

Core Curriculum for Graduate Degrees in Water Resources Engineering

Core Courses - Required (9 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.

At least 3 credits of engineering design coursework is strongly recommended.

Additional 21 credits from the courses listed below in Table 1 or equivalent coursework, including at least one hydraulics course relevant to the area of concentration. For a groundwater concentration this would be CE 514, for a surface water concentration it would be CE 544, for watershed engineering, either FE 530 or CE 517. Additional 6-12 credits of WRE 503 Thesis are required for MS students in WRE; students must also meet the ethics requirement (see the Graduate School website for details).

Course Number	Course Title	Credits	Required	AIH Categories
CE 547	Water Resources Engineering I: Principles of Fluid Mechanics	4	yes	1
BEE 512	Physical Hydrology	3	yes	1
BEE 529	Biosystems Modeling or equivalent	3	yes	2
BEE 549	Regional Hydrologic Modeling	3		1
CE 513	GIS in Water Resources	3		3
Groundwater Engineering				
BEE/CE/GEO 514	Groundwater Hydraulics	3	yes	1
*BEE <u>533</u>	Irrigation System Design	4		2
BEE <u>542</u>	Vadose Zone Transport	4		1
ENVE <u>554</u>	Groundwater Remediation	4		1
GEO 530	Geochemistry	4		1
GPH 665	Geophysical Field Techniques	3		1
Surface Water Engineering				

Course Number	Course Title	Credits	Required	AIH Categories
*BEE <u>533</u>	Irrigation System Design	4		2
BEE/CE <u>544</u>	Hydraulics of Open Channels	4	yes	1
BEE 545	Sediment Transport	3		2
CE <u>518</u>	Groundwater Modeling	3		1
CE <u>543</u>	Applied Hydrology	4		1
BEE <u>546</u>	River Engineering	4		1
ENVE 535	Physical and Chemical Processes for Hazardous Waste Treatment	4		2
CE 641	Ocean Engineering Wave Mechanics	3		2
FE 535	Water Quality and Forest Land Use	3		2
FE 536	Watershed Impacts of Forest Disturbance	4		2
FE 537	Hillslope Hydrology	4		1
GEO 532	Applied Geomorphology	3		2
GEO 533	Coastal Geomorphology	3		2
Watershed Engineering				
ATS 564	Interactions of Vegetation and Atmosphere	3		2
BEE 525	Stochastic Hydrology	3		1
*BEE 558	Non-point Source Pollution Assessment and Control	3		1
BEE 549	Regional Hydrologic Modeling	3		1
*CE 513	GIS in Water Resources	3		2
*CE 517	Hydraulic Engineering Design	4		1
CE 545	Sediment Transport	4		2
CE 548	Water Quality Dynamics	3		1

Course Number	Course Title	Credits	Required	AIH Categories
*ENVE 556	Sustainable Water Resources Development	3		2
*ENVE 521	Water and Wastewater Characterization	4		1
ENVE 522	Environmental Engineering Design	4		2
*ENVE 531	Fate & Transport of Chemicals in Environmental Systems	4		2
ENVE 532	Aquatic Chemistry of Natural and Engineered Systems	4		1
ENVE 536	Aqueous Environmental Chemistry Lab	1		1
*FE 530	Watershed Processes	4		1
FE 532	Forest Hydrology	3		1
FE 535	Water Quality and Forest Land Use	3		1
FE 536	Watershed Impacts of Forest Disturbance	4		2
FE 537	Hillslope Hydrology	4		1
BOT 588	Environmental Physiology of Plants	3		1
FE 630	Special Topics in Forest Hydrology	1-3		1

*4XX/5XX courses