

## WATERSHED MANAGEMENT AND ECOHYDROLOGY OPTION (Major: Natural Resources)

This guide is to aid students in selecting courses. Changes may be made but only in consultation with an advisor. Students must meet all program, Natural Resource Core Curriculum, and University general education requirements for graduation. (See SNR Web Site: [www.snrn.arizona.edu](http://www.snrn.arizona.edu))

	<b>Fall</b>		<b>Spring</b>		
Freshman Year	Tier 1 Nat Sci – CHEM 151 (Gen. Chem & Lab)	4	Tier 1 Nat Sci – CHEM 152 (Gen. Chem & Lab)	4	
	GEOS 251 (Physical Geology)	4	ENGL 102 or 104H (Freshman Composition)	3	
	ENGL 101 or 103H (Freshman Composition)	3	MATH 129 (Calculus II)	3	
	Tier 1 Individuals and Societies Elect.	3	Tier 1 Individuals and Societies Elect.	3	
	MATH 124 or 125 (Calculus I)	3	Tier 1 Traditions and Cultures Elect. <sup>1</sup>	3	
	TOTAL	17/19	TOTAL	16	
Sophomore Year	MATH 160 or 263 (Intro to Statistics)	3	SWES 200, 201 (Soil Science & Lab)	4	
	ECOL 181R, 181L (Life Science of Biology & Lab)	4	ECOL 182R/L (Life Science of Biology & Lab)	4	
	Tier 2 Nat Sci – PHYS 102 (Intro to Physics I)	3	PHYS 103 (Intro to Physics II)	3	
	Tier 2 Ind & Soc – ECON 201a (Intro to Econ-Micro) or 200	3	Tier 1 Traditions and Cultures Elect.	3	
	<b>RNR 200 (Foundations in History &amp; Policy)</b>	3	<b>RNR 321 (Natural Resources – Measurements)</b>	3	
	TOTAL	16	TOTAL	17	
Junior Year	<b>RNR 230 (Natural Resources – Field Botany)</b>	4	<b>RNR 384 (Natural Resources – Management Practices)</b>	3	
	<b>RNR 316 (Natural Resources – Ecology)</b>	3	WSM 462 (Watershed Management)	3	
	WSM 402 (Air and Water)	3	Technical Writing: ENGL 308, AED 422, or SWES 408	3	
	WSM 460 (Watershed Hydrology)	3	Tier 2 Arts or Humanities Elect	3	
		TOTAL	13	TOTAL	16
Senior Year	Fire Science: WSM 408 or RNR 438	3	WSM 456A (Watershed and Ecosystem Functions)	3	
	Resource Economics: AREC 350, AREC 479 or RNR 485	3	WSM 468 (Wildland Water Quality)	3	
	Technical Elective	6	<b>RNR 480 (Nat Resources – Policy &amp; Law)</b>	3	
		TOTAL	12	TOTAL	13
				TOTAL	13

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

<sup>2</sup> Students must complete a minimum of 14 units of technical electives (shown on the back of this guide) as part of the major

**Bold = SRNR Core**

## Technical Electives

Students are required to take 14 units of coursework for the list below. Course substitutions are allowed with approval of your academic 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	SWES 316	Soil Fertility + Plant Nutrition	3
WSM 408	Wildland Fire Management	3	SWES 401	Mgt Arid Land + Salt-Aff Soils	3
WSM 426	Soil+Water Conservation Eng.	3	SWES 418	Intro to Hum Health Risk Ass	3
WSM 444	Appl. Environment Law	3	SWES 420	Environmental Physics	3
WSM 452	Dryland Ecohydro+Veg Dynmc	3	SWES 431	Soil Genesis, Morph, + Classif	3
WSM 467	Adv Watershed Hydrology	3	SWES 453	Remote Sensing of the Environ	3
HWR 431	Hydrogeology	3	SWES 454	Water Harvesting	3
HWR 443	Env Risk + Econ Anal in WR	3	SWES 461	Soil + Water Conservation	3
HWR 445	Statistical Hydrology	3	SWES 462	Env Soil + Water Chemistry	3
HWR 450	Environmental Hydrology	3	SWES 470	Soil Physics	3
RNR 385	Long-term Ecological Monit	1	SWES 471	Stream Ecology	3
RNR 403	Applications of GIS	3	SWES 474	Aquatic Plants + the Environ	3
RNR 417	GIS for Natural Resources	3	AREC 217	Res and Enviv. Economics	3
RNR 419	Cartographic Modeling	3	AREC 350	Econ, Ethics + Environ Mgt	3
RNR 420	Advanced GIS	3	AREC 479	Econ of Water Mgt + Policy	3
RNR 422	Resource Mapping	3	POL 401	The Politics + Gov of Water	3
RNR 438	Fire Ecology	3	POL 481	Environmental Policy	3
RNR 448	Outdoor Recreation Mgt	3	REM 490	RS for the Study of Plant Earth	3
GEOS 251	Physical Geology	4	CE 427	Computer Appl in Hydraulics	3
GEOS 415	Geologic Hazards	2	PLS 360	Principles of Plant Physiology	3
GEOS 450	Geomorphology	4	GEOG 459	Land Use and Growth Control	3
GEOS 464	Intro to Dendrochronology	4	GEOG 468	Water and Sustainability	3
GEOS 478	Global Change	3	GEOG 483	Geographic Appl of RS	3
ATMO 171	Intro Meteor and Climatology	3	WFSC 441	Limnology	4
RAM 382	Rangeland Plant Comm. West	3	WFSC 455R	Fishery Management	3
RAM 436	Grazing Ecology and Mgt	2	WFSC 455L	Fishery Management Lab	1
RAM 446	Vegetation Mgt of Wildlands	4	WFSC 482	Ichthyology	4
RAM 456A	Rangeland Inventory & Monit	4	ANS 334	Principles of Animal Nut	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: HWR 450, SWES 316, and SWES 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 SWES 316, SWES 431, SWES 462, and SWES 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: WSM 408, RNR 438, and GEOS 464

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