

VILLANOVA UNIVERSITY
WATER RESOURCES AND
ENVIRONMENTAL ENGINEERING
GRADUATE PROGRAM

Evening Course
in

Environmental Flows

C.E.E. 8507

Offered – Even Years – Fall*
Offered in class



COURSE DESCRIPTION

Water quality and quantity models have become a common instrument in water resource engineering. As computer capabilities have increased, so has the complexity of the numerical models. Numerical modeling of physical systems is a tool with which all engineers in water resources should be familiar, however it is also necessary to understand the physics of natural system processes.

This course is an extension of fluid mechanics, applied to commonly encountered environmental systems: rivers, lakes, estuaries and the atmosphere. The participants will use fluid mechanic concepts, such as wave motion, turbulence and diffusion, to understand pollutant transport, algae blooms and optimal operation of Best Management Practices. Initially, the course will review the fundamental concepts of fluid mechanics and then use these concepts to understand more specific environmental flows. By the end of the course, the participants will have an understanding of the physical system and how the physics drive the quality (chemistry and biology) of the flow.

Class assignments will include application of the fundamental fluid mechanic equations to create simple models, as well as a review of the current state-of-the-art in environmental flows and fluid mechanics.

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Prospective students may contact the instructor or the Department of Civil and Environmental Engineering 610-519-4960.

Further information on all of the Department's graduate programs is available at:
www.engineering.villanova.edu/academics/ce/index.htm

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*Instructor/Course Offerings are subject to change.