BS ENVIRONMENTAL EARTH AND SOIL SCIENCES

Program Learning Objectives

- 1. Demonstrate critical thinking and problem solving skills.
- 2. Effectively communicate scientific and technical knowledge in a professional manner.
- 3. Demonstrate the ability to integrate and apply technical knowledge in the following key areas:
 - Geology & Climate rock materials and processes of the lithosphere, plate tectonics; deformational histories, and past climates;
 - b. Soils & Water morphology, ecology, chemistry, physics, and health;
 - Geography & Geospatial Technology human cultural impacts, resource utilization trends and spatial patterns, geographic information systems and modeling;
 - d. Resource Management effects of land management activities on, and restoration and rehabilitation of, soil and water resources.
- Demonstrate proficiency in quantitative skills and information management specific to their discipline areas.
- 5. Exhibit an understanding of their professional and ethical responsibilities, including respect for diversity.
- Promote life-long learning habits by exposing students to the discovery process of applied research and demonstration projects conducted by the faculty.

Degree Requirements and Curriculum

In addition to the program requirements listed on this page, students must also satisfy requirements outlined in more detail in the Minimum Requirements for Graduation (https://catalog.calpoly.edu/ generalrequirementsbachelorsdegree/#generaleducationtext) section of this catalog, including:

- 60 units of upper-division courses
- Graduation Writing Requirement (GWR)
- 2.0 GPA
- U.S. Cultural Pluralism (USCP)

Note: No Major, Support or Concentration courses may be selected as credit/no credit.

MAJOR COURSES

NR 140	Careers in Natural Resources Management and Environmental Sciences	1
or UNIV 100	University Studies	
ERSC 144	Introduction to Earth Science	4
ERSC 223	Rocks and Minerals	4
ERSC 303	Soil Erosion and Water Conservation	4
ERSC/GEOG 333	Human Impact on the Earth ¹	3-4
or BRAE 345	Aerial Photogrammetry and Remote Sensing	
or GEOG 325	Climate and Humanity	
or GEOG 350	The Global Environment	
or MATH 142	Calculus II	

SS 120	Introductory Soil Science	4
SS 221	Soil Health and Plant Nutrition	4
SS 321	Soil Morphology	4
SS 422	Soil Ecology ²	4
or ERSC 423	Geomorphology	
SS 423	Environmental Soil and Water Chemistry	5
SS 424	Environmental Soil Physics - Senior Project	5
BOT 121	General Botany (B2 & B3) ³	4
CHEM 127	General Chemistry for Agriculture and Life Science I (B1 & B3) ³	4
CHEM 128	General Chemistry for Agriculture and Life Science II	4
CHEM 129	General Chemistry for Agriculture and Life Science III	4
CHEM 312	Organic Chemistry: Fundamentals and Applications	5
GEOL 201	Physical Geology	3
GEOL 241	Physical Geology Laboratory	1
GEOL 415	Structural Geology ²	4
or GEOL 330	Principles of Stratigraphy	
MATH 161	Calculus for the Life Sciences I (B4) 3,4	4
or MATH 141	Calculus I	
NR/LA 218	Introduction to Geographic Information Systems (GIS)	3
NR 310	Global Climate Change (Upper- Division B) ³	4
NR 363	Undergraduate Seminar	2
NR 418	Applied GIS	3-4
or NR 355	Drone Assisted Surveying	
or NR 416 or SS 431	Environmental Impact Analysis and Mana Digital Soil Mapping	agement
PHYS 121	College Physics I ⁵	4
or PHYS 141	General Physics I	
STAT 218	Applied Statistics for the Life Sciences (GE Electives) ³	4
or STAT 217	Introduction to Statistical Concepts and N	Nethods
Concentration (32 u combination with Fi	nits) or Approved Electives (20 units) in ree Electives ^{6,7,8}	20-32
GENERAL EDUCATI	ON (GE)	
(See GE program ree	quirements below.)	52
FREE ELECTIVES		
Free Electives		0-13
Total units		180-181
to meet prerequ interested in the take MATH 142	Geology concentration need to take MATH isites for courses in the concentration. Stud Soil Geotechnical Studies are encouraged to meet prerequisites for courses in that are sted in taking NR 355 need to take BRAE 34	dents to ea.

² Students in the Geology concentration must take ERSC 423 and GEOL 415 to meet requirements for this concentration.

- ³ Required in Major or Support; also satisfies General Education (GE) requirement.
- ⁴ Students in the Geology concentration need to take MATH 141 to meet prerequisites for courses in the concentration. Students interested in the Soil Geotechnical Studies Approved Electives area must take MATH 141 to meet prerequisites for courses in that area.
- ⁵ Students in the Geology concentration need to take PHYS 141 to meet prerequisites for courses in the concentration. Students interested in the Soil Geotechnical Studies Approved Electives area must take PHYS 141 to meet prerequisites for courses in that area.
- ⁶ Unless a concentration is declared, the default will be a combination of Approved Electives and Free Electives.
- ⁷ Students who do not declare a concentration are encouraged to use Approved Electives and Free Electives to earn a minor. See the below Approved Electives Guide for recommended minors.
- ⁸ If a course is taken to meet a Major or Support requirement, it cannot be double-counted as an Approved Elective.

Concentrations

- Geology (https://catalog.calpoly.edu/collegesandprograms/ collegeofagriculturefoodenvironmentalsciences/ naturalresourcesmanagementenvironmentalsciences/ bsenvironmentalearthsoilsciences/geologyconcentration/)
- Hydrology (https://catalog.calpoly.edu/collegesandprograms/ collegeofagriculturefoodenvironmentalsciences/ naturalresourcesmanagementenvironmentalsciences/ bsenvironmentalearthsoilsciences/hydrologyconcentration/)

Approved Electives Guide

Approved Electives are courses that support the below career areas. Refer to number(s) next to each course to identify which courses align with each of the career areas. Consultation with an advisor is recommended prior to selecting Approved Electives; bear in mind your selections may impact pursuit of post-baccalaureate studies and/or goals.

- 1. Climate Change Science
- 2. Environmental Mitigation Strategies
- 3. Environmental Policy and Management
- 4. Environmental Soil Science
- 5. Forest and Environmental Practices
- 6. Geospatial Technology
- 7. Soil Geotechnical Studies
- 8. Sustainable Agriculture
- 9. Urban Forestry

A student may earn one or more of the minors listed below through the appropriate selection of Approved Electives in combination with Free Electives (refer to advising materials for the minor). However, students in this major may not obtain minors in Environmental Soil Science or Geology as the subject areas in these minors are substantially covered in this major.

- · Anthropology and Geography
- Biology
- Geographic Information Systems for Agriculture
- · Indigenous Studies in Natural Resources and the Environment

- Sustainable Environments
- Water Science

Approved Electives

Select from the following:

Select fro	m the follow	wing:		
At leas	t 8 units m	ust be upper-division (300-400 level)		
degree	No more than 6 units of NR 339 may count towards the degree.			
double	count as a			
AG/PL	SC 315	Principles of Organic Crop Production		
AG 339		Internship in Agriculture ⁸		
	ES/ENGR/ CM/UNIV	The Global Environment ^{1, 8}		
AG 360)	Holistic Management ^{5, 8}		
AGB 21	12	Agricultural Economics ⁸		
AGB 31	2	Agricultural Policy ⁸		
AGB 36	59	Agricultural Personnel Management ⁸		
AGC 20)5	Agricultural Communications		
ANT 20	01	Cultural Anthropology ¹		
or A	NT 202	World History Before Writing		
ANT 25	50	Biological Anthropology ¹		
ARCE 2	211	Structures I ⁷		
or C	E 204	Mechanics of Materials I		
ARCE 2	212	Structures II ⁷		
or M	1E 211	Engineering Statics		
ARCE 2	223	Mechanics of Structural Members ⁷		
or C	E 207	Mechanics of Materials II		
ARCE 4	122	Foundation Design ⁷		
ASCI 1	12	Principles of Animal Science ⁸		
ASCI 2	21	Introduction to Beef Production ⁸		
ASCI 2	23	Systems of Small Ruminant Management ⁸		
ASCI 2	39	Principles of Rangeland Management 1,2,3,8		
ASCI 3	11	Advanced Beef Cattle System Management ⁸		
ASCI 3	72	California Rangeland & Ranch Resource Management ^{1,2,3,8}		
ASCI 4	65	Applied Practices for Monitoring California Rangelands ^{1,2,3,8}		
BIO 32	9	Vertebrate Field Zoology ²		
BIO 40	0	Special Problems for Advanced Undergraduates ^{2, 5}		
BIO 42	7	Wildlife Management ²		
BIO 43	5	Plant Physiology 5		
BOT/PI	LSC 323	Plant Pathology ⁸		
BOT 32	26	Plant Ecology ²		
BIO 44	7	Spatial Ecology ^{2,6}		
BRAE 1	141	Agricultural Machinery Safety ⁸		
BRAE 1	142	Agricultural Power and Machinery Management ⁸		

BRAE 150	Design Graphics and CAD for	GEOG 308	Global Geography ¹
	Agricultural Engineering ^{5, 6}	GEOG 328	Applications in Remote Sensing and
BRAE 237	Introduction to Engineering Surveying		GIS ^{1, 6}
		GEOG 400	Special Problems for Advanced
BRAE 239	Engineering Surveying ^{5, 6}		Undergraduates ¹
BRAE/NR 247	Forest Surveying ⁵	GEOG 435	Biodiversity and Biogeography Methods
BRAE 333	Aquacultural Engineering ^{1,2,3,8}	GEOG 441	Advanced Applications in Geospatial
BRAE 340	Irrigation Water Management ^{5, 8}	GEUG 441	Technologies ¹
BRAE 345	Aerial Photogrammetry and Remote Sensing ⁶	GEOL 203	The Geologic Record: Fossils and the History of Life ¹
BRAE 348	Energy for a Sustainable Society 1	GEOL 206	Geologic Excursions ⁷
BRAE/NR 349	Water for a Sustainable Society ^{1,2,3,8}	GEOL 200 GEOL 305	Seismology and Earth Structure ⁷
BRAE 447	Advanced Surveying with GIS	GEOL 303	Special Problems for Advanced
05110	Applications ⁶	GLOL 400	Undergraduates ⁷
CE 112	Design Principles in Civil Engineering	GEOL 420	Applied Geophysics ⁷
CE 113	Computer Aided Drafting in Civil	JOUR 203	News Reporting and Writing ⁵
OL 115	Engineering ⁶	MATH 142	Calculus II ⁴
CE 204	Mechanics of Materials I ⁷	or MATH 162	Calculus for the Life Sciences II
CE 381	Geotechnical Engineering	MATH 143	Calculus III ⁷
& CE 382	and Geotechnical Engineering	MATH 241	Calculus IV ⁷
	Laboratory ⁷	MCR0 221	Microbiology ⁵
or ARCE 421	Soil Mechanics	MCRO 436	Microbial Ecology ⁵
CHEM 314	Biochemistry: Fundamentals and Applications ⁴	NR 141	Introduction to Forest Ecosystem Management ^{5, 9}
CHEM 331	Quantitative Analysis ⁴	NR 142	Environmental Management ^{8,9}
CHEM 341	Environmental Chemistry: Water Pollution ⁴	NR 200	Special Problems for Undergraduates 1,2,3,4,5,6,7,8,9
CRP 212	Introduction to Urban Planning ^{3, 5, 6, 9}	NR 203	Resource Law Enforcement
CRP 336	Introduction to Environmental	NR 204	Wildland Fire Control ^{5, 9}
	Planning ^{5, 6}	NR 208	Dendrology ^{5, 9}
CRP/NR 404	Environmental Law	NR 215	Land and Resource Measurements ⁵
CRP/NR 408	Water Resource Law and Policy ^{2, 3, 5,}	NR 260	Forest Operations ⁵
	35	NR 306	Natural Resource Ecology and
CRP 420	Land Use Law ^{3, 5}		Habitat Management ^{2, 5, 6, 9}
CSC/CPE 101	Fundamentals of Computer Science ⁶	NR/ES 308	Fire and Society ⁵
ECON 221	Microeconomics ³	NR 312	Technology of Wildland Fire
EDES 406	Sustainable Environments ⁸		Management ⁵
ENGL 147	Writing Arguments about STEM ^{1, 2, 3}	NR 315	Forest Mensuration ⁵
ENGL 316	Writing Sustainability ^{1, 2, 3}	NR 320	Watershed Processes and
ENVE 264	Environmental Fluid Mechanics ⁷		Management ⁵
ENVE 324	Introduction to Air Pollution ¹	NR 323	Human Dimensions in Natural
ENVE 405	Environmental Engineering Research		Resources Management ^{1, 2, 3}
ERSC/GEOG 250	Physical Geography ¹	NR 324	Social Dimensions of Sustainable Food and Fiber Systems ⁸
ERSC/GEOG 325	Climate and Humanity ¹	NR 326	Natural Resources Economics and
ERSC/GEOG 414	5 57	ND 320	Valuation ^{1, 3, 5}
ERSC/GEOG 415	1	NR 339	Internship in Forest and Natural Resources ^{1,2,3,4,5,6,7,8,9}
ERSC 423	Geomorphology ^{4, 6}	NR 340	Wildland Fire Management ^{5, 9}
ERSC 442	Applied Environmental Groundwater	NR 340 NR 350	Urban Forestry ^{5, 9}
	Hydrology ⁴	NR 350 NR 355	Drone Assisted Surveying ^{5,6}
ERSC 443	Applied Environmental Contaminant Transport ⁴	NR/ES 360	Ethnicity and the Land ⁵
GEOG 150	Human Geography ^{1, 3}	NR 365	Silviculture and Fuels Management ⁵
GL08 150	Human Geography	NH 303	Simoulture and rueis Management

NNE 3: 06 Indigenous Peoples and International Law and Policy ³ NR 413 Apjicitural Law ^{1,2,3,4,8} NR 420 Watershed Assessment and Protection ¹ NR 421 Stream Assessment and Water Quality Monitoring ^{5,9} NR 422 Stream Assessment and Water Quality Monitoring ^{5,9} NR 435 Environmental Relax ^{1,3} NR 436 Wood Properties, Products and Sustainable Laws ^{1,4} Stream Assessment and Water Quality Monitoring ^{5,9} Sisters Measurements and Water Quality Monitoring ^{5,9} NR 435 Environmental Relax / Analysis ^{1,2} NR 435 Systems Thinking In Environmental Measagement ^{1,2,4,4,4,7,4,1,4,9 NR 435 Systems Thinking In Environmental Measagement ^{1,2,4,4,4,7,1,4,9 NR 475 Senior Project - Forest Stewardship ^{3,4} NR 475 Senior Project - Forest Stewardship ^{3,4} PHIL 340 Environmental Ethics ^{1,3} PHIL 340 Environmental Ethics ^{1,3} PHY 512 College Physics II ⁴ PHY 513 General Physics II PHY 514 General Physics II PHY 514 General Physics II PHY 514 General Physics II PHY 513 General Physics II}}	NR 400	Special Problems for Advanced Undergraduates ¹ , 2, 3, 4, 5, 6, 7, 8, 9	PSC 320	Energy, Society and the Environment
NR 420 Watershed Assessment and Protoction ¹ NR 422 Stream Measurements and Water Quality Monitoring ¹ NR 422 Stream Measurements and Water Quality Monitoring ¹ NR 424 Stream Measurements and Water Quality Monitoring ¹ NR 425 Stream Measurements and Water Quality Monitoring ¹ NR 435 Environmental Policy Analysis ^{1,3} NR 445 Systems Thinking in Environmental Management ^{1,2} 4, 5, 6, 7, 3 NR 475 Senior Project - Forest Stewardship Practices ^{3,5} NR 475 Senior Project - Forest Stewardship Practices ^{3,5} NR 475 Senior Project - Forest Stewardship Practices ^{3,5} NR 475 Senior Project - Forest Stewardship Practices ^{3,5} PHYS 112 College Physics II PHYS 113 General Physics II PHYS 114 General Physics II PHYS 112 Landscape Ingallation and Maintenance ^{3,5} PLSC 223 Organic Enterprise Project ⁸ PLSC 223 Plant Materials ^{1,5,9} PLSC 223 Plant Materials ^{1,5,9} PLSC 223 Plant Materials ^{1,5,9} PLSC 233 Plant Materials ^{1,5,9} PLSC 244 Plant Propagation ^{5,9} PLSC 245 <td>NR/ES 406</td> <td>-</td> <td>RPTA 112</td> <td></td>	NR/ES 406	-	RPTA 112	
Protection 5 BPTA 302 Environmental and Wilderness NR 422 Stream Measurements and Water Education 3 Quality Monitoring 5.9 Stream Measurements and Water NR 435 Environmental Policy Analysis 1.3 Stream Measurements and Water NR 435 Environmental Policy Analysis 1.3 Stream Care Measurements and Water NR 435 Environmental Policy Analysis 1.3 Stream Care Measurements and Water NR 435 Environmental Policy Analysis 1.3 Stream Care Measurements and Water NR 435 Environmental Policy Analysis 1.3 Stream Care Measurements and Water NR 435 Environmental Policy Analysis 1.3 Stream Care Measurements and Water NR 447 Exercise 2.4.5.4.5.9 Stream Care Measurements and Water NR 472 Leadership Practice 3.5 Stream Care Measurements and Water NR 472 Leadership Protect - Forest Strewardship 3 Stresm Care Measurements and Water PHIL 340 Environmental Ethics 1.3 Stream Care Measurement 4 PHIS 122 College Physics II Stream Care Measurement 4 PHY 5122 College Physics II UNIX 931 Adaptaced Viticulture - Full 4 PLSC 223 Departice Forecat Stream Care M	NR 413	Agricultural Law ^{1, 2, 3, 4, 8}	RPTA 210	Experience Design ³
NR 422 Stream Measurements and Water Quality Monitoring 5.9 NR 434 Wood Properties, Products and Statianable Uses ^{1,3} Stream Thinking in Environmental Management ^{1,4} / ₂ × 5, 6, 6, 9 NR 445 Systems Thinking in Environmental Management ^{1,4} / ₂ × 5, 6, 6, 9 NR 445 Systems Thinking in Environmental Relationships ^{4,1} NR 447 Forest Stewardship Practices ^{3,0} NR 477 Selected Advanced Laboratory ⁴ Stress C470 Selected Advanced Laboratory ⁴ NR 475 Selected Advanced Laboratory ⁴ Stress C470 Selected Advanced Laboratory ⁴ NR 475 Selected Advanced Laboratory ⁴ NR 475 Selected Advanced Laboratory ⁴ Stress C470 Selected Advanced Laboratory ⁴ NR 475 Selected Advanced Laboratory ⁴ Stress C470 Selected Advanced Laboratory ⁴ Stress C470 Selected Advanced Usoratory ⁴ Stress C470 Selected Advanced Laboratory ⁴ Stress C470 Selected Advanced Usoratory ⁴ Stress C470 Selected Advanced Laboratory ⁴ Stress C470 Selected Advanced Laboratory ⁴ Physics I3 Colige Physicis II Stress C470 <	NR 420		RPTA 255	Leadership and Diverse Groups ²
Quality Monitoring ^{5,9} NR 434 Wood Properties, Products and Sustainable Uses ^{5,9} NR 435 Environmental Policy Analysis ^{1,3} NR 445 Systems Thinking in Environmental Management ^{12,3,4,5,6,9} NR 455 Environmental Folicy Analysis ^{1,3} NR 457 Series The Protection ^{5,9} NR 457 Series The Protection ^{5,9} NR 472 Leadership in Outgoing ^{3,4,5,6,9} Signer Project - Forest Stewardship Practice ^{3,5} Signer Project - Forest Stewardship ^{3,5} NR 472 College Physics II PHIL 340 Environmental Ethics ^{1,3} Signer Project - Forest Stewardship ^{3,5} PHIS 122 College Physics II PHYS 142 General Physics II PHYS 142 General Physics II PHYS 142 Phart Marinals ^{5,9} PLSC 123 Landscepic Instraint Project - Sorest Stewardship ^{5,9} PLSC 234 Plant Materials ^{1,5,9} PLSC 234 Plant Materials ^{1,5,9} PLSC 231 Androuced Viculture ^{6,9} PLSC 231 Inaset Pet Management ^{5,9} PLSC 231 Inaset Ret Management ^{5,8} PLSC 242 Plant Materials ^{1,6,9}	NR 422		RPTA 302	
NN 4343 Wood Properties, Products and Sustainable Uses ^{5,4} NR 435 Environmental Policy Analysis ^{1,3} NR 445 Systems Thinking in Environmental Management ^{1,2,4,4,4,6,4,8,9 NR 445 Widdland-Urban Fire Protection ^{5,9} NR 445 Widdland-Urban Fire Protection ^{5,9} NR 475 Leadership Protection ^{5,9} NR 474 Forest Stewardship Practices ^{5,5} NR 474 Forest Stewardship Practices ^{5,5} NR 475 Schland-Urban Fire Protection ^{5,9} SK 187 Selected Advanced Laboratory ⁴ SS 222 Advanced Soil Fertility ⁴ SS 522 Advanced Soil Fertility ⁴ SS 522 Advanced Ind Management ^{4,4} STAT 331 Applet Experimental Deliog and Management ^{4,4} STAT 331 Applet Experimental Deliog and Management ^{4,4} VIT 233 Landscape Installation and Management ^{8,5} PLSC 230 Organic Enterprise Project ⁸ PLSC 231 Park torpagation ^{5,6} PLSC 232 Plant Materials 1^{5,5} PLSC 231 Apriculture 8,3 PLSC 232 Plant Materials 1^{5,5} PLSC 231 Applet Materials 1^{5,6} PLSC}		Quality Monitoring ^{5, 9}	RPTA 325	Leadership in Outdoor Experiences ³
NR 435 Environmental Policy Analysis ^{1,3} NR 435 Systems Thinking in Environmental Management ^{1,2,3,4,8,6,7,8,9} NR 435 Willdand Urban Fire Protection ^{5,9} NR 474 Forest Stewardship Practice ^{3,5} NR 475 Senior Project - Forest Stewardship ^{3,4,5,6,9} SK 440 Forest and Range Soile ^{4,5,9} NR 475 Senior Project - Forest Stewardship ^{3,4,5,6,9} SK 440 Forest and Range Soile ^{4,5,9} SK 441 Soil Judging ⁴ SK 440 Forest and Range Soile ^{4,5,9} PHUS 122 College Physics II PHYS 142 General Physics II PHYS 143 General Physics II PLSC 123 Landscape Installation and Maintenance ^{5,9} PLSC 203 Organic Enterprise Project ⁸ PLSC 224 Plant Propagation ^{5,6} PLSC 234 Plant Materials ^{1,5,9} PLSC 231 Advanced Vinculture - Spring ⁶ PLSC 232 Plant Materials ^{1,5,9} PLSC 234 Plant Materials ^{1,5,9} PLSC 234 Plant Materials ^{1,5,9} PLSC 234 Plant Materials ^{1,5,9} PLSC 242 Plant Materials ^{1,5,9}	NR 434	Wood Properties, Products and	SS/ERSC 270	
NR 445 Systems Thinking in Environmental Management ¹² , ¹³ , ¹³ , ¹⁵ , ¹⁵ , ¹⁵ , ¹⁶ , ¹⁶ NR 455 Wildland-Urban Fire Protection ^{5, 9} NR 472 Leadership Practice ^{3, 5} NR 474 Forest Stewardship Practice ^{3, 5} NR 475 Selected Advanced Topics ⁴ SS/ERSC 470 Selected Advanced Topics ⁴ SS/ERSC 471 Selected Advanced Topics ⁴ PHL 340 Environmental Ethics ^{1, 3} PHL 340 Environmental Ethics ^{1, 3} PHY 3142 General Physics II PHY 3142 General Physics II PHY 3142 General Physics II PHY 3142 College Physics II ⁴ PHY 3142 College Physics II PHY 3143 Advanced Viticulture ⁵ VIT 233 Basic Viticulture ⁵ PLSC 124 Plant Materials I ^{5, 9} PLSC 230 Environmental Horiculture ⁸ PLSC 231 Plant Materials I ^{5, 9} PLSC 232 Plant Materials I ^{5, 9} PLSC 233 Agricultural Entomology ⁶ PLSC 237 Vertebrate Pest Management ^{5, 8} PLSC 241 Problems ⁹ PLSC 431 Ina			SS 322	Soil Plant Relationships ^{4, 8}
Management 12.4.4.8.7,8.3 Display Constrained Anape Solid NR 455 Wildland-Urban Fire Protection 5.9 NR 474 Forest Stewardship Practices 3.6 NR 475 Senior Project - Forest Stewardship 3 Systems Systems Systems PHIL 340 Environmental Ethics 1.3 PHIL 340 Environmental Ethics 1.3 PHY 5122 College Physics II 5 PHY 5142 General Physics II 5 PHY 5142 General Physics II 5 PHY 5143 General Physics II 5 PLSC 123 Landscape Installation and Maintenance. ⁵ MVIT 333 Advanced Visculture - Fall ⁶ VVIT 331 Advanced Visculture - Fall ⁶ WVIT 333 Advanced Visculture - Fall ⁶ PLSC 233 Plant Materials I ^{5,9} WVIT 333 Advanced Visculture - Fall ⁶ PLSC 233 Plant Materials I ^{5,9} WVIT 333 Advanced Visculture - Fall ⁶ PLSC 233 Plant Materials I ^{5,9} WVIT 333 Advanced Visculture - Fall ⁶ PLSC 233 Abitice Plant For California Landscapes ^{8,9} Fore Electives may be needed to correst is	NR 435		SS/NR/BIO 421	Wetlands ^{2, 4, 5}
NR 455 Wildland-Urban Fire Protection ^{8,9} NR 475 Leadership Practices ^{3,5} NR 476 Serior Project - Forest Stewardship ^{3,3} S Serior Project - Forest Stewardship ^{3,3} PHIL 340 Environmental Ethics ^{1,3} PHIX 122 College Physics II PHYS 142 General Physics II PHYS 143 General Physics II PHYS 143 Environmental Ethics ^{1,3} PLSC 123 Landscape Installation and Maintenance ^{5,9} PLSC 230 Great Physics II PLSC 230 Organic Enterprise Project ⁸ PLSC 231 Plant Materials I ^{5,9} PLSC 232 Plant Materials I ^{5,9} PLSC 233 Plant Materials I ^{5,9} PLSC 234 Plant Materials I ^{5,9} PLSC 235 Abolicic Plant Problems ⁹ PLSC 327 Vertebrate Pest Management ^{5,4} PLSC 328 Plant Materials I ^{5,9} PLSC 327 Vertebrate Pest Management ^{5,4} PLSC 328 Plant Materials I ^{5,9} PLSC 441 Precision Farming ^{6,8} PLSC 327 Vertebrate Pest Management ^{5,4} PLSC 431 Insect Pest Management	NR 445	Systems Thinking in Environmental	SS 431	Digital Soil Mapping ^{3, 4, 5, 6, 9}
NR 472 Leadership Practices ^{3,5} NR 472 Leadership Practices ^{3,5} NR 474 Forest Stewardship Practices ^{3,5} NR 475 Senior Project - Forest Stewardship ^{3,5} PHL 340 Environmental Ethics ^{1,3} PHL 340 Environmental Ethics ^{1,3} PHYS 122 College Physics II PHYS 143 General Physics II PHYS 140 Physics Solid Earth ⁷ PHYS 1410 Physics Solid Earth ⁷ PLSC 123 Landscape Installation and Maintenance ^{5,9} PLSC 203 Organic Enterprise Project ⁸ PLSC 203 Organic Enterprise Project ⁸ PLSC 234 Plant Materials I ^{5,9} PLSC 234 Plant Materials I ^{5,9} PLSC 231 Maintenance ^{5,8} PLSC 232 Plant Materials I ^{5,9} PLSC 233 Plant Materials I ^{5,9} PLSC 234 Plant Materials I ^{5,9} PLSC 231 Mainterials I ^{5,9} PLSC 232 World Sacqueent ^{5,9} PLSC 233 Native Plants for California Landscape ^{6,9} PLSC 420 Organic Crop Production Systems ⁸ PLSC 421 Biological Control for Pest Management ^{5,8} PLSC 422 Organic Grop Production Systems ⁸ PLSC 424 Organic Grop Production Systems ⁸ <td></td> <td></td> <td>SS 440</td> <td>Forest and Range Soils ^{4, 5, 9}</td>			SS 440	Forest and Range Soils ^{4, 5, 9}
NR 474 Forest Stewardship Practices ^{3,6} NR 475 Serior Project - Forest Stewardship ^{3,5} PHUS 340 Environmental Ethics ^{1,3} PHYS 122 College Physics II PHYS 142 General Physics II PHYS 143 General Physics II PHYS 143 General Physics II PHYS 143 General Physics II PHYS 142 Good logs Physics II PHYS 143 General Physics II PHYS 142 General Physics II PHYS 143 General Physics II PHYS 142 General Physics II PHYS 143 General Physics II PHYS 143 General Physics II PHYS 142 General Physics II PLSC 230 Fixin Propagation ^{5,6} PLSC 231 Plant Materials II ^{5,9} PLSC 232 Plant Materials II ^{5,9} PLSC 231 Apriculture Fant Mareials II ^{5,9} PLSC 321 Weed Biology and Management ^{5,8} PLSC 323 Abiotic Plant Problems ⁹ PLSC 321 Mixe Parts for California Landscapes ^{6,9} PLSC 425 Arboiculture 5,7 PLSC 426 Organic Crop Product			SS 444	Soil Judging ⁴
NR 475 Senior Project - Forest Stewardship ³ . PHIL 340 Environmental Ethics ^{1,3} PHK 122 College Physics II ⁴ or PHYS 142 General Physics II PHS 143 General Physics II PHYS 142 General Physics II PHYS 143 General Physics II PHYS 144 General Physics II PHYS 143 Maintenace ^{5, 9} PLSC 230 Drommatil Horiculture ^{5, 9} PLSC 231 Plant Materials I ^{5, 9} PLSC 242 Precision Faming ^{6, 8} PLSC 313 Agricultural Entomology ⁸ PLSC 321 Weed Biology and Management ^{6, 8} PLSC 422 Organic Crop Production Systems ⁸			SS/ERSC 470	Selected Advanced Topics ⁴
s S S 2.2 Advanced Soli Fertility PHI. 340 Environmental Ethics ^{1,3} SS 582 CIS in Advanced Soli Fertility PHYS 112 College Physics II STAT 313 Applied Experimental Design and Regression Models ⁶ PHYS 142 General Physics II Maintenance ^{5,9} UNIV 391 Appropriate Technology for the World's People: Development ⁸ PLSC 124 Plant Propagation ^{5,9} WVIT 333 Advanced Viticulture ⁸ PLSC 230 Organic Enterprise Project ⁸ WVIT 331 Advanced Viticulture - Fall ⁸ PLSC 234 Plant Materials II ^{5,9} WVIT 332 Advanced Viticulture - Sing ⁸ PLSC 234 Plant Materials II ^{5,9} WVIT 428 Winegrape Vineyard Management ⁸ PLSC 237 Vertebrate Pest Management ^{5,8} PLSC 237 Vertebrate Pest Management ^{5,8} PLSC 240 Organic Crop Production Systems ⁸ - 72 units required, 20 of which are specified in Major and/or Support requirements additional units of Free Electives may be needed to complete the total units used to satisty a Major or Support requirements PLSC 241 Biological Control for Pest Management ⁸ - 72 units required for the degree. PLSC 443 Insect Pest Management ⁸ - 72 units required for the degree. <			SS/ERSC 471	Selected Advanced Laboratory ⁴
PHYS 122 College Physics II ⁴ or PHYS 142 General Physics II PHYS 143 General Physics II PHYS 142 Landscape Installation and Maintenance ^{5,9} PLSC 124 Plant Propagation ^{5,9} PLSC 203 Organic Enterprise Project ⁸ PLSC 234 Plant Materials 1 ^{5,9} PLSC 237 Vertebrate Pest Management ^{5,8} PLSC 238 Native Plants for California Landscapes ^{8,9} PLSC 240 Organic Crop Production Systems ⁸ PLSC 421 Insect Pest Management ^{5,8} PLSC 422 Organic Crop Production Systems ⁸ PLSC 431 Insect Pest Management ⁸ PLSC 445 Cropping Systems ⁸ <td< td=""><td>NR 475</td><td>Senior Project - Forest Stewardship 7</td><td>SS 522</td><td>Advanced Soil Fertility ⁴</td></td<>	NR 475	Senior Project - Forest Stewardship 7	SS 522	Advanced Soil Fertility ⁴
PHYS 122 College Physics II 4 or PHYS 142 General Physics II PHYS 143 General Physics II PHYS 143 General Physics II PHYS 140 Physics of Solid Earth 7 PHYS 1410 Physics of Solid Earth 7 PHYS 122 Landscape Installation and Maintenance 5.9 PLSC 123 Landscape Installation and Maintenance 5.9 PLSC 230 Organic Enterprise Project ⁸ PLSC 231 Plant Materials I ^{5.9} PLSC 232 Plant Materials I ^{5.9} PLSC 233 Plant Materials I ^{5.9} PLSC 234 Plant Materials I ^{5.9} PLSC 231 Abiotic Plant Problems ⁹ PLSC 232 Weed Biology and Management ^{5.8} PLSC 231 Abiotic Plant Problems ⁹ PLSC 232 Vertebrate Pest Management ^{5.8} PLSC 231 Native Plants for California Landscapes ^{6.9} PLSC 242 Organic Crop Production Systems ⁸ PLSC 2431 Insect Pest Management ⁸ PLSC 441 Biological Control for Pest Management ⁸ PLSC 442 Cropping Systems ⁸ PLSC 4431 Insect Pest Management ⁸ PLSC 4431		Environmental Ethics ^{1, 3}	SS 582	GIS in Advanced Land Management ⁴
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PLSC 321 Weed Biology and Management ^{5, 8} PLSC 327 Vertebrate Pest Management ^{5, 8} PLSC 327 Vertebrate Pest Management ^{5, 8} PLSC 350 Abiotic Plant Problems ⁹ · 72 units required, 20 of which are specified in Major and/or Support. PLSC 381 Native Plants for California Landscapes ^{8, 9} · 72 units required, 20 of which are specified in Major and/or Support. PLSC 420 Organic Crop Production Systems ⁸ · 73 units required for the degree. PLSC 425 Arboriculture ^{5, 9} · 8 PLSC 431 Insect Pest Management ⁸ · 8 PLSC 441 Biological Control for Pest Management ⁸ · 8 · 9 PLSC 445 Cropping Systems ⁸ · 7 · 8 English Language Communication), A2 (Written Communication), A3 (Critical Thinking), and B4 (Mathematics/ Quantitative Reasoning). POLS 112 American and California Government ³ A1 Oral Communication 4 POLS 341 American Constitutional Law ³ A1 Oral Communication 4 POLS 341 American Constitutional Law ³ Area B Scientific Inpuiry and Quantitative Reasoning 4 POLS 343 Civil Rights in America ³ B1 Physical Science (4 units	PLSC 313	-		
PLSC 327Vertebrate Pest Management 5General Education (GE) RequirementsPLSC 350Abiotic Plant Problems 9- 72 units required, 20 of which are specified in Major and/or Support.PLSC 381Native Plants for California Landscapes 8,9- 72 units required, 20 of which are specified in Major and/or Support.PLSC 420Organic Crop Production Systems 8- 72 units requirement, additional units of Free Electives may be needed to complete the total units required for the degree.PLSC 425Arboriculture 5,9- 8PLSC 431Insect Pest Management 8- 8PLSC 441Biological Control for Pest Management 8- 7PLSC 450Current Issues in the Strawberry Industry 8- 7POLS 112American and California Government 3- 7POLS 245Judicial Process 3- 7POLS 332World Food Systems- 7POLS 341American Constitutional Law 3- 7POLS 343Civil Rights in America 3- 7POLS 344Civil Liberties 3- 7				
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PLSC 381Native Plants for California Landscapes ^{8, 9} • If any of the remaining 52 units is used to satisfy a Major or Support requirement, additional units of Free Electives may be needed to complete the total units required for the degree.PLSC 420Organic Crop Production Systems ⁸ • See the complete GE course listing (https://catalog.calpoly.edu/ generalrequirementsbachelorsdegree/#generaleducationtext).PLSC 431Insect Pest Management ⁸ • A grade of C- or better is required in one course in each of the following GE Areas: A1 (Oral Communication), A2 (Written Communication), A3 (Critical Thinking), and B4 (Mathematics/ Quantitative Reasoning).PLSC 445Cropping Systems ⁸ • Area AEnglish Language Communication and Critical ThinkingPOLS 112American and California Government 3A1Oral Communication and Critical ThinkingPOLS 332World Food SystemsA3Critical Thinking ² 4POLS 341American Constitutional Law ³ Area BScientific Inquiry and Quantitative Reasoning4POLS 344Civil Liberties ³ B1Physical Science (4 units in Major) ¹ 0	PLSC 350		 72 units require 	d, 20 of which are specified in Major and/or Support.
PLSC 420Organic Crop Production Systems 8PLSC 425Arboriculture 5, 9PLSC 431Insect Pest Management 8PLSC 441Biological Control for Pest Management 8PLSC 445Cropping Systems 8PLSC 450Current Issues in the Strawberry Industry 8POLS 112American and California Government 3POLS 245Judicial Process 3POLS 332World Food SystemsPOLS 341American Constitutional Law 3POLS 343Civil Rights in America 3POLS 344Civil Liberties 3B1Physical Science (4 units in Major) 10	PLSC 381		If any of the remaining 52 units is used to satisfy a Major or Support	
PLSC 431Insect Pest Management 8generalrequirementsbachelorsdegree/#generaleducationtext).PLSC 441Biological Control for Pest Management 8A grade of C- or better is required in one course in each of the following GE Areas: A1 (Oral Communication), A2 (Written Communication), A3 (Critical Thinking), and B4 (Mathematics/ Quantitative Reasoning).PLSC 450Current Issues in the Strawberry Industry 8American and California Government 3Area AEnglish Language Communication and Critical ThinkingPOLS 112American and California Government 3A1Oral Communication 44POLS 332World Food SystemsA2Written Communication and Critical Thinking 24POLS 341American Constitutional Law 3A3Critical Thinking 24POLS 344Civil Liberties 3B1Physical Science (4 units in Major) 10	PLSC 420	Organic Crop Production Systems ⁸	complete the to	tal units required for the degree.
PLSC 431Insect Pest ManagementPLSC 441Biological Control for Pest Management 8PLSC 445Cropping Systems 8PLSC 450Current Issues in the Strawberry Industry 8POLS 112American and California Government 3POLS 245Judicial Process 3POLS 332World Food SystemsPOLS 341American Constitutional Law 3POLS 343Civil Rights in America 3POLS 344Civil Liberties 3B1Physical Science (4 units in Major) 10	PLSC 425	Arboriculture ^{5, 9}		
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PLSC 445Cropping SystemsQuantitative Reasoning).PLSC 450Current Issues in the Strawberry Industry 8Area AEnglish Language Communication and Critical ThinkingPOLS 112American and California Government 3A1Oral Communication4POLS 245Judicial Process 3A2Written Communication4POLS 332World Food SystemsA3Critical Thinking4POLS 341American Constitutional Law 3Area BScientific Inquiry and Quantitative Reasoning4POLS 344Civil Liberties 3B1Physical Science (4 units in Major) 10	PLSC 441		following GE Areas: A1 (Oral Communication), A2 (Written Communication), A3 (Critical Thinking), and B4 (Mathematics/	
PLSC 450Current Issues in the Strawberry Industry 8Area AEnglish Language Communication and Critical ThinkingPOLS 112American and California Government 3An Oral Communication4POLS 245Judicial Process 3A2Written Communication4POLS 332World Food SystemsA3Critical Thinking 24POLS 341American Constitutional Law 3Area BScientific Inquiry and Quantitative Reasoning4POLS 344Civil Liberties 3B1Physical Science (4 units in Major) 10	PLSC 445	-		
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POLS 245Judicial Process 3A2Written Communication4POLS 332World Food SystemsA3Critical Thinking 24POLS 341American Constitutional Law 3Area BScientific Inquiry and Quantitative Reasoning4POLS 343Civil Rights in America 3B1Physical Science (4 units in Major) 10	POLS 112	American and California Government	A1	
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POLS 341American Constitutional Law 3Area BScientific Inquiry and Quantitative ReasoningPOLS 343Civil Rights in America 3ReasoningPOLS 344Civil Liberties 3B1Physical Science (4 units in Major) 10	POLS 332			Critical Thinking ² 4
POLS 343Civil Rights in America 3ReasoningPOLS 344Civil Liberties 3B1Physical Science (4 units in Major) 10	POLS 341	American Constitutional Law ³		
	POLS 343			
PSC 201 Physical Oceanography ¹ B2 Life Science (4 units in Major) ¹ 0	POLS 344	Civil Liberties ³	B1	
	PSC 201	Physical Oceanography ¹	B2	Life Science (4 units in Major) ¹ 0

B3	One lab taken with either a B1 or B2 course	
B4	Mathematics/Quantitative Reasoning (4 units in Major) ¹	0
Upper-Division B (4	units in Major) ¹	0
Area C	Arts and Humanities	
Lower-division cours different subject pre	ses in Area C must come from three fixes.	
C1	Arts: Arts, Cinema, Dance, Music, Theater	4
C2	Humanities: Literature, Philosophy, Languages other than English	4
Lower-Division C Ele or C2	ective - Select a course from either C1	4
Upper-Division C ³		4
Area D	Social Sciences - Select courses in Area D from at least two different prefixes	
D1	American Institutions (Title 5, Section 40404 Requirement)	4
D2	Lower-Division D ⁴	4
Upper-Division D ⁵		4
Area E	Lifelong Learning and Self- Development	
Lower-Division E		4
Area F	Ethnic Studies	
F	Ethnic Studies	4
GE Electives in Area	s B, C, and D	
Select courses from division or upper-div	two different areas; may be lower- rision courses.	
GE Electives (4 units in Majors plus 4 units in GE) $^{ m 1}$		4
Total units		52

¹ Required in Major or Support; also satisfies General Education (GE) requirement.

- ² Recommended course to satisfy GE Area A3: ENGL 147.
- ³ Recommended courses to satisfy GE Area Upper-division C: NR 360 or ENGL 316.
- ⁴ Recommended course to satisfy GE Area D2: GEOG 150.
- ⁵ Recommended courses to satisfy GE Area Upper-division D: BRAE 349, GEOG 308, or NR 323.