

*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
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 <sup>1</sup>	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 <sup>2</sup>	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) <sup>3</sup>	4
CHEM 127	Gen CHEM for Ag & Life Science I (B1 & B3) <sup>3</sup>	4
CHEM 128	Gen CHEM for Ag & Life Science II	4
CHEM 129	Gen CHEM for Ag & 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 <sup>2</sup>	4
or GEOL 330	Principles of Stratigraphy	
MATH 161	Calculus for the Life Sciences I (B4) <sup>3</sup>	4
or MATH 141	Calculus I (B4) <sup>3,4</sup>	
NR/LA 218	Intro to Geographic Information Systems (GIS)	3
NR 310	Global Climate Change (Upper-Division B) <sup>3</sup>	4
NR 363	Undergraduate Seminar	2
NR 418	Applied GIS	3-4
or NR 355	Drone Assisted Surveying	
or NR 416	Environmental Impact Analysis & Mgmt	
or SS 431	Digital Soil Mapping	
PHYS 121	College Physics I	4
or PHYS 141	General Physics IA <sup>5</sup>	
STAT 218	Applied Statistics for the Life Sciences (GE Electives) <sup>3</sup>	4
or STAT 217	Introduction to Statistical Concepts and Methods	
Concentration (32 units) or Approved Electives (20 units) in combination with Free Electives <sup>6,7,8</sup>		20-32
<b>Total Major Units</b>		<b>115-129</b>

GENERAL EDUCATION		
<b>Area A English Language Communication and Critical Thinking</b>		
A1	Oral Communication	4
A2	Written Communication	4
A3	Critical Thinking <sup>9</sup>	4
<b>Area B Scientific Inquiry and Quantitative Reasoning</b>		
B1	Physical Science (4 units in Major) <sup>3</sup>	0
B2	Life Science (4 units in Major) <sup>3</sup>	0
B3	One lab taken with either a B1 or B2 course	
B4	Mathematics/Quantitative Reasoning (4 units in Major) <sup>3</sup>	0
Upper-Division B (4 units in Major) <sup>3</sup>		0
<b>Area C Arts and Humanities</b>		
Lower-division courses in Area C must come from three different subject prefixes.		
C1	Arts	4
C2	Humanities	4
Lower-Division C Elective - Select a course from either C1 or C2		4
Upper-Division C <sup>10</sup>		4
<b>Area D Social Sciences - Select courses in Area D from at least two different prefixes</b>		
D1	American Institutions (Title 5, Section 40404 Req)	4
D2	Lower-Division D <sup>11</sup>	4
Upper-Division D <sup>12</sup>		4
<b>Area E Lifelong Learning and Self-Development</b>		
Lower-Division E		4
<b>Area F Ethnic Studies</b>		
F	Ethnic Studies	4
<b>GE Electives in Areas B, C, and D</b>		
Select courses from two different areas; may be lower- or upper-div courses		
GE Electives (4 units B in Major) <sup>3</sup>		0
GE Electives (Area C or D)		4
<b>Total GE Units</b>		<b>52</b>
<b>FREE ELECTIVES</b>		<b>0-13</b>
<b>TOTAL DEGREE UNITS</b>		<b>180-181</b>
<b>FOOTNOTES</b>		
1 Students in the Geology concentration need to take MATH 142 to meet prerequisites for courses in the concentration. Students interested in the Soil Geotechnical Studies are encouraged to take MATH 142 to meet prerequisites for courses in that area. Students interested in taking NR 355 need to take BRAE 345 to meet prerequisites.		
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.		
9 Recommended course to satisfy GE Area A3: ENGL 147.		
10 Recommended courses to satisfy GE Area Upper-division C: NR 360 or ENGL 316.		
11 Recommended course to satisfy GE Area D2: GEOG 150.		
12 Recommended courses to satisfy GE Area Upper-division D: BRAE 349, GEOG 308, or NR 323.		

<b>Geology Concentration</b>		
GEOL 301	Physical Models in the Geosciences	4
GEOL 303	Computation & Visualization in the Geosciences	3
GEOL 305	Seismology and Earth Structure	4
GEOL 309	Igneous Petrology	3
GEOL 311	Metamorphic Petrology	3
GEOL 330	Principles of Stratigraphy	4
GEOL/ERSC 416	Field-Geology Methods	4
GEOL/ERSC 417	Geologic Mapping	4
GEOL 420	Applied Geophysics	3
<b>Total Units</b>		<b>32</b>

<b>Hydrology Concentration</b>		
ERSC 442	Applied Environmental Groundwater Hydrology	4
or ERSC 443	Applied Environmental Contaminant Transport	
Select from the following:		4
MATH 142	Calculus II <sup>1</sup>	
MATH 162	Calculus for the Life Sciences II	
NR 320	Watershed Processes and Management	4
NR 420	Watershed Assessment and Protection	4
PHYS 122	College Physics II	4
or PHYS 142	General Physics II	
SS 431	Digital Soil Mapping	4
or SS 440	Forest and Range Soils	
<b>Approved Electives <sup>1</sup></b>		
Select from the following:		8
BRAE 331	BRAE 532	NR 400
BRAE 340	ERSC 423	NR/CRP 408
BRAE 345	ERSC 442	NR 422
BRAE 435	ERSC 443	NR/RPTA 472
		SS/BIO/NR 421
		SS 431
		SS 440
<b>Total Units</b>		<b>32</b>

<sup>1</sup> If a course is taken to meet a Major requirement, it cannot be double-counted in the concentration.

### 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

If any of the remaining 52 units of general education is used to satisfy an approved elective, additional free electives may be needed to complete the total units for the degree. 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 <sup>6,7,8</sup> Select from the following:

At least 8 units must be upper-division (300-400 level). No more than 6 units of NR 339 may count towards the degree. Courses used to meet a degree requirement cannot double count as an elective.

AG/PLSC 315	Principles of Organic Crop Production <sup>8</sup>	NR 141	Introduction to Forest Ecosystem Management <sup>5,9</sup>
AG 339	Internship in Agriculture <sup>8</sup>	NR 142	Environmental Management <sup>8,9</sup>
AG/EDES/	The Global Environment <sup>1,8</sup>	NR 200	Special Problems for Undergraduates <sup>1,2,3,4,5,6,7,8,9</sup>
ENGR/ISLA/		NR 203	Resource Law Enforcement
SCM/UNIV 350		NR 204	Wildland Fire Control <sup>5,9</sup>
AG 360	Holistic Management <sup>5,8</sup>	NR 208	Dendrology <sup>5,9</sup>
AGB 212	Agricultural Economics <sup>8</sup>	NR 215	Land and Resource Measurements <sup>5</sup>
AGB 312	Agricultural Policy <sup>8</sup>	NR 260	Forest Operations <sup>5</sup>
AGB 369	Agricultural Personnel Management <sup>8</sup>	NR 306	Natural Resource Ecology & Habitat Mgmt <sup>2,5,6,9</sup>
AGC 205	Agricultural Communications	NR/ES 308	Fire and Society <sup>5</sup>
ANT 201	Cultural Anthropology <sup>1</sup>	NR 312	Technology of Wildland Fire Management <sup>5</sup>
or ANT 202	World History Before Writing	NR 315	Forest Mensuration <sup>5</sup>
ANT 250	Biological Anthropology <sup>1</sup>	NR 320	Watershed Processes and Management <sup>5</sup>
ARCE 211	Structures I <sup>7</sup>	NR 323	Human Dimensions in Natural Resources Management <sup>1,2,3</sup>
or CE 204	Mechanics of Materials I	NR 324	Soc Dimensions of Sustainable Food & Fiber Sys <sup>8</sup>
ARCE 212	Structures II <sup>7</sup>	NR 326	Natural Resources Economics and Valuation <sup>1,3,5</sup>
or ME 211	Engineering Statics	NR 339	Internship in Forest & Natural Resources <sup>1,2,3,4,5,6,7,8,9</sup>
ARCE 223	Mechanics of Structural Members <sup>7</sup>	NR 340	Wildland Fire Management <sup>5,9</sup>
or CE 207	Mechanics of Materials II	NR 350	Urban Forestry <sup>5,9</sup>
ARCE 422	Foundation Design <sup>7</sup>	NR 355	Drone Assisted Surveying <sup>5,6</sup>
ASCI 112	Principles of Animal Science <sup>8</sup>	NR/ES 360	Ethnicity and the Land <sup>5</sup>
ASCI 221	Introduction to Beef Production <sup>8</sup>	NR 365	Silviculture and Fuels Management <sup>5</sup>

ASCI 223	Systems of Small Ruminant Management <sup>8</sup>	NR 400	Special Probs for Adv Undergraduates <sup>1, 2, 3, 4, 5, 6, 7, 8, 9</sup>
ASCI 239	Principles of Rangeland Management <sup>1, 2, 3, 8</sup>	NR/ES 406	Indigenous Peoples & International Law & Policy <sup>9</sup>
ASCI 311	Advanced Beef Cattle System Management <sup>8</sup>	NR 413	Agricultural Law <sup>1, 2, 3, 4, 8</sup>
ASCI 372	CA Rangeland & Ranch Resource Management <sup>1, 2, 3, 8</sup>	NR 420	Watershed Assessment and Protection <sup>5</sup>
ASCI 465	Applied Practices for Monitoring CA Rangelands <sup>1, 2, 3, 8</sup>	NR 422	Stream Measurements & Water Quality Monitoring <sup>5, 9</sup>
BIO 329	Vertebrate Field Zoology <sup>2</sup>	NR 434	Wood Properties, Products and Sustainable Uses <sup>5, 9</sup>
BIO 400	Special Problems for Advanced Undergraduates <sup>2, 5</sup>	NR 435	Environmental Policy Analysis <sup>1, 3</sup>
BIO 427	Wildlife Management <sup>2</sup>	NR 445	Sys Thinking in Environmental Mgmt. <sup>1, 2, 3, 4, 5, 6, 7, 8, 9</sup>
BIO 435	Plant Physiology <sup>5</sup>	NR 455	Wildland-Urban Fire Protection <sup>5, 9</sup>
BOT/PLSC 323	Plant Pathology <sup>8</sup>	NR 472	Leadership Practice <sup>3, 5</sup>
BOT 326	Plant Ecology <sup>2</sup>	NR 474	Forest Stewardship Practices <sup>3, 5</sup>
BIO 447	Spatial Ecology <sup>2, 6</sup>	NR 475	Senior Project - Forest Stewardship <sup>3, 5</sup>
BRAE 141	Agricultural Machinery Safety <sup>8</sup>	PHIL 340	Environmental Ethics <sup>1, 3</sup>
BRAE 142	Agricultural Power and Machinery Management <sup>8</sup>	PHYS 122	College Physics II <sup>4</sup>
BRAE 150	Design Graphics & CAD for Agricultural Engineering <sup>5, 6</sup>	or PHYS 142	General Physics II
BRAE 237	Introduction to Engineering Surveying <sup>5</sup>	PHYS 143	General Physics III <sup>7</sup>
BRAE 239	Engineering Surveying <sup>5, 6</sup>	PHYS 410	Physics of Solid Earth <sup>7</sup>
BRAE/NR 247	Forest Surveying <sup>5</sup>	PLSC 123	Landscape Installation and Maintenance <sup>5, 9</sup>
BRAE 333	Aquacultural Engineering <sup>1, 2, 3, 8</sup>	PLSC 124	Plant Propagation <sup>5, 9</sup>
BRAE 340	Irrigation Water Management <sup>5, 8</sup>	PLSC 203	Organic Enterprise Project <sup>8</sup>
BRAE 345	Aerial Photogrammetry and Remote Sensing <sup>6</sup>	PLSC 230	Environmental Horticulture <sup>8, 9</sup>
BRAE 348	Energy for a Sustainable Society <sup>1</sup>	PLSC 233	Plant Materials I <sup>5, 9</sup>
BRAE/NR 349	Water for a Sustainable Society <sup>1, 2, 3, 8</sup>	PLSC 234	Plant Materials II <sup>5, 9</sup>
BRAE 447	Advanced Surveying with GIS Applications <sup>6</sup>	PLSC 244	Precision Farming <sup>6, 8</sup>
CE 112	Design Principles in Civil Engineering <sup>6</sup>	PLSC 313	Agricultural Entomology <sup>8</sup>
CE 113	Computer Aided Drafting in Civil Engineering <sup>6</sup>	PLSC 321	Weed Biology and Management <sup>5, 8</sup>
CE 204	Mechanics of Materials I <sup>7</sup>	PLSC 327	Vertebrate Pest Management <sup>5</sup>
CE 381	Geotechnical Engineering	PLSC 350	Abiotic Plant Problems <sup>9</sup>
& CE 382	and Geotechnical Engineering Laboratory <sup>7</sup>	PLSC 381	Native Plants for California Landscapes <sup>8, 9</sup>
or ARCE 421	Soil Mechanics	PLSC 420	Organic Crop Production Systems <sup>8</sup>
CHEM 314	Biochemistry: Fundamentals and Applications <sup>4</sup>	PLSC 425	Arboriculture <sup>5, 9</sup>
CHEM 331	Quantitative Analysis <sup>4</sup>	PLSC 431	Insect Pest Management <sup>8</sup>
CHEM 341	Environmental Chemistry: Water Pollution <sup>4</sup>	PLSC 441	Biological Control for Pest Management <sup>8</sup>
CRP 212	Introduction to Urban Planning <sup>3, 5, 6, 9</sup>	PLSC 445	Cropping Systems <sup>8</sup>
CRP 336	Introduction to Environmental Planning <sup>5, 6</sup>	PLSC 450	Current Issues in the Strawberry Industry <sup>8</sup>
CRP/NR 404	Environmental Law <sup>1</sup>	POLS 112	American and California Government <sup>3</sup>
CRP/NR 408	Water Resource Law and Policy <sup>2, 3, 5, 8</sup>	POLS 245	Judicial Process <sup>3</sup>
CRP 420	Land Use Law <sup>3, 5</sup>	POLS 332	World Food Systems
CSC/CPE 101	Fundamentals of Computer Science <sup>6</sup>	POLS 341	American Constitutional Law <sup>3</sup>
ECON 221	Microeconomics <sup>3</sup>	POLS 343	Civil Rights in America <sup>3</sup>
EDES 406	Sustainable Environments <sup>8</sup>	POLS 344	Civil Liberties <sup>3</sup>
ENGL 147	Writing Arguments about STEM <sup>1, 2, 3</sup>	PSC 201	Physical Oceanography <sup>1</sup>
ENGL 316	Writing Sustainability <sup>1, 2, 3</sup>	PSC 320	Energy, Society and the Environment <sup>1</sup>
ENVE 264	Environmental Fluid Mechanics <sup>7</sup>	RPTA 112	Introduction to Parks and Outdoor Recreation <sup>3</sup>
ENVE 324	Introduction to Air Pollution <sup>1</sup>	RPTA 210	Experience Design <sup>3</sup>
ERSC/GEOG 250	Physical Geography <sup>1</sup>	RPTA 255	Leadership and Diverse Groups <sup>2</sup>
ERSC/GEOG 325	Climate and Humanity <sup>1</sup>	RPTA 302	Environmental and Wilderness Education <sup>3</sup>
ERSC/GEOG 414	Global and Regional Climatology <sup>1</sup>	RPTA 325	Leadership in Outdoor Experiences <sup>3</sup>
ERSC/GEOG 415	Applied Meteorology and Climatology <sup>1</sup>	SS/ERSC 270	Selected Topics (2) <sup>4</sup>
ERSC 423	Geomorphology <sup>4, 6</sup>	SS 322	Soil Plant Relationships <sup>4, 8</sup>
ERSC 442	Applied Environmental Groundwater Hydrology <sup>4</sup>	SS/NR/BIO 421	Wetlands <sup>2, 4, 5</sup>
ERSC 443	Applied Environmental Contaminant Transport <sup>4</sup>	SS 431	Digital Soil Mapping <sup>3, 4, 5, 6, 9</sup>
GEOG 150	Human Geography <sup>1, 3</sup>	SS 440	Forest and Range Soils <sup>4, 5, 9</sup>
GEOG 308	Global Geography <sup>1</sup>	SS 444	Soil Judging <sup>4</sup>
GEOG 328	Applications in Remote Sensing and GIS <sup>1, 6</sup>	SS/ERSC 470	Selected Advanced Topics <sup>4</sup>
GEOG 400	Special Problems for Advanced Undergraduates <sup>1</sup>	SS/ERSC 471	Selected Advanced Laboratory <sup>4</sup>
GEOG 435	Biodiversity and Biogeography Methods	SS 522	Advanced Soil Fertility <sup>4</sup>
GEOG 441	Advanced Applications in Geospatial Technologies <sup>1</sup>	SS 582	GIS in Advanced Land Management <sup>4</sup>
GEOL 203	The Geologic Record: Fossils and the History of Life <sup>1</sup>	STAT 313	Applied Experimental Design & Regression Models <sup>6</sup>
GEOL 206	Geologic Excursions <sup>7</sup>	STAT 331	Statistical Computing with R <sup>6</sup>
GEOL 305	Seismology and Earth Structure <sup>7</sup>	UNIV 391	Appropriate Tech for World's People: Development <sup>8</sup>
GEOL 400	Special Problems for Advanced Undergraduates <sup>7</sup>	WVIT 233	Basic Viticulture <sup>8</sup>
GEOL 420	Applied Geophysics <sup>7</sup>	WVIT 331	Advanced Viticulture - Fall <sup>8</sup>
JOUR 203	News Reporting and Writing <sup>5</sup>	WVIT 332	Advanced Viticulture - Winter <sup>8</sup>
MATH 142	Calculus II <sup>4</sup>	WVIT 333	Advanced Viticulture - Spring <sup>8</sup>
or MATH 162	Calculus for the Life Sciences II	WVIT 428	Winegrape Vineyard Management <sup>8</sup>
MATH 143	Calculus III <sup>7</sup>		
MATH 241	Calculus IV <sup>7</sup>		
MCRO 221	Microbiology <sup>5</sup>		
MCRO 436	Microbial Ecology <sup>5</sup>		
			Any SCM course and any upper division AG, ANT, BIO, BOT, BRAE, CHEM, COMS, EDES, ENVE, ERSC, GEOG, GEOL, JOUR, MCRO, PLSC, NR, RPTA, SS, or UNIV courses