

Syllabus
Spring 2013 GEOL 4/5/60095 Special Topics: Urban Hydrology
Kent State University, Department of Geology

Instructor: Dr. Anne Jefferson, ajeffer9@kent.edu, 330-672-2746, McGilvrey 235C
Office Hours: Tuesday and Thursday: 1:45 to 4:15 pm or by appointment

Course Meetings: Tuesday and Thursday, 12:30 to 1:45, McGilvrey 234

Course Website: <http://all-geo.org/jefferson/teaching/urban-hydrology/>

Course Numbers:

Undergraduates: GEOL 40095 sec 3 (CRN 13753)

Graduates: GEOL 50095/60095 sec (CRN 13767/13776)

Prerequisites: 20 hours of geology courses.

Required Materials: You are not required to buy any text for this class, however, readings will be assigned! These readings will be made available through the course website.

Course Description: In this course we will investigate the science and management of water in cities and built environments. We will approach the subject from an interdisciplinary perspective, integrating hydrology, geology, biology, architecture/engineering, and the social sciences. The course will include readings, discussions, data analysis, field trips, and designing an urban rain garden.

Learning Outcomes:

- 1) Understand the natural and human factors that regulate hydrologic processes in urban areas
- 2) Evaluate watershed land use changes and associated hydrologic impacts
- 3) Describe methods to mitigate the effects of urbanization on aquatic systems
- 4) Analyze the scientific literature on urban aquatic systems and discuss the approaches and main conclusions with fellow scientists and the public

Assessment

Grades will be distributed based on the percentage of points earned. Point values needed to achieve a given grade may be adjusted downward at the end of the term, but will not be adjusted upward.

A = 90-100%, B = 80-90%, C = 70-80%, D = 60-70%, F < 60%

<u>Assessment</u>	<u>Undergraduates</u>	<u>Graduates</u>	<u>Tentative Dates</u>
Exams (2)	400	400	5 March, 9 May
Mini-assignments (10)	100	100	Tuesdays, most weeks
Data Collection project	100	100	February
Data Analyses (2)	300	300	14 February, 4 April
Rain Garden project	100	100	2 May
Essay	---	150	.
	1000	1150	

- **Exams** will cover material from lecture, assignments, class discussions, and the assigned readings. Questions may be short answer, essay, or data analysis.
- **Mini-assignments** will be near-weekly short writing exercises or quizzes that require you to reflect on the assigned reading and/or to engage with urban hydrology in your surroundings. These assignments will generally be due on Tuesdays, unless another assignment or exam is due that week.
- The **Data Collection** project will involve each student being assigned a day to make water quality measurements in the Cuyahoga River in Kent. If you participate in class activities surrounding the project and, on your assigned day, complete the measurements, report the data, and return the equipment in working order, you will receive all the points for this assignment.
- In the **Data Analyses**, you will use real-world hydrologic datasets to explore the effects of urbanization on water quantity and quality. Techniques will be introduced in class, but the analyses and a short write-up will be completed individually.
- In the **Rain Garden Project**, the class will work through a design manual and complete the measurements necessary to design a rain garden for a property near campus. If you participate in the in-class activities surrounding the project, and complete a write-up, you will receive full points for the project.
- **Essay:** *Graduate students* will also complete a 1000-2000 word essay focused on some topic relevant to urban hydrology. This essay should draw from the scientific literature, may be pertinent to current events or issues in a particular region, and should include at least one image. Good examples can be found at <http://thenatureofcities.com/>. Good drafts will be due by 21 March, and revisions may be required before an essay is acceptable. All essays will be finalized by 2 May. I will be happy to discuss potential topics and scope with you before the deadline.

University Policies

- **Registration:** The official registration deadline for this course is January 27, 2013. University policy requires all students to be officially registered in each class they are attending. Students who are not officially registered for a course by published deadlines should not be attending classes and will not receive credit or a grade for the course. Each student must confirm enrollment by checking his/her class schedule (using Student Tools in FlashLine) prior to the deadline indicated. Registration errors must be corrected prior to the deadline.
- **Withdrawal:** The course withdrawal deadline is January 27th (for no W grade recorded) or March 24th (W grade recorded).
- **Academic Dishonesty:** University policy 3-01.8 deals with the problem of academic dishonesty, cheating, and plagiarism. None of these will be tolerated in this class. The sanctions provided in this policy will be used to deal with any violations. If you have any questions, please read the policy at http://www.kent.edu/policyreg/policydetails.cfm?customel_datapageid_1976529=2037779 and ask for help. If you are academically dishonest in this class, you will at a minimum receive 0 credit for the assignment or exam and be referred to Plagiarism School. Greater sanctions are also possible.
- **Student Accessibility:** University policy 3-01.3 requires that students with disabilities be provided reasonable accommodations to ensure their equal access to course content. If you have a documented disability and require accommodations, please contact the instructor at the beginning of the semester to make arrangements for necessary classroom adjustments. Please note, you must first verify your eligibility for these through Student Accessibility Services (contact 330-672-3391 or visit www.kent.edu/sas for more information on registration procedures).

Course Policies

- **Late and Absence Policy:** Your attendance and participation in all class sessions is expected. If you cannot attend class for an approved and documented absence (illness, family emergency, religious observance, or University-approved event) and you cannot complete the associated assignment by its due date, please let me know as soon as possible and I will arrange a substitute assignment. Late mini-assignments will not be accepted.
- **Outdoor Activities:** On dates announced in advance, we will meet outdoors for some or all of the class period. On these days, you are expected to come to class prepared to participate in outdoor activities. You should bring a notebook, sharpened pencils, and an eraser to all outdoor sessions. Colored pencils, a ruler, and a calculator may be helpful in some cases. If we are meeting outdoors, you should dress appropriately for the weather and for outdoor terrain and vegetation. This includes rugged shoes and appropriate cold weather and sun protection. Make sure to bring adequate water.
- **Professional Behavior:** This is a class for advanced undergraduate and graduate students who are preparing to be geoscience professionals. I expect professional behavior and communication from you, and I will try to model those behaviors for you. These behaviors include promptness and attentiveness in the classroom, a can-do approach in the field, and typed, grammatically-correct writing, free of spelling errors and slang. This includes email communication. Assignments not meeting these standards may be returned for revision and resubmission.

Tentative Timetable

Dates are subject to change.

Please attend class, check the web page, and ask me if you have questions.

Readings will be linked from <http://all-geo.org/jefferson/teaching/urban-hydrology/>

15 – 31 January: Introduction to Water and Cities

Introduction to Hydrologic Science
Introduction to Urban Areas and Land Use Change
Introduction to Urban Water Management

5 – 28 February: Effects of Urbanization on Aquatic Systems

Changes to Hydrology and Geomorphology
Urban Stream Syndrome
Changes to Water Quality and Ecology
Urban Groundwater
19 February – Data Analysis #1
Data Collection project (on-going)

5 March: Midterm Exam

7 March – 4 April: The Future of Water in Cities

Stormwater Management
Green Infrastructure
Stream Restoration
21 March - Graduate Essays due
26-28 March – No class, spring break
4 April – Data Analysis #2

9 April - 2 May: Current Research in Urban Hydrology

Case studies from Baltimore, Charlotte, Cleveland, etc.
Design of a residential rain garden
2 May – Rain Garden Project due

9 May: Final Exam

Bridging the Conceptual Divide Between Theoretical and Applied Environmental Chemistry

The Geology Department at Kent State University was recently awarded a significant grant from the National Science Foundation to study how and in what ways different classroom approaches influence student learning. This course section has been selected as one of the classes to be studied for the Spring 2013 semester. On January 31st, Dr. David M. Dees from the Faculty Professional Development Center will be visiting our class to explain to you the research design of this project, how it may or may not influence your experiences in this class, and offer you a chance to participate in the study. If you have any questions on this study beforehand, please do not hesitate to contact Dr. David M. Dees at 330-337-4285 or ddees@kent.edu.