

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	
	<b>RNR 200 Conservation of Natural Environments</b>	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
	<b>RNR 316 Natural Resources Ecology</b>	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	
	<b>RNR 230R and L Field Botany</b>	3		ECON 200	3	
	MCB 181R and L General Biology Lecture and Lab	4	MATH 112 or placement; CHEM	<b>RNR 384 Natural Resources Management Practices</b>	3	
TOTAL	16		TOTAL	16		
Junior	ENVS 474 (Aq Plants) or 475 (Algae) or RAM 382 (Plant Communities)	3/4	RNR 230R and L	<b>RNR 321 Ecological Surveys and Sampling</b>	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 <b>or</b> 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		<b>RNR 480 Natural Resources Policy and Law</b>	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 2019-20						

## **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  
3<sup>rd</sup> "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)