CE 421 Hydrology, Fall 2013

When & Where: TuTh 9:30-10:45, AEC 327

Instructor:

Dr. David Brandes, Associate Professor of Civil & Environmental Engineering
Office: AEC 320  Office Hours: M2-4, Tu11-12, W1-3, Th11-12 and by appt.
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Course Overview & Approach:

Hydrology is an interdisciplinary science involving the quantitative description of all aspects of the water cycle: from precipitation to runoff and infiltration, then to groundwater and streamflow, and back to the atmosphere by evaporation and transpiration. In this course we focus on practical applications in hydrology, in particular sustainable hydrologic design on campus or in the local community.

This is a project-based course that builds on CE 251 and CE 351. Rather than following a textbook-style approach, we will explore new topics and you will learn new skills as required to meet the objectives of each project - this means that to some degree we will sacrifice logical organization and breadth of topics for the benefit of doing intensive real-world projects. Classroom lectures, handouts, and other materials may be used to get you up to speed on various topics as necessary. The projects typically involve local hydrologic data collection and analysis, field work, computer modeling, and design work such as green infrastructure and stormwater best management practices (BMPs). You will work in teams to do the project work and complete associated deliverables, similar to the structure of a design firm or consulting group. The project sites are all within a few miles of campus.

Learning Outcomes:

1) Students will conduct hydrologic analysis and design with a project-based approach focused on local watersheds (3a, 3c, 3e)
2) Students will apply industry-standard methods and models to simulate stormwater runoff and routing, and design stormwater management facilities using current methods (3k)
3) Students will work in teams to complete project tasks and deliverables (3d)
4) Students will develop effective written communication skills through project reports to stakeholders and/or clients (3g)
5) Students will develop knowledge of contemporary/emerging issues in hydrology (3j)

(note, the codes 3a, 3c, etc correspond to ABET Student Outcomes)

The student work in this course is in full compliance with the federal definition of a four credit hour course. Please see the Lafayette College compliance website for the full policy and practice statement.
Text:
There is no required textbook, but handouts and copies from various texts, journals, magazines and guidance documents will be provided. Reference material for your project work will be placed in the p:\cee_drive\CE421_2013 folder.

Contemporary/Emerging Issues in Hydrology:

Hydrologic engineering has important societal dimensions and implications. With this in mind, we will explore a variety of topics of current concern in hydrology through readings, guest lectures or campus seminars, film, and possibly field trips. Many of these activities will take place outside normal class hours and I expect you to be flexible in working with me on scheduling. You are also encouraged to share current news articles that are relevant to the course.

Grading:

Grades will be assigned based on the professional quality (or lack of) of your written work products and your individual effort in completing the project tasks.

- Group project reports: 100 pts each
- Progress memos/draft work products: 10 pts each
- Miscellaneous homework assignments: 10 pts each

You will work extensively in teams in this course. Each team will have a leader/project manager that organizes the project team, leads meetings outside of class, and ensures that deadlines are met. Grades for all reports will be assigned based on both technical content and professional presentation. Reports should be formatted as a report to a client as you have learned in prior courses – I will provide more details for each project. Sloppy, unprofessional work will not be graded and must be resubmitted with 10% per day late penalty applied. Late work will be accepted with full credit only if you have made prior arrangements with me. Individual students will be required to submit progress memo(s) with attached draft work products prior to the project due dates so that I can assess individual contributions to team products.

Attendance, participation, and effort will play a role in your final grade (e.g., it may be the difference between A/A- or B/B+). More than two unexcused absences from class will reduce your final grade. If I assign readings I expect you to have completed them by the assigned date and to be ready to participate in class discussion.

Important Events for Fall 2013 (stay tuned for more):

- Polk Valley Park BMP tour, Hellertown, PA – Date/time TBD
- AAEES Kappe Lecture, Wednesday, September 18 at Lehigh
- Michel Merkel ‘90 “Good Food and Clean Water: Will Corporate Agriculture Ever Deliver?”, Thurs, September 26
- Mid-Atlantic AWRA Conference, Trenton, NJ - Thurs, Sept 26 (looking into options)
**Additional Notes**

**Academic Dishonesty:** the College has clear written policies on academic dishonesty (see the online Student Handbook pages 7, 20 and Appendix II). Don’t forget to provide citations, sources for pictures/graphics, and a reference list for all your written reports!

**Professionalism:** our clients are real, the project sites are on campus or in the local community, and your conduct is important to maintaining valuable long-term relationships. Please act appropriately whenever we are in the field or are meeting with clients and project stake-holders.

**Driving:** the project sites are all within a few miles of campus. Because we are a small group and may be making frequent trips to these sites, we will carpool rather than rent vehicles. You must understand that if you elect to use your personal vehicle, and an accident occurs, your personal auto insurance provides the coverage and you are responsible for any deductible (see Lafayette Transportation Policy).

**Safety in the Field:**

- Traffic – driving is probably the highest risk activity associated with the course – please use caution when driving with your classmates and always be careful when crossing streets on foot.
- Private property – generally I will obtain access prior to the project start, but if someone approaches you, explain who you are and what you are doing, and refer them to me for more info.
- Working solo – not a good idea when off campus. Be sure to return to campus before dark.
- High flow conditions - do not venture into local waterways under high flow conditions! Be careful of your footing when in the stream.
- Poison ivy – very common in the local area, especially along streams (smooth, shiny dark green leaves in threes) - causes a nasty rash.
- Ticks - common in tall grass, weeds, and woods throughout the area - may carry Lyme disease. Check yourself thoroughly when we return from the field!