

## Bachelor of Science in Natural Resources: Watershed Management and Ecohydrology

		FALL		SPRING		
	Course Title	Units	Prerequisite?	Course Title	Units	Prerequisite?
<b>Freshman</b>	CHEM 151 OR CHEM 141 AND 143	4	MATH 112 or placement	CHEM 152 OR CHEM 142 AND 144	4	First semester CHEM
	ENGL 101 or 109H	3		ENGL 102	3	
	Tier 1 Traditions and Cultures	3		Tier 1 Traditions and Cultures <sup>1</sup>	3	
	<b>RNR 200 Conservation of Natural Environments</b>	3		MATH 129 Calculus II	3	MATH 122A/B, or 125 Calculus I
	MATH 122A/B, or 125 Calculus I	3/5	MATH 120R or placement	Tier 1 Individuals and Societies	3	
<b>TOTAL</b>		<b>17/19</b>		<b>TOTAL</b>		<b>16</b>
<b>Sophomore</b>	PHYS 102 Intro to Physics I	3	MATH 112 or placement	PHYS 103	3	Phys 102
	Tier 1 Ind & Societies	3		Tier 2 Individuatal and Societies	3	
	Statistics: MATH 163 or 263, PSY 230, or SBS 200	3	MATH 112 or placement	ENVS 200 and 201 Soil Science Lecture and Lab	4	First semester CHEM
	MCB 181R/L General Biology Lecture and Lab	4	MATH 112 or placement; CHEM 151	ECOL 182R/L General Biology Lecture and Lab	4	
	GEOS 251 Physical Geology	4		<b>RNR 384 Natural Resources Management Practices</b>	3	
	<b>TOTAL</b>		<b>17</b>		<b>TOTAL</b>	
<b>Junior</b>	<b>RNR 230R/L Field Botany Lecture and Lab</b>	3		<b>RNR 321 Ecological Surveys and Sampling</b>	3	Statistics
	<b>RNR 316 Natural Resources Ecology</b>	3	ECOL 182R/L	Technical Writing: ENGL 308, 313, 340 or 414, ENVS 408 or 415	3	
	WSM 460A Watershed Hydrology	4	Calculus and Physics 102 or equivalent	WSM 462 Watershed Management	4	WSM 460A
	Riparian Science: WFSC 471 OR ENVS 474	3 - 4		Technical Skills Elective: RNR 403, RNR 417, RNR 429, GEOG 330, RAM 456A, RAM 446	3	
	ECON 200 (Economics)	3		Tier 2 Arts or Humanities Elective	3	
	<b>TOTAL</b>		<b>16</b>		<b>TOTAL</b>	
<b>Senior</b>	WSM 452 Dryland Ecohydrology and Vegetation Dynamics	4	RNR 316, ECOL 302, or consent of instructor.	Resource Economics: RNR 485 or AREC 476 or AREC 479	3	ECON 200
	Forest Science: RNR 355	3	One year of biology; ecology recommended	Oral or Media Communication: ALC 422, SCI 401, JOUR 455, 472, SBE 202, COMM 113, 119, RNR 495A	3	
	Technical Electives	5		WSM 468 Wildland Water Quality	3	
	<b>TOTAL</b>		<b>12</b>		<b>TOTAL</b>	

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

## Technical Electives

Students are required to take 5 units of coursework from the list below. Course substitutions are allowed with approval of your faculty advisor. Course suggestions for different emphasis areas can be found in the next section.

Course #	Name	Units	Course #	Name	Units
<b>Undergrad Certificate in GIS courses</b>			ENVS 316	Soil Fertility + Plant Nutrition	3
RNR 403	Applications of GIS	3	ENVS 401	Sustain Mgt of Arid Lands and ...	3
RNR 417	GIS for Natural Resources	3	ENVS 418	Intro to Hum Health Risk Ass	3
RNR 419	Cartographic Modeling	3	ENVS 420	Environmental Physics	3
RNR 420	Advanced GIS	3	ENVS 431	Soil Genesis, Morph, + Classif	3
RNR 422	Resource Mapping	3	ENVS 454	Water Harvesting	3
RNR 494	Practicum	1	ENVS 461	Soil + Water Conservation	3
			ENVS 462	Env Soil + Water Chemistry	3
<b>Certificate in Rangeland Management courses</b>			ENVS 470	Soil Physics	3
RAM 382	Rangeland Plant Comm. West	3			
RAM 436a	Grazing Ecology and Mgt	2	POL 481	Environmental Policy	3
RAM 446	Restor and Mgt of Wildland Veg	4	WSM 444	Appl. Environment Law	3
RAM 456A	Rangeland Inventory & Monit	4	RNR 438	Fire Ecology	3
RAM 487	Rangeland Management Planning	2	RNR 448	Conserv.Plng and Wildland Rec	3
			RNR 458	Ecosystem Ecology	3
			PLS 360	Principles of Plant Physiology	3
			GEOG 468	Water and Sustainability	3
GEOS 415	Geologic Hazards	3	GEOG 483	Geographic Appl of RS	3
GEOS 450	Geomorphology	3			
GEOS 439A	Intro to Dendrochronology	4	WFSC 455R	Fishery Management	3
GEOS 478	Global Change	3	WFSC 455L	Fishery Management Lab	1
			WFSC 482	Ichthyology	4
WSM 330	Intro. to Remote Sensing	3	CE 427	Computer Appl in Hydraulics	3
REM 490	RS for the Study of Plant Earth	3	HWRS 431	Hydrogeology	3
			HWRS 443A	Env Risk + Econ Anal in WR	3
RNR 322	Field Methods in Natural Resources		HWRS 449	Statistical Hydrology	3
			WSM 426	Watershed Engineering	3

**Emphasis Areas:** Students should consult with an advisor and development an emphasis area that meets their career goals. Examples of potential programs are below, but students can also design their own emphasis area.

**Biogeochemical Emphasis:** Students interested in a strong background in water quality. Suggested courses include: HWRS 450, ENVS 316, and ENVS 462.

**EcoHydrology Emphasis:** For students interested in ecological aspects of watershed management. Suggested courses include: PLS 360, RAM 382, and WSM 452

**Soil Emphasis:** Students interested in obtaining a Soil Scientist GS-5 Office of Personnel Management Certification must take at least 15 units of soil science courses. Suggested courses include ENVS 316, ENVS 431, ENVS 462, and ENVS 470.

**Water Policy and Economics Emphasis:** For students interested in social and economic aspects of watershed management. Suggested courses include WSM 444, AREC 375, and POL 481

**Fire Management Emphasis:** For students interested in fire management and ecology. Suggested courses include: RNR 355, RNR 438, and GEOS 464

**Range Management Emphasis:** For students interested in rangeland watershed management. Suggested courses include: RAM 382, RAM 436a, RAM 446, RAM 456, and RAM 487. Students interested in obtaining a Range Scientist GS-5 Office of Personnel Management Certification should talk to an advisor.