Water Issues Specialization

Research on Earth's water is interdisciplinary, requires ability to bridge the social and natural sciences and engineering.

Examples of Water Specialization research areas include:

- Water in global change
- Water quantity, hydrologic forecasting and remote sensing
- Water quality, the role of water in biogeochemical cycles
- Consequences of human activities to aquatic ecosystem services
- Consequences of aquatic ecosystem conditions to public health
- Water rights in coupled human-natural systems
- Water contaminant fate and ecotoxicity
- Collaborative watershed planning
- Transboundary water governance

Specialization requirements:

1. Approval of the student's advisor
2. Completion of the specialization coursework requirements

Water faculty:

- Heather Allen
- Doug Alsdorf
- Nick Basta
- Gil Bohrer
- Larry Brown
- Jeremy Bruskotter
- Anne Carey
- Yu-Ping Chin
- Ann Christy
- Maria Manta Conroy
- Ozeas Costa
- Peter Curtis
- Konrad Dabrowski
- Anand Desai
- Warren Dick
- Doug Doohan
- Norman Fausey
- Robert J. Gates
- Charles Goebel
- Steven Gordon
- Dan Herms
- Motomu Ibaraki
- Elena Irwin
- Rattan Lal
- Roman Lanno
- Jeff Lejeune
- Yebo Li
- Jialin Lin
- Brian Lower
- Stuart Ludsin

Water Specialization coursework requirements:

- MS: Take a total of three credits from each of the three objectives below.
- PhD: Take a total of three credits from each of the three objectives below.

Requirement	Course name and number	Credit Hours	Semester (to be) taken
Objective 1: Biological Sciences Choose 3 (MS) credits or 6 (PhD) credits	**EEOB 5420** *Aquatic Ecosystems- Ecology of Inland Waters* *ESGP Core: Biological Sciences	1.5-4	
	ENR 5250.01 + ENR 5250.02 *Wetland Ecology and Restoration + Field Laboratory* *ESGP Core: Biological Sciences	3	
	PUBHEHS 7360 *Water Contamination: Sources and Health Impact* *ESGP Core: Biological Sciences	3	
	EEOB 5410 *Aquatic Ecosystems - Ocean Ecology*	1.5	
	ENR 5280 *Stream Ecology*	4	
	ENR 5345 *Methods in Aquatic Ecology*	4	
	ENR 5355 *Aquaculture*	3	
	EEOB 6210 *Ecotoxicology*	2-4	
	ENR 7700 *Watershed Ecology and Restoration*	3	
	ENR 8890.02 *Ecological Restoration Seminar*	1-12	
	Objective 1 total:		
Objective 2: Physical Sciences And Engineering Choose 3 (MS) credits or 6 (PhD) credits	**EARTHSC 5621** *Introduction to Geochemistry* *ESGP Core: Physical Science	3	
	EARTHSC 5651 *Hydrogeology* *ESGP Core: Physical Science	4	
	ENR 5273 *Environmental Fate and Impact of Contaminants in Soil and Water*	3	

	*ESGP Core: Physical Science		
	ENVENG 6100 *Environmental Engineering Analytical Methods* *ESGP Core: Physical Science	3	
	ENVENG 5430 *Principles of Risk Assessment* *ESGP Core: Physical Science	3	
	FABENG 5550 *Sustainable Waste Management* *ESGP Core: Physical Science	3	
	EARTHSCI 5718 *Aquatic Geochemistry* *ESGP Core: Physical Science	3	
	CIVILEN 5230 *Transport Phenomena in Water Resources Engineering*	3	
	CIVILEN 5420 *Remote Sensing of Environment*	3	
	CIVILEN 5130 *Applied Hydrology*	3	
	ENVENG 5120 *Advanced Environmental Biotechnology*	3	
	CIVILEN 6230 *Numerical Models in Water Resources Engineering*	3	
	EARTHSC 5206 *Advanced Oceanography*	3	
	EARTHSC 5655 *Land Surface Hydrology*	3	
	EARTHSC 5752 *Contaminants in Aqueous Systems*	4	
	EARTHSC 5751 *Quantitative Ground-Water Flow Modeling*	4	
	ENVENG 6210 *Environmental Engineering Unit Operations*	3	
	FABENG 5730 *Design of Agricultural Water Management Systems*	3	
	FABENG 5750	3	

	Stream Geomorphology and Watershed Hydrology		
	Objective 2 total:		
Objective 3: Social Sciences and Policy Choose 3 (MS) credits or 6 (PhD) credits	**ENR 8350** *Ecosystem Management Policy* *ESGP Core: Social Science	3	
	ENR 5451 *Water Law* *ESGP Core: Social Science	3	
	EARTHSC 5717 *Critical Issues in World Freshwater Resources*	4	
	Objective 3 total:		
ESGP Seminar Three credits required (MS and PhD)	**ESGP 7899** Current Issues in Environmental Science	1	
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	ESGP Seminar total:		
	Grand total:		