

Bachelor of Science in Natural Resources: Global Change Ecology & Management

		FALL		SPRING			
Course Title		Units	Prerequisite?	Course Title	Units	Prerequisite?	
Freshman	CHEM 151 OR CHEM 141 and 143	4	MATH 112 or placement	CHEM 152 OR CHEM 142 and 144	4	1st semester CHEM	
	ENGL 101 or 109H	3		ENGL 102 (or 109H)	3		
	RNR 101: Global Sustainability and Natural Resources	3		ECOL 182R and L General Biology Lecture and Lab	4		
	Calculus: MATH 113, 122B, or 125	3	MATH 112 or placement test	Tier 1 Traditions and Cultures	3		
	Tier 1 Individuals and Societies	3		Tier 1 Individuals and Societies	3		
		TOTAL	16			TOTAL	17
Sophomore	ECON 200	3		Tier 2 Individuals and Societies	3		
	Statistics: MATH 163 or 263, or PSY 230, or SBS 200	3	MATH 112 or placement	Tier 2 Arts or Humanities Elect.	3		
	RNR 200 Conservation of Natural Environments	3		Tier 1 Traditions and Cultures	3		
	Phys 102	3	MATH 112 or placement/none	RNR 384 Natural Resources Management Practices	3		
	MCB 181L General Biology Lab	1	MATH 112 or placement; CHEM	Technical Elective	3		
MCB 181R General Biology Lecture	3	MATH 112 or placement; CHEM			TOTAL	15	
		TOTAL	16				
Junior	RNR 316 Natural Resources Ecology	3	ECOL 182R, ECOL 182L, RNR 230R/L	Human Systems Elective: see list	3		
	Technical Writing: ENGL 308, 313, 340, 414 or ENVS 408, 415	3		Oral or Media Communication: ALC 422, COMM 113, COMM 119, JOUR 455, JOUR 472, SBE 202, SCI 401, RNR 495A	3		
	RNR 230R and 230L Field Botany	3		RNR 321 Ecological Surveys and Sampling	3	statistics	
	Policy, Law, and Economics Elective: AREC 360 , 476 or 479; RNR 485	3	ECON 200/MATH 112	Managment Elective: see list	3		
	Earth Systems and Global Change Elective	3		Technical Skills: RNR 403, 417, 429 or GEOG 330 or RAM 446 or 456A	3		
		TOTAL	15			TOTAL	15
Senior	RNR 440 Climate Change Adaptation Environment Elective: RNR 452 Dryland Ecohydrology (Fall) or RNR 458 Ecosystem Ecology (Spring)	3	Seniors only	RNR 496G - Climate Assessment	3		
	GEOS 478 Global Change	4	One year of general biology	Biological Systems Elective: see list	3		
	Technical electives	3	junior/senior; intro bio/chem/phys	GEOG 430 The Climate System	3		
	SNRE Requirement	5		RNR 480 Natural Resources Policy and Law	3	RNR 200	
		1		Technical electives	3		
		TOTAL	16			TOTAL	15

Diversity Emphasis: One general education course must have the non-Western Civilization, Gender, Race, Class, Ethnicity designation
2nd semester language proficiency required-- not included in this plan

GLOBAL CHANGE ECOLOGY & MANAGEMENT OPTION

**Major: Natural Resources
Technical Electives**

GCEM students take a minimum of one class in each of five areas: skills and tools, Earth systems and global change, biological systems, human systems, and management.

Earth Systems and Global Change

ATMO 171 Intro to Meteorology and Climatology
ATMO 336 Weather climate and society
ATMO 421C Physical climatology: mechanisms of change
ATMO 436A Fundamentals of atmospheric sciences
GEOG 304 Water environment and society
GEOG 431 Global and regional climatology
GEOS 212 Intro to oceanography
GEOS 220 Environmental History of the Southwest
GEOS 308 Paleontology
GEOS 412A Ocean sciences
GEOS 482 Paleoclimatology
RNR 355 Wildland Fire
RNR 429 Ecological Climatology
ENVS 200/201 Soils w/ lab
ENVS 461 Soil & water conservation
WSM 468 Wildland water quality

Biological systems

ECOL 320 Genetics
ECOL 335 Evolutionary biology
ECOL 406R Conservation biology
ECOL 426 Population genetics
ECOL 496J Plant population ecology
ECOL 496R Species diversity
ENVS 300 Soil Ecology and Sustainable Systems
GEOG 438 Biogeography
RAM 382 Rangeland plant communities
PL S 240 Plant biology

PL S 360 Principles of plant physiology
PL S 440 Plant growth & development
WFSC 471 Stream ecology

Human Systems

AREC 217 Resource and Environmental economics
AREC 476 Envl law and economics
GEOG 305 Economic geography
GEOG 371 Principles and practices of regional development
GEOG 379 Urban growth and development
GEOG 380 Global agricultural and international relations
GEOG 404 Politics of nature
ENVS 310 Ecosystem Health and Justice
HWR 415 Intro to water resources policy
PA 461 Global climate change science and policy
RNR 256 Sustainable cities and societies
RNR 476 Envl law and economics
RNR 481 Environmental policy
RNR 495F Conservation biology in developing countries
WSM 444 Applied environmental law

Management

AREC 350 Economics, ethics and environmental management
GEOG 301 Intro to regional planning
GEOG 379 Urban Growth and Development
GEOG 408 Arizona and the Southwest
RAM 436A Grazing ecology and management
RAM 446 Management and Restoration of Wildland Vegetation
RNR 496E Restoration ecology
ENVS 401 Sustainable management of arid lands
ENVS 454 Water harvesting

WS M 438 Fire Ecology
WS M 462 Watershed management
WFSC 444 Wildlife Management
WFSC 455R Fishery Management

Additional Electives

ECOL 380 Math models in biology
GEOG 457 Statistical techniques in geography and regional development
GEOS 497C Introduction to dendrochronology
RNR 322 Field Methods in Nat Res
RNR 419 Cartographic modeling
RNR 473 Spatial analysis
RNR 483 Geography applications of remote sensing
RNR 490 Remote sensing for the study of planet earth
WS M 497C/I Dendrochronology and dendroclimatology
RNR 492 Directed Research
RNR 493 Internship
RNR 499 Independent Study

Consider an Undergraduate Certificate in:

- Rangeland Management
- Geographic Information Systems
- Zoo and Aquarium Conservation
- International Environmental Conservation