CI-WATER Hydroinformatics Course Fall 2012

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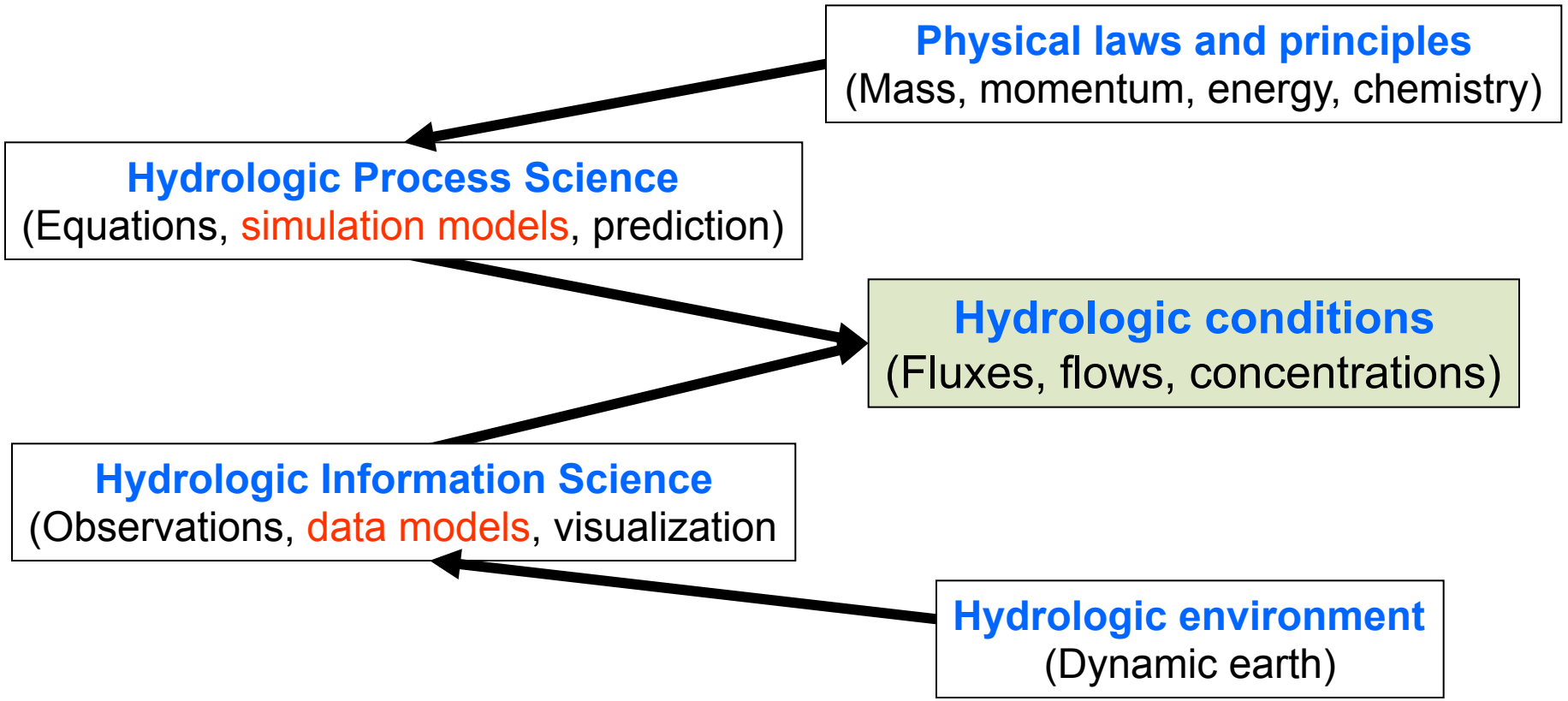
What is Hydroinformatics?

- 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.

Hydrologic Information Science

It is as important to represent hydrologic environments precisely with data as it is to represent hydrologic processes with equations



Slide from David Maidment

Hydroinformatics Course Structure

- Jointly offered across the USU, UofU, and BYU campuses via UEN IVC
- Instructors at each campus
- Fall 2012: 30+ students total
- Goals
  - Introduce students to cyberinfrastructure and informatics concepts
  - Better prepare students to work in data-intensive research and project environments

UtahStateUniversity

THE UNIVERSITY OF UTAH

BYU
BRIGHAM YOUNG UNIVERSITY

Hydroinformatics Concepts

- Automated data collection networks
- Relational databases and data management software
- Metadata and semantics
- Data storage media, file formats, and standards
- Data management and transformations
- Automation of data manipulation tasks to support modeling and analysis
- Web based data sharing
- Integrated networks of hydro-climate data

Outcomes

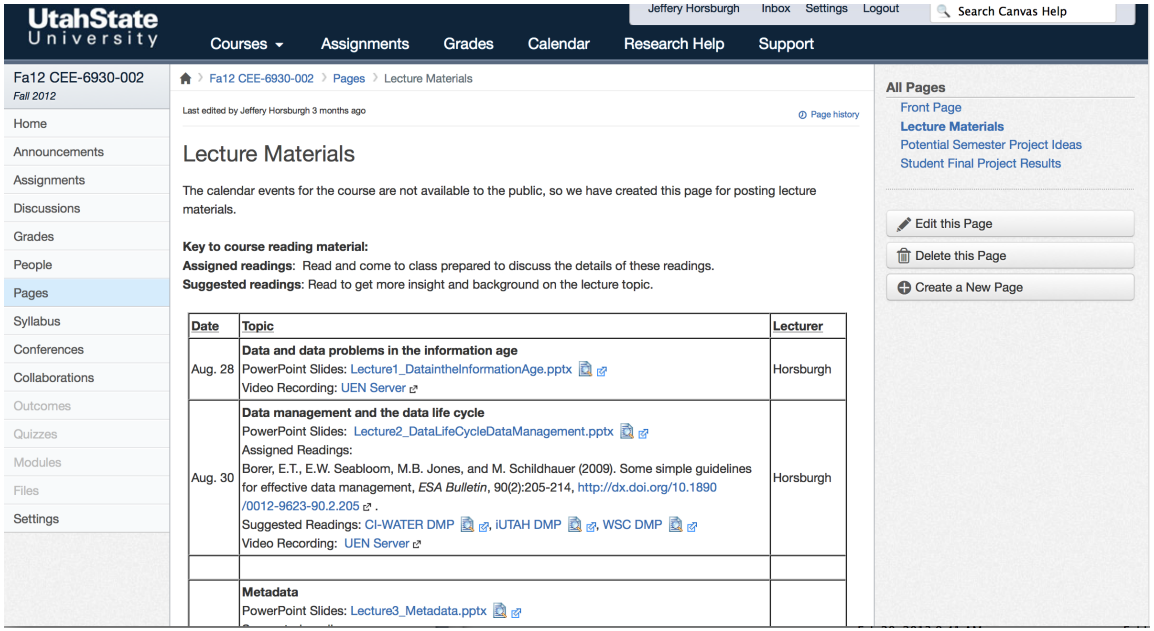
- 30+ Total Students
  - 7 at Utah State University (+1 Observer)
  - 7 at University of Utah
  - 18 at Brigham Young University

Outcomes

- 9 Individual Learning Opportunities
  1. Metadata and the data life cycle
  2. Google Fusion Tables and Visualization and Mapping in Excel
  3. Data model design
  4. Database implementation and loading data
  5. Querying, visualizing, transformation, and analysis
  6. Automation of data management tasks
  7. Accessing data using web services via HydroDesktop
  8. Deploying an HIS Server to share your data
  9. Preparing data for input to a model

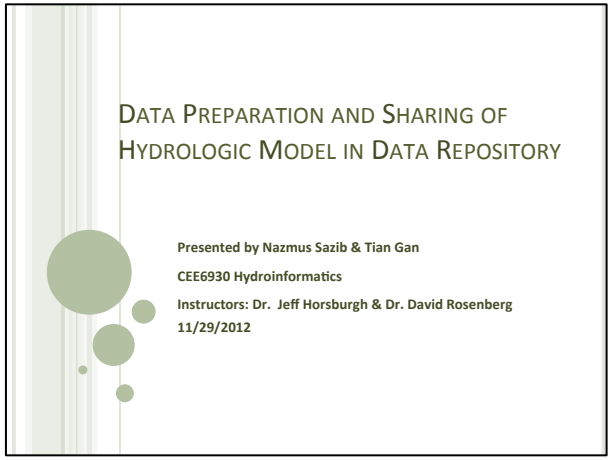
Outcomes

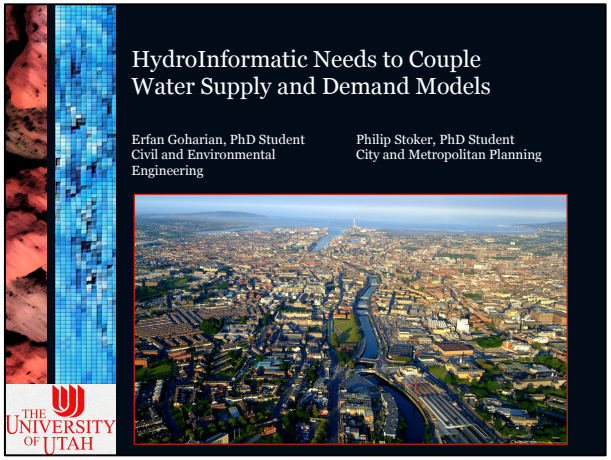
- Lecture and class materials publicly available on course Canvas website
- Lectures recorded, edited, and posted on course Canvas website
- https://usu.instructure.com/courses/127332

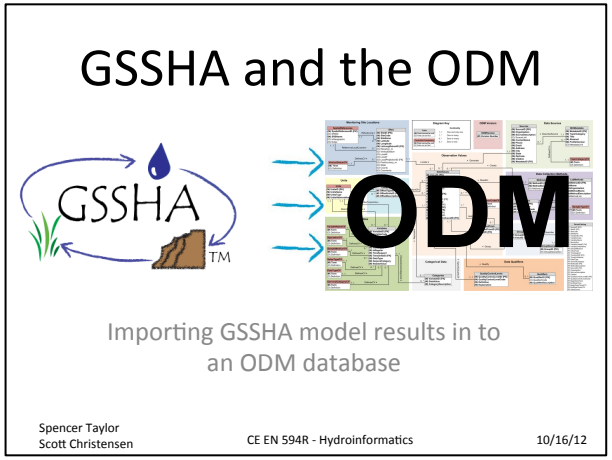


Outcomes

- Student Projects
  - Results of 15 student group projects posted on course website
    - Midterm oral presentation
    - Final oral presentation
    - Final written report







Outcomes

- Mid-term and final student surveys

"In this class I learned so many important aspects of hydroinformatics that otherwise would talk me many years to develop and learn. This in-turn will help me immensely in my research and future career. "

"I really liked being able to go back and re-watch lectures. It was really helpful to be able to watch while I was working on the ILO for the lecture. "

"I'm personally not a fan of the distance learning, but I did appreciate having the variety in teaching style and skills from the three professors. "

"I want every fellow student that studies water resources engineering to take this class. This class would improve the quality of research at USU and other campuses and set them apart from so many water resources programs in the US.
Hydroinformatics was one of most beneficial and cool classes that I ever took through my bachelors, Masters, and PhD so far! "

Outcomes

- Conference proceedings paper submitted to the American Society of Engineering Education Annual Conference
- “Using Interactive Video Conferencing for Multi-Institution, Team-Teaching”