

Graduate International Pathway: Civil Engineering — Water Resources track

Course Options

- **CE 5093. Geographic Information Systems (GIS). (3-0) 3 Credit Hours.**
 - **Course description:** Introduces vector, raster and tabular concepts, emphasizing the vector approach. Topics include spatial relationships, map features, attributes, relational database, layers of data, data ingesting, digitizing from maps, projections, output, applications, and availability of public data sets. Focus will be placed on spatial/temporal data analyses using digitized maps and database information in an area of CE specialization. (Formerly CE 5293. Credit cannot be earned for both CE 5093 and CE 5293.)

- **CE 5363. Coastal Engineering. (3-0) 3 Credit Hours.**
 - **Course description:** This course introduces coastal engineering principles. This course will cover various fundamental and applied aspects of coastal engineering, including: wave mechanics, wave-structure interaction, coastal water level fluctuations, coastal zone processes, and design considerations for coastal structures and beach nourishment projects.

- **CE 6343. Water Resources Systems Analysis. (3-0) 3 Credit Hours.**
 - **Course description:** Systems Analysis methods use algorithmic and mathematical approaches for problem-solving. These are powerful methods that can be applied to solve complex design and management problems for water resources systems and other engineering areas. This class will focus on optimization methods, such as linear programming, integer programming, nonlinear programming, genetic algorithms, and dynamic programming, and their application to water resources systems.

- **CE 6383. Global Change. (3-0) 3 Credit Hours.**
 - **Course description:** Changes in the global distribution of plants and animals and the causes of the changes will be examined. Factors that are apparently coupled to changes in the atmosphere and environmental temperature will be examined. (Formerly CE 6113. Same as ES 5043 and GEO 5043. Credit can be earned for only one of the following: CE 6383, CE 6113, ES 5043, or GEO 5043.)