

# MS and PhD Programs in Hydrogeology

## 1. Prerequisites

Geology: Stratigraphy/sedimentology; Basic petrology; Structural geology; Field geology (at least 9 credits)  
Other: Multi-variable calculus; Differential equations; Linear algebra; Introductory statistics;  
Introductory physics and chemistry. Courses not part of undergraduate curriculum need to be made up as graduate student.

## 2. Required courses (MS & PhD)

GEO 503	x cr.	Thesis
GEO 507	1 x 3	Seminar: Geology Colloquium (3 quarters: Fall + 2 additional)
GEO 514	3	Groundwater hydraulics (W)
GEO 517	2	Geologic report writing (W)
GEO 589	3	Role of fluids in geologic processes (S, alt. yrs.)
GEO 691	4	Heat and mass transfer in the environment (S, Alt. yrs.)
GEO 5xx	3-4	One of GEO 512, 527, 530, 540, 597, 633, or 646.
GEO 5xx	3-4	One of GEO 536, 537, 556, 558, 561, or 563.
CSS 535,6	4	Physics of Soil Ecosystems + Vadose Zone Lab (F)
BRE 542	3	Vadose zone transport (F)
CE 518	3	Groundwater modeling (W)

### Required for environmental geology focus (MS & PhD)

BRE 512	3	Introductory hydrology (F)
ENVE 554	4	Groundwater remediation (S)

### Required for subsurface geology focus (MS & PhD)

GEO 5xx	3-4 x 2	Two more 5xx or 6xx Geology courses
---------	---------	-------------------------------------

### Required for ecohydrology focus (MS & PhD)

FE 537	3	Hillslope and Watershed Hydrology (F)
GEO 548	3	Field Research in Geomorphology and Landscape Ecology (F)
GEO 5xx	3	Snow Hydrology (new class)

## 3. Some other recommended classes for MS and PhD.

BRE 525	3	Stochastic hydrology
CE 543	4	Applied hydrology
CE 544	4	Hydraulics of open channels
CSS 555	4	Biology of Soil Ecosystems
CSS 566	4	Geochemistry of Soil Ecosystems
ENVE 535	4	Transp. and fate of organic chem. in environ. syst.
ENVE 532	1-3	Aqueous environmental chemistry
GEO 516	2	Interpretation of geologic maps
GEO 525	3	Water resources management in the US
GEO 532	3	Applied geomorphology
GEO 565	3	Geographic information systems
GEO 570/680	4	Stratigraphy and sedimentology OR Adv. sedimentary petrology
GEO 582	3	Forest geomorphology
MTH 581-3	3-9	Mathematical methods for scientists and engineers
ST 511-3	12	Methods of data analysis