

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

		FALL		SPRING		
	Course Title	Units	Prerequisite?	Course Title	Units	Prerequisite?
<b>Freshman</b>	Tier 1 Nat Sci – CHEM 151	4	MATH 112 or placement	Tier 1 Nat Sci – CHEM 152	4	CHEM 151
	ENGL 101 or 109H	3		ENGL 102	3	
	Tier 1 Traditions and Cultures	3		Tier 1 Traditions and Cultures <sup>1</sup>	3	
	GEOS 251 Physical Geology	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	
	TOTAL	17/19		TOTAL	16	
<b>Sophomore</b>	PHYS 102 Intro to Physics I (Tier 2 Natural Science)	3	MATH 112 or placement	PHYS 103 or WSM 402 Air and Water	3	Phys 102
	Tier 2 Ind & Soc – ECON 201a or ECON 200 (Economics)	3		Tier 1 Traditions and Cultures	3	
	MATH 163 or 263 (Statistics)	3	MATH 112 or placement	ENVS 200 and 201 Soil Science Lecture and Lab	4	CHEM 151
	MCB 181R/L General Biology Lecture and Lab	4	MATH 112 or placement; CHEM 151	ECOL 182R/L General Biology Lecture and Lab	4	
	<b>RNR 200 Conservation of Natural Environments</b>	3		<b>RNR 384 Natural Resources Management Practices</b>	3	MATH 163 or 263
	TOTAL	16		TOTAL	17	
<b>Junior</b>	<b>RNR 230R/L Field Botany Lecture and Lab</b>	3		<b>RNR 321 Ecological Surveys and Sampling</b>	3	
	<b>RNR 316 Natural Resources Ecology</b>	3	ECOL 182R/L	ENGL 308, 313 or 340, ENVS 408 or 415, AGTM 422, SCI 401	3	
	WSM 460A Watershed Hydrology	4	Calculus and Physics 102 or equivalent	WSM 462 Watershed Management	3	WSM 460A
	Riparian Science: WFSC 441 OR ENVS 471 OR ENVS 474	3		Technical Elective <sup>2</sup>	3	
		TOTAL	13	Tier 2 Arts or Humanities Elective	3	
				TOTAL	15	
<b>Senior</b>	WSM 452 Dryland Ecohydrology and Vegetation Dynamics	4	RNR 316, ECOL 302, or consent of instructor.	Resource Economics: AREC 478 OR AREC 479	3	ECON 200
	Forest Science: RNR 355	3	One year of biology; ecology recommended	Technical Elective	3	
	Technical Electives	6		WSM 468 Wildland Water Quality	3	
		TOTAL	13	<b>RNR 480 Natural Resources Policy and Law</b>	3	RNR 200
				TOTAL	12	

<sup>1</sup> Diversity Emphasis: One general education course must have the non-Western Civilization, Gender, Race, Class, Ethnicity designation

<sup>2</sup> Students must complete 12 units of Technical Electives

\*\*2nd semester language proficiency required

## Technical Electives

Students are required to take 12 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
WSM 330	Intro. to Remote Sensing	3	ENVS 316	Soil Fertility + Plant Nutrition	3
WSM 426	Watershed Engineering	3	ENVS 401	Sustain Mgt of Arid Lands and ...	3
WSM 444	Appl. Environment Law	3	ENVS 418	Intro to Hum Health Risk Ass	3
WSM 452	Dryland Ecohydro+Veg Dynmc	3	ENVS 420	Environmental Physics	3
WSM 467	Adv Watershed Hydrology	3	ENVS 431	Soil Genesis, Morph, + Classif	3
HWRS 431	Hydrogeology	3	ENVS 453	Remote Sensing of the Environ	3
HWRS 443A	Env Risk + Econ Anal in WR	3	ENVS 454	Water Harvesting	3
HWRS 449	Statistical Hydrology	3	ENVS 461	Soil + Water Conservation	3
RNR 403	Applications of GIS	3	ENVS 462	Env Soil + Water Chemistry	3
RNR 417	GIS for Natural Resources	3	ENVS 470	Soil Physics	3
RNR 419	Cartographic Modeling	1	ENVS 471	Stream Ecology	3
RNR 420	Advanced GIS	3	ENVS 474	Aquatic Plants + the Environ	3
RNR 422	Resource Mapping	3	AREC 217	Res and Env. Economics	3
RNR 438	Fire Ecology	3	AREC 350	Econ, Ethics + Environ Mgt	3
RNR 448	Conserv.Plng and Wildland Rec	3	AREC 479	Econ of Water Mgt + Policy	3
GEOS 251	Physical Geology	3	POL 401	The Polities + Gov of Water	3
GEOS 415	Geologic Hazards	3	POL 481	Environmental Policy	3
GEOS 450	Geomorphology	3	REM 490	RS for the Study of Plant Earth	3
GEOS 439A	Intro to Dendrochronology	4	CE 427	Computer Appl in Hydraulics	3
GEOS 478	Global Change	2	PLS 360	Principles of Plant Physiology	3
ATMO 171	Intro Meteor and Climatology	4	GEOG 459	Land Use and Growth Control	3
RAM 382	Rangeland Plant Comm. West	4	GEOG 468	Water and Sustainability	3
RAM 436a	Grazing Ecology and Mgt	3	GEOG 483	Geographic Appl of RS	3
RAM 446	Restor and Mgt of Wildland Veg	3	WFSC 441	Limnology	4
RAM 456A	Rangeland Inventory & Monit	3	WFSC 455R	Fishery Management	3
ACBS 334	Principles of Animal Nutrition	3	WFSC 455L	Fishery Management Lab	1
			WFSC 482	Ichthyology	4

**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 350, 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, and RAM 456.

Students interested in obtaining a Range Scientist GS-5 Office of Personnel Management Certification should talk to an advisor.