Advanced Topics in Watershed Management

BSE 5214

Spring 2009

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Office Hours: Wednesdays 9:00-11:00; Thursdays, 3:00-5:30. If you cannot make my office hours, please make an appointment and/or contact me via email.

Course website: Check the course website daily for course announcements, updates, and reminders.

Prerequisites: Graduate standing

Course Description:

This course is a graduate-level interdisciplinary course designed to explore advanced topics in watershed management. The focus will be on reading, discussion, summary and presentation of current research in the areas of water quality and watershed management. Each year a different theme will be chosen for review. Example topics could include Urban Stream Systems, Pathogens in the Environment, Onsite Infiltration Practices, Detecting Water Quality Changes at the Watershed Scale, Sensors in Hydrologic and Water Quality Monitoring, and Water Quality Implications of Climate Change. The theme for Spring 2008 is hillslope hydrology.

For the first part of the course, a core group of papers will be reviewed by the entire class. Students will write an abstract and a critique for each of these papers. During the remainder of the semester, each student will select and pursue a topic of interest related to the theme of the course in greater detail. Each student will be responsible for finding, and reading thoroughly, at least five journal articles related to their selected topic. The articles will be summarized in a literature review and compiled into an annotated bibliography for the topic. One week prior to their assigned class period, the student will select and distribute one or two papers for the remainder of the class to read. The student will then make a brief conference-style presentation during one class period and will lead a discussion of the research. The final exam will consist of one or two essay questions designed to integrate and critically evaluate the material presented in the literature and discussed in class.

Learning Objectives:

Upon successful completion of this course, students shall be able to:

- Critically evaluate and discuss research in hillslope hydrology
- Describe the state of the science related to hillslope hydrology
- Identify research needs related to hillslope hydrology

Course Topics:

Hortonian overland flow
Saturation overland flow
Subsurface flow
- Macropore and pipe flow
- Soil matrix flow

Variable source area concept
Dissolved organic carbon
Nitrogen
Isotopes
Other tracers
Karst
Preferential flow
Vegetation effects
"Old" water
Saturated wedge theory
The role of bedrock in runoff generation
Hillslope hydrology modeling
Arid lands
Hillslope/riparian/stream interaction
Other topics as chosen by students…

Course Grading:

Participation in discussions	15%
Weekly article abstracts and critiques	20%
Literature synthesis and analysis	25%
Presentation and discussion	20%
Final exam	20%

Disability Statement: Reasonable accommodations are available for students who have a disability. Students should contact the Services for Students with Disabilities (SSD), 150 Henderson Hall, 231-3788 (V), 231-1740 (TTY); Susan P. Angle, spangle@vt.edu, www.ssd.vt.edu. "Students with disabilities are responsible for self-identification....To be eligible for services, documentation of the disability from a qualified professional must be presented to SSD upon request. Academic adjustments may include, but are not limited to: priority registration, auxiliary aids, program and course adjustment, exam modifications, oral or sign language interpreters, cassette taping of text/materials, notetakers/readers, or assistive technology."

Honor Code Statement: The Honor Code will be strictly enforced in this course. All assignments submitted shall be considered graded work, unless otherwise noted. All aspects of your coursework are covered by the Honor System. Any suspected violations of the Honor Code will be promptly reported to the Honor System (see http://www.honorsystem.vt.edu/). The following is the Honor Code written verbatim from the VT Honor System Constitution:

The Honor Code is the University policy that expressly forbids the following academic violations:

1. Cheating -- Cheating includes the actual giving or receiving of any unauthorized aid or assistance or the actual giving or receiving of any unfair advantage on any form of academic work, or attempts thereof.
2. Plagiarism -- Plagiarism includes the copying of the language, structure, ideas and/or thoughts of another and passing off same as one's own, original work, or attempts thereof.
3. Falsification -- Falsification includes the statement of any untruth, either verbally or in writing, with respect to any circumstances relevant to one's academic work, or attempts thereof. Such acts include, but are not limited to, the forgery of official signatures, tampering with official

records, fraudulently adding or deleting information on academic documents such as add/drop requests, or fraudulently changing an examination or other academic work after the testing period or due date of the assignment.

Virginia Tech's Principles of Community: Virginia Tech is a public land-grant university, committed to teaching and learning, research, and outreach to the Commonwealth of Virginia, the nation, and the world community. Learning from the experiences that shape Virginia Tech as an institution, we acknowledge those aspects of our legacy that reflected bias and exclusion. Therefore, we adopt and practice the following principles as fundamental to our on-going efforts to increase access and inclusion and to create a community that nurtures learning and growth for all of its members:

- We affirm the inherent dignity and value of every person and strive to maintain a climate for work and learning based on mutual respect and understanding.
- We affirm the right of each person to express thoughts and opinions freely. We encourage open expression within a climate of civility, sensitivity, and mutual respect.
- We affirm the value of human diversity because it enriches our lives and the University. We acknowledge and respect our differences while affirming our common humanity.
- We reject all forms of prejudice and discrimination, including those based on age, color, disability, gender, national origin, political affiliation, race, religion, sexual orientation, and veteran status. We take individual and collective responsibility for helping to eliminate bias and discrimination and for increasing our own understanding of these issues through education, training, and interaction with others.
- We pledge our collective commitment to these principles in the spirit of the Virginia Tech motto of Ut Prosim (That I May Serve).