

**Table 2: Core Curriculum for Water Resources Science**

**Core Courses - Required (12 credits)**

**WRP 524 Socio-technical Aspects of Water (3 cr)**

**WRE/WRS/WRP 507 Water Resources Seminar (1cr + 1 cr)**

**WRE/WRS/WRP 505 Water Resources Journal Club (1 cr) associated with one of the seminar courses above.**

**BEE 512 Physical hydrology (3)**

**Experiential learning: GEOG 596 or WRS 510 (total 3 cr.)**

**Additional 24 credits for the MS and 30 credits for the PhD from the courses listed below in Table 2 or equivalent coursework. At least 6 to 12 additional credits of WRS 503 Thesis or 36 to 45 credits WRS 603 Dissertation are required for MS and PhD students in WRS, respectively. Students must also meet the ethics requirement (see the Graduate School website for details).**

Course Number	Course Title	Credits	Required	AIH Category
<b>Core Courses (6 credits)</b>				
WRE 507	Water Resources Engineering Seminar (Winter)	1	yes	1
WRP 507	Water Resources Policy Seminar (Fall)	1	yes	3
WRS 507	Water Resources Science Seminar (Spring)	1	yes	1
WRP/WRP/WRS 505	Water Resources Journal Club (F,W,S)	1		1,2,3
WRP 524	Socio-technical Aspects of Water Resources	3	yes	3
BEE 512	Physical Hydrology	3	yes	1
GEOG 596	Advanced field methods in geomorphology and landscape	3	yes	2
<b>Biological Science</b>				
ENVE 541	Microbial Processes in Environmental Systems	4		1
BOT 588	Environmental Physiology of Plants	3		3
FW 556	Limnology	5		2
FW 579	Wetlands and Riparian Ecology	3		2
FW 580	Stream Ecology	3		2
SOIL 555	Biology of Soil Ecosystems	4		3
SOIL 645	Soil Microbial Ecology	3		3
<b>Chemical Science</b>				
CE 548	Water Quality Dynamics	3		1
ENVE 532	Aquatic Chemistry of Natural and Engineered Systems	4		1
ENVE 536	Aqueous Environmental Chemistry Lab	1		1

GEO 530	Geochemistry	3		3
SOIL 545	Environmental Soil Chemistry	3		3
SOIL 547	Nutrient Cycling	3		3
<b>Physical Science</b>				
ATS 520	Principles of Climate	4		2
ATS 564	Interactions of Vegetation and Atmosphere	3		2
BEE 542	Vadose Zone Transport	4		1
BEE/CE 544	Hydraulics of Open Channels	4		1
BEE 546	River Engineering	4		2
CE 512	Hydrology			
CE 514	Groundwater Hydraulics	3		1
CE 547	Water Resources Engineering I: Principles of Fluid Mechanics	4		1
FE 530	Watershed Processes	4		1
FE 532	Forest Hydrology	3		1
GEO 532	Applied Geomorphology	3		2
GEOG 523	Snow Hydrology	3		1
GEO 691	Mass and Heat Transport in the Environment	4		1
GPH 665	Geophysical Field Techniques	3		2
OC 670	Fluid Dynamics	4		1
SOIL 535	Soil Physics	4		1
SOIL 536	Vadose Zone Hydrology lab	1		2
<b>Geospatial Analysis</b>				
CE 513	GIS in Water Resources	3		3
GEOG 560	GIScience I: Intro to GIS	4		3
<b>Modeling</b>				
BEE 525	Stochastic Hydrology	3		1
BEE 529	Biosystems Modeling	3		2
BEE 549	Regional Hydrologic Modeling	3		1
CE 517	Hydraulic Engineering Design	4		1
CE 518	Groundwater Modeling	3		1
<b>Human Impacts &amp; Design</b>				
BEE 533	Irrigation System Design	4		1

BEE 558	Non-point Source Pollution Assessment and Control	3		1
FE 536	Watershed Impacts of Forest Disturbance	4		2
RNG 555	Riparian Ecology and Management	3		2

CSS 523	Principles of Stable Isotopes	3		3
ENVE 534	Physical and Chemical Processes for Water Quality Control	4		1
FE 535	Water Quality and Forest Land Use	3		4
FE 537	Hillslope Hydrology	4		4
BEE/FE 545	Sediment transport	4		?
GEO 531	Applied Climatology	3		2

GEOG 580	Remote Sensing I: Principles and Applications	3		3
<del>GEO 582</del>	<del>Geomorphology of Forests and Streams</del>	<del>3</del>		<del>2</del>