

BS in Natural Resources, Fisheries Conservation and Management option catalog year 2020-21

General Education Requirements

English Composition
 ENGL 101 and ENGL 102 3__ 3__
 OR ENGL 106, 107 and 108 3__ 3__ 3__
 OR ENGL 109H 3

2nd Language _____
 (2nd semester proficiency by credit or exam; C or better)

Tier I

Individuals and Societies: Select 2 courses from 150s
 _____ 3__
 _____ 3__
 Traditions and Cultures: Select 2 courses from 160s
 _____ 3__
 _____ 3__

NOTE: you do not need any 170A, B, C courses

Tier II

Art or Humanities
 _____ 3__
 _____ 3__
 *Individuals and Societies: ECON 200 suggested
 _____ 3__

Diversity requirement: One general education course must have the non-Western Civilization, Gender, Race, Class, Ethnicity designation. Some Tier I and Tier II courses also satisfy this requirement

Supporting Coursework

Statistics: MATH 163 or 263, OR PSY 230 OR SBS 200 3__
 Economics: *ECON 200 3__
 *If you count ECON 200 towards your Tier II Individ, substitute a technical elective
 General Chemistry: CHEM 151 AND CHEM 450 4__ 4__
 Additional Physical Science (select 1): 4__
 CHEM 241A and 243A or PHYS 102 and 183
 or ENVS 200 and 201, or GEOS 251
 General Biology: MCB 181R/L: Intro Biol I 4__
 ECOL 182R/L: Intro Biol II 4

Natural Resources Core Courses (18 units)

RNR 200: Conservation of Natural Environments (Fall/Sum) 3__
 RNR 230R/L: Field Botany (Fall) 2__ 1__
 RNR 316: Natural Resources Ecology (Fall/Spring) 3__
 RNR 321: Ecological Surveys and Sampling (Fall/Spring) 3__
 RNR 384: Natural Resources Management Practices (Spring) 3__
 RNR 480: Natural Resources Policy and Law (Spring) 3__

Core Themes (13 units) *select one course from each area*

Math: MATH 113 OR MATH 122B OR MATH 125 3 or 5__
 Technical Skills: RNR 403, RNR 417, GEOG 330, 3__
 _____ RNR 429, RAM 456A, RAM 446
 Technical Writing: ENGL 308, ENGL 313, ENGL 340, 3__
 ENGL 414, ENVS 408, ENVS 415
 Oral or Media Communication: ALC 422, COMM 119, 3__
 _____ COMM 113, JOUR 455, JOUR 472, RNR 495A, SBE 202, SCI 401
 SNRE requirement 3__
 _____ 1__

Option Specific Courses (28 units)

Genetics: PLS 312 OR ECOL 320/H 4__
 Plants: RAM 382 Rangeland Plant Communities (Sp) or 3-4__
 ENVS 474 Aquatic Plants and the Environment (F) or
 ENVS 475 Freshwater and Marine Algae (Sp)
 WSM 468 Wildland Water Quality (Spring) 3__
 WFSC 471 Stream Ecology (Fall) 3__
 WFSC 455 R and L Fishery Management (even Sp) 4__
 Additional Management course (select 1): 4__
 WFSC 444 Wildlife Ecol, Cons, Mang
 WFSC 456 Aquaculture
 ECOL 482 Ichthyology (odd year Fall) 4__
 Additional Organismal Biology course (select 1):
 ENTO 405 Aquatic Entomology or ECOL 483 Herpetology 4__
 or ECOL 484 Ornithology, or ECOL 485 Mammalogy

Technical Electives (13 units):

____ ()__
 _____ ()__
 _____ ()__
 _____ ()__
 _____ ()__

Graduation Requirements

- at least 120 units
- 42 upper division units
- 30 or more units completed at the UA
- at least a 2.0 major and cumulative GPA,
- Mid-career writing assessment fulfilled with a B or higher in English Composition OR with Technical Writing requirement.

Bachelor of Science in Natural Resources: Fisheries Conservation and 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	3	
	Tier 1 Individuals and Societies	3		ECOL 182R and L General Biology Lecture and Lab	4	
	RNR 200 Conservation of Natural Environments	3		Calculus: MATH 113, 122B, or 125	3	MATH 112 or placement test
	Tier 1 Traditions and Cultures	3		Tier 1 Individuals and Societies	3	
TOTAL	16		TOTAL	17		
Sophomore	Tier 1 Individuals and Societies	3		Additional Physical Science: CHEM 241a, 243a or PHYS 102, 181 or SWES 200, 201 or GEOS 251	4	varies
	RNR 316 Natural Resources Ecology	3	ECOL 182R and L, RNR 230R	Tier 1 Traditions and Cultures	3	
	Statistics: MATH 163 or 263, or PSY 230, or SBS 200	3	MATH 112 or placement	Tier 2 Arts or Humanites	3	
	RNR 230R and L Field Botany	3		ECON 200	3	
	MCB 181R and L General Biology Lecture and Lab	4	MATH 112 or placement; CHEM	RNR 384 Natural Resources Management Practices	3	
TOTAL	16		TOTAL	16		
Junior	ENVS 474 (Aq Plants) or 475 (Algae) or RAM 382 (Plant Communities)	3/4	RNR 230R and L	RNR 321 Ecological Surveys and Sampling	3	Statistics
	Technical Writing: ENGL 308, 313, 340, or 414, ENVS 408 or 415	3		ECOL "ology" elective (e.g. Aquatic Entomology)	4	RNR 316 recommended
	ECOL 482 Ichthyology (odd years in fall)	4	RNR 316 recommended	WSM 468 Wildland Water Quality	3	
	Technical Skills: RNR 403, 417, 429 or GEOG 330, or RAM 446, 456A	3		Oral or Media Communication: COMM 113, 119, ALC 422, SCI 401, JOUR 455, JOUR 472, SBE 202, RNR 495A	3	
				Technical Elective	3	
TOTAL	13/14		TOTAL	16		
Senior	WFSC 456 Aquaculture or WFSC 444 (fall)	3-4		Genetics PLS 312 or ECOL 320	4	MCB 181R and L; CHEM
	WFSC 471 Stream Ecology	3		Technical Electives	3	
	Technical Electives	7		WFSC 455 R and L Fisheries Management	4	even years
	SNRE requirement	1		RNR 480 Natural Resources Policy and Law	3	RNR 200
	TOTAL	14/15		TOTAL	14	
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						
Catalog Year 2020-21						

Suggested Technical Electives (those marked with an * already fulfill major requirements)

Ecology/Zoology/Animal Health

WFSC 385 Zoo and Aquarium Conservation
ACBS 400A/B Animal Anatomy and Physiology
ECOL 335 Evolution
ECOL 473 Topics in Behavioral Ecology
ECOL 487 Animal Behavior
ECOL 403 Biology of Animal Parasites
3rd "Ology" of ECOL 483 (Herpet), 484 (Ornith),
485 (Mammal), 482 (Ichthy)*
ACBS 336A Applied Animal Nutrition
ACBS 449 Diseases of Wildlife

Tools/Techniques/Internships

RNR 403 -- Applications of GIS (3)
RNR 417 -- GIS for Natural Resources (3)
RNR 419 -- Cartographic Modeling for Nat
RNR 420 -- Advanced GIS (3)
RNR 422 -- Resource Mapping (3)
RNR 473 Spatial Analysis and Modeling (3)
RNR 493 Internship
RNR 499 Independent Study
RNR 322 Field Methods in Nat Resources

Fire Ecology and Natural Resources Management

RNR 448 Conservation Planning & Wildland Recreation
RNR 355 Intro to Wildland Fire
RNR 438 Wildland Fire Ecology
RNR 440 Climate Change Adaptation
RNR 441A - Natural Resource Management in Native Communities

Other Ecology/Conservation

RNR 458 Ecosystem Ecology
ECOL 338 Biogeography
ECOL 406R Conservation Biology
GEOS 478 Global Change
RNR 495A Study Abroad Namibia/Australia/Ecuador
WFSC 430 Conservation Genetics
WFSC 447 Wildlife Conservation Behavior

Economics/Policy/Planning

RNR 485 Economics and Social Connections to Nat Resources
AREC 217 Resources & Environmental Econ
AREC 476 Environmental Law and Economics
POL 481 Environmental Policy
PLG 472 Environmental Land Use Planning
GEOG 404 The Politics of Nature

Certificate in Rangeland Management courses

RAM 382 Rangeland Plant Communities*
RAM 436A Grazing Ecology and Management
RAM 446 Management + Restoration of Wildland Vegetation
RAM 456 Rangeland Inventory & Monitoring
RAM 487 Rangeland Management Planning

Marine Sciences Minor courses

ECOL 496O- Galapagos Marine Ecology
GEOS 212 Introduction to Oceanography
ENVS 475 - Freshwater and Marine Algae*
ECOL 404R and L Biology of the Oceans (Fall)
ECOL 412A and B Ocean Sciences
ECOL 360 Marine Ecology and Conservation
ECOL 450 Marine Discovery

Courses Required for Certification by the American Fisheries Society

Course Grade must be "C" or better (No Pass/Fail)

- A. **Fisheries and Aquatic Sciences**: Four courses (12 units), 2 must be directly related to fisheries sciences (e.g., Ichthyology, Fishery Management, Aquatic Plants, Aquatic Entomology, Algae, Aquaculture, Limnology)
- B. **Other Biological Sciences**: 18 semester hours (e.g., Basic Biology, Genetics, Anatomy, Disease, Nutrition, Botany, Zoology)
- C. **Physical Sciences**: Must total 15 semester hours (e.g., Chemistry, Physics, Soils, Water Quality)
- D. **Mathematics and Statistics**: Must total 6 semester hours. Must include college algebra or calculus and 1 course in statistics.
- E. **Communications**: Must total 9 semester hours (e.g., English Composition, Public Speaking, Technical Writing)
- F. **Human Dimensions**: Must total 6 semester hours (e.g., Survey of Economics, Conservation Planning, Policy and Law, Natural Resources Economics)