Requirements (49 units)</b> <b>Fundamentals of Biological and Chemical Science</b> <b>Course Name</b>	5 26 5 120 n core courses in science and ma ee in Natural Science in Natural Science is designe gree is 120. A minimum of 24 ac	5 29 2 120 ath that also meet (Applied So	cience) reparation for broad upper division coun Credits:	5 25 6 120 cor Block B Natural Scie	uiring application of a ge	5 12 17 120 9 units).	ce background to designated as GE
Upper division major core Emphasis specific required courses Upper division elective courses Total units *Natural Science majors are required to take lower divisio <b>Option III - Bachelor of Science Degre</b> The Applied Science Option of the Bachelor of Science deg human behavior. Total number of units required for the do Writing Intensive (WI). <b>Requirements for the Major (70-76 units)</b> <b>Core Requirements (49 units)</b> <b>Fundamentals of Biological and Chemical Science</b> <b>Course Name</b> BIOL 1100 - Principles of Biology I	5 26 5 120 n core courses in science and ma ee in Natural Science in Natural Science is designe gree is 120. A minimum of 24 ac	5 29 2 120 ath that also meet (Applied So	cience) reparation for broad upper division count (5)	5 25 6 120 cor Block B Natural Scie	uiring application of a ge he emphasis area, and tw	5 12 17 120 units). neral natural scien vo courses must be	designated as GE
Upper division major core Emphasis specific required courses Upper division elective courses Total units *Natural Science majors are required to take lower divisio <b>Option III - Bachelor of Science Degre</b> The Applied Science Option of the Bachelor of Science deg human behavior. Total number of units required for the de Writing Intensive (WI). <b>Requirements for the Major (70-76 units)</b> <b>Core Requirements (49 units)</b> <b>Fundamentals of Biological and Chemical Science</b> <b>Course Name</b> BIOL 1100 - Principles of Biology I BIOL 1200 - Principles of Biology II	5 26 5 120 n core courses in science and ma ee in Natural Science in Natural Science is designe gree is 120. A minimum of 24 ac	5 29 2 120 ath that also meet (Applied So	cience) reparation for broad upper division count upper division count (5) (5)	5 25 6 120 cor Block B Natural Scie	uiring application of a ge he emphasis area, and tw	5 12 17 120 units). neral natural scien vo courses must be	designated as GE
Upper division major core Emphasis specific required courses Upper division elective courses Total units "Natural Science majors are required to take lower divisio <b>Option III - Bachelor of Science Degre</b> The Applied Science Option of the Bachelor of Science deg human behavior. Total number of units required for the de Writing Intensive (WI). <b>Requirements for the Major (70-76 units)</b> <b>Fundamentals of Biological and Chemical Science</b> <b>Course Name</b> BIOL 1100 - Principles of Biology I BIOL 2020 - Human Anatomy and Physiology I BIOL 2020 - Human Anatomy and Physiology II	5 26 5 120 n core courses in science and ma ee in Natural Science in Natural Science is designe gree is 120. A minimum of 24 ac	5 29 2 120 ath that also meet (Applied So	cience) reparation for broad upper division count (5)	5 25 6 120 cor Block B Natural Scie	uiring application of a ge he emphasis area, and tw	5 12 17 120 units). neral natural scien vo courses must be	designated as GE
Upper division major core Emphasis specific required courses Upper division elective courses Total units *Natural Science majors are required to take lower divisio <b>Option III - Bachelor of Science Degree</b> The Applied Science Option of the Bachelor of Science deg human behavior. Total number of units required for the do Writing Intensive (WI). <b>Requirements for the Major (70-76 units)</b> <b>Fundamentals of Biological and Chemical Science</b> <b>Course Name</b> BIOL 1100 - Principles of Biology I BIOL 2000 - Human Anatomy and Physiology I BIOL 2000 - Human Anatomy and Physiology II CHEM 1010 - Fundamentals of Chemistry	5 26 5 120 n core courses in science and ma ee in Natural Science in Natural Science is designe gree is 120. A minimum of 24 ac	5 29 2 120 ath that also meet (Applied So	Credits:         (5)           (4)         (4)	5 25 6 120 cor Block B Natural Scie	uiring application of a ge he emphasis area, and tw	5 12 17 120 units). neral natural scien vo courses must be	designated as GE
Upper division major core Emphasis specific required courses Upper division elective courses Total units *Natural Science majors are required to take lower divisio <b>Option III - Bachelor of Science Degre</b> The Applied Science Option of the Bachelor of Science deg human behavior. Total number of units required for the de Writing Intensive (WI). <b>Requirements for the Major (70-76 units)</b> <b>Core Requirements (49 units)</b> <b>Fundamentals of Biological and Chemical Science</b> <b>Course Name</b> BIOL 1200 - Principles of Biology I BIOL 1200 - Human Anatomy and Physiology I BIOL 2010 - Human Anatomy and Physiology I CHEM 1020 - Fundamentals of Chemistry CHEM 1020 - Fundamentals of Chemistry	5 26 5 120 n core courses in science and ma ee in Natural Science in Natural Science is designe gree is 120. A minimum of 24 ac	5 29 2 120 ath that also meet (Applied So	<b>Credits:</b> (5) (5) (4) (4) (4) (4)	5 25 6 120 cor Block B Natural Scie	uiring application of a ge he emphasis area, and tw	5 12 17 120 units). neral natural scien vo courses must be	designated as GE
Upper division major core Emphasis specific required courses Upper division elective courses Total units *Natural Science majors are required to take lower divisio <b>Option III - Bachelor of Science Degre</b> The Applied Science Option of the Bachelor of Science deg human behavior. Total number of units required for the de Writing Intensive (WI). <b>Requirements for the Major (70-76 units)</b> <b>Core Requirements (49 units)</b> <b>Fundamentals of Biological and Chemical Science</b> <b>Course Name</b> BIOL 1200 - Principles of Biology I BIOL 2010 - Human Anatomy and Physiology I BIOL 2020 - Human Anatomy of Physiology I BIOL 2020 - Human Anatomy of Chemistry CHEM 1020 - Fundamentals of Organic Chemistry CHEM 1020 - Fundamentals of Organic Chemistry CHEM 1020 - Nutritional Aspects of Biochemistry	5 26 5 120 n core courses in science and ma ee in Natural Science in Natural Science is designe gree is 120. A minimum of 24 ac	5 29 2 120 ath that also meet (Applied So	Credits:         (5)           (4)         (4)	5 25 6 120 cor Block B Natural Scie	uiring application of a ge he emphasis area, and tw	5 12 17 120 units). neral natural scien vo courses must be	designated as GE
Upper division major core Emphasis specific required courses Upper division elective courses Total units *Natural Science majors are required to take lower divisio <b>Option III - Bachelor of Science Degre</b> The Applied Science Option of the Bachelor of Science deg human behavior. Total number of units required for the de Writing Intensive (WI). <b>Requirements for the Major (70-76 units)</b> <b>Core Requirements (49 units)</b> <b>Fundamentals of Biological and Chemical Science</b> <b>Course Name</b> BIOL 1200 - Principles of Biology I BIOL 2020 - Human Anatomy and Physiology I BIOL 2020 - Human Anatomy and Physiology I BIOL 2020 - Human Anatomy and Physiology I CHEM 1020 - Fundamentals of Organic Chemistry CHEM 1020 - Nutritional Aspects of Biochemistry MATH 1020 - College Algebra * * Students in the bridge to clinical laboratory science emplation <b>Course In the bridge to clinical laboratory science emplated</b>	5 26 5 120 n core courses in science and ma ce in Natural Science ree in Natural Science is designe gree is 120. A minimum of 24 ac ) s (33 units)	5 29 2 120 ath that also meet (Applied S ed primarily for p dditional units of	Credits:           (5)           (4)           (4)           (4)           (4)	5 25 6 120 cor Block B Natural Scie	uiring application of a ge he emphasis area, and tw	5 12 17 120 units). neral natural scien vo courses must be	designated as GE
Upper division major core Emphasis specific required courses Upper division elective courses Total units "Natural Science majors are required to take lower divisio Option III - Bachelor of Science Degre The Applied Science Option of the Bachelor of Science deg human behavior. Total number of units required for the de Writing Intensive (WI). Requirements for the Major (70-76 units) Core Requirements (49 units) Fundamentals of Biological and Chemical Science Course Name BIOL 1200 - Principles of Biology I BIOL 2000 - Punciples of Biology I BIOL 2000 - Human Anatomy and Physiology I BIOL 2000 - Human Anatomy and Physiology I CHEM 1020 - Fundamentals of Organic Chemistry CHEM 1020 - Fundamentals of Organic Chemistry CHEM 1020 - Nutritional Aspects of Biochemistry MATH 1020 - College Algebra * * Students in the bridge to clinical laboratory science empl Sciences	5 26 5 120 n core courses in science and ma ce in Natural Science ree in Natural Science is designe regree is 120. A minimum of 24 ac s (33 units) hasis area MATH 1050 - Precalcu	5 29 2 120 ath that also meet (Applied S ed primarily for p dditional units of	Credits:           (5)           (4)           (4)           (4)           (4)	5 25 6 120 cor Block B Natural Scie	uiring application of a ge he emphasis area, and tw	5 12 17 120 units). neral natural scien vo courses must be	designated as GE
Upper division major core Emphasis specific required courses Upper division elective courses Total units "Natural Science majors are required to take lower divisio Option III - Bachelor of Science Degre The Applied Science Option of the Bachelor of Science deg human behavior. Total number of units required for the d Writing Intensive (WI). Requirements for the Major (70-76 units) Core Requirements (49 units) Fundamentals of Biological and Chemical Science Course Name BIOL 1200 - Principles of Biology I BIOL 2000 - Punciples of Biology I BIOL 2000 - Human Anatomy and Physiology I BIOL 2000 - Human Anatomy and Physiology I BIOL 2000 - Human Anatomy and Physiology I BIOL 2000 - Human Anatomy of Physiology I BIOL 2000 - Physiology I BIOL 2000 - Physiology I BIOL 2000 - Physiology	5 26 5 120 n core courses in science and ma ce in Natural Science ree in Natural Science is designe regree is 120. A minimum of 24 ac s (33 units) hasis area MATH 1050 - Precalcu	5 29 2 120 ath that also meet (Applied S ed primarily for p dditional units of	Credits:           (5)           (4)           (4)           (4)           (4)	5 25 6 120 cor Block B Natural Scie	uiring application of a ge he emphasis area, and tw	5 12 17 120 units). neral natural scien vo courses must be	designated as GE
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BIOL 3200 - Professional Writing in the Life Sciences		(3)		1			1
MATH 1050 - Precalculus for Life Sciences		(6)		1			
PHYS 1560 - Physics for the Twenty-first Century		(2)					
PHYS 1570 - Physics for the Twenty-first Century Laboratory Upper Division Electives (15 units)		(1)					1
Select upper division electives with advisor approval from the follow	wing list of courses:						
Course Name	0	Credit	s:	Term T	aken	Grade	Gen Ed
BIOL 3400 - Cell Biology and Genetics		(3)					
BIOL 3401 - Cell and Molecular Laboratory BIOL 4120 - Human Genetics		(2)					
BIOL 4120 - Human Genetics BIOL 4130 - Molecular Diagnostics		(3)					
BIOL 4160 - Molecular Genetics		(3)					
BIOL 4170 - Gene Manipulation		(3)					
AICR 3300 - Microbial Genetics AICR 3500 - Bacterial Physiology		(3)					
AICR 3700 - Medical Microbiology		(4)					
AICR 4600 - Theoretical and Applied Immunology		(4)					_
AICR 4100 - General Virology AICR 4200 - Emerging and Re-Emerging Infectious Diseases		(3)		+			
AICR 4220 - Bioterrorism and Biosecurity		(3)					
AICR 4300 - Hematology		(3)					_
AICR 4400 - Fungal Pathogenesis		(3)					
Tree Electives (5 units)	1 Completion of a difficult heider to C	n a de					
elect lower and/or upper division electives with advisor approva	a. Completion of additional bridge to C	LS OF OTHE	er applied science courses is stroi	igiy recom	nenaea.		
ood Science Emphasis (21 units)							
equired (21 units) elect upper division NTRS courses totaling at least 21 units with ac ree Elective (11 units)	dvisor approval.						
elect courses with advisor approval. Aedical Science Emphasis (21 units)							
Required Upper Division Elective (21 units) Select upper division NURS courses totaling at least 21 units with a	dvisor approval.						
Free Elective (11 units) Select courses with advisor approval.							
<b>Fable 3. Unit distribution for Applied Sc</b>	ience ontion (Ontion II	T) for	each emphasis area				
Tuble 3. Onit distribution for Applied Se		1)101		•			
	Option III		Option III		Option III		
	(Prides to CLO Frank soir)		· ·		•		
	(Bridge to CLS Emphasis)		(Food Science Emphasis)		•	nce Emphasis)	
	(Bridge to CLS Emphasis) 30		· ·		•	nce Emphasis)	
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Upper division GE Lower division major core	30 09 36		(Food Science Emphasis) 30 09 39		(Medical Scie 30 09 39	nce Emphasis)	
Upper division GE Lower division major core Lower division major core(additional)	30 09 36 0		(Food Science Emphasis) 30 09 39 0		(Medical Scie 30 09 39 0	nce Emphasis)	
Upper division GE Lower division major core Lower division major core(additional) Upper division major core	30 09 36 0 16		(Food Science Emphasis) 30 09 39 0 10		(Medical Scie 30 09 39 0 10	nce Emphasis)	
Upper division GE Lower division major core Lower division major core(additional) Upper division major core Emphasis specific required courses	30       09       36       0       16       15		(Food Science Emphasis) 30 09 39 0 10 0 0		(Medical Scie 30 09 39 0 10 0	nce Emphasis)	
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Upper division GE Lower division major core Lower division major core(additional) Upper division major core Emphasis specific required courses Upper division elective courses	30       09       36       0       16       15       15		(Food Science Emphasis) 30 09 39 0 10 0 21		(Medical Scie 30 09 39 0 10 0 21	nce Emphasis)	
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