

New for Fall 2012!

CEE 6930: Hydroinformatics

Class Time: Tuesday/Thursday 3:00 – 4:15 PM

Class Location: ENGR 401

Instructors:

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Course Description:

Hydroinformatics is the study, design, development, and deployment of hardware and software systems for hydrologic data collection, distribution, interpretation, and analysis to aid in the understanding and management of water in the natural and built environment. This class will introduce students to fundamental and advanced hydroinformatics concepts and procedures including automated data collection networks, relational databases and data management software, metadata and semantics, data storage file formats and standards, data transformations and automation of data manipulation tasks to support modeling and analysis, web based data distribution and access using web services, and integrated networks of hydro-climate data.

The course has an open, project-type format where students will work individually or in a small group over the semester to discover, organize and manage data for a hydrology or water resources problem of their interest. Projects may include designing appropriate data models and automating data loading, manipulation, and transformations in support of data intensive analyses or modeling. Class time will include lectures focused on learning and developing data management, transformation, and task automation skills, class discussions, code writing exercises to solve data manipulation tasks, demonstration of software and data systems, and student presentations of their project work. The course will better prepare students to work in data-intensive research and project work environments and emphasize development of reproducible processes for managing and transforming data in ways that others can easily and completely reproduce on their own to support analyses and modeling. Additionally, this course will better prepare students to work across multiple software platforms and systems used in data management.

Prerequisites:

Graduate student standing, proficiency in Microsoft Excel and Geographic Information Systems (GIS), familiarity with and ability to write simple programs in any programming language such as C, C++, C#, Fortran, Visual Basic, R, Matlab, Python, or Java.