

CIVE 573 – Urban Stormwater Management
Course Outline
Spring 2015
Tuesday/Thursday – 12:30-1:45pm – Engineering B2

Description and Purpose: This course is designed to teach students how to manage urban stormwater systems to reduce the detrimental impacts of urban stormwater on receiving waters. Urban stormwater management encompasses a variety of activities such as stormwater infrastructure design and maintenance, analysis/modeling and selection of appropriate solutions to urban stormwater problems, and cost estimation of stormwater infrastructure. The course content will include both current and future “state-of-practice” fundamentals in urban stormwater management with a focus on practical applications.

Credit Hours/Workload: This is a 3 credit-hour course. In addition to lectures, students should expect to spend an average of 6-7 hours on “out-of-classroom” activities (assignments/studying/reading) each week.

Instructor: Chris Olson, P.E.
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Course Webpage: CSU Canvas - <https://colostate.instructure.com/courses/5460>

Office Hours: Tues./Thurs. in Eng. 205A – 1:30pm-3pm or by appointment

Grading: Homework (45%)
Exams (25%)
Final Project (30%)

Final Project

A final project will be assigned in lieu of a final exam and will serve as a means for students to apply many of the course concepts to a “real-world” project. Deliverables for the final project will include a final report (produced in the form of a professional engineering report) and a 20-30 minute PowerPoint presentation. Students are encouraged to identify and propose their own final project topic (perhaps one that relates to a professional or research project), otherwise one will be assigned by the instructor.

Policies

Assignments: All assignments (unless otherwise noted) should be completed in Microsoft Word and uploaded to CANVAS by the specified due date and time. Late homework will be assessed a 20% per day penalty. Circumstances that prevent the student from completing the assignment on time should be discussed with me at least 5 days before the due date.

Communication: I prefer to answer questions in person or via telephone, but will also accept email questions provided that they clearly explain the problem/question. I will respond to emails as fast as possible, but students should not anticipate a response any sooner than 24 hours after submission.

Student Collaboration: I encourage students to work and study together to complete homework assignments and class projects, however each student is responsible for completing and submitting their own work. Copying or sharing of work will be identified by the grader and may result in all involved students receiving 0% for that assignment.

Distance Students: I will require distance students to adhere to the same homework/project due dates as on-campus students to make grading more efficient on my part and reduce the possibility of distance students falling behind throughout the course.

Class Materials

In addition to the course PowerPoint lectures and other materials provided throughout the course, students should download and install (if necessary) the following materials at the beginning of the course.

Urban Drainage and Flood Control District Criteria Manual

http://www.udfcd.org/downloads/down_critmanual_home.htm

EPA-SWMM Model Software, User's Manual and Application Manual

<http://www.epa.gov/nrmrl/wswrd/wq/models/swmm/>

Learning Objectives

At the end of this course, students should be able to do the following:

- Discuss and compute various rainfall statistics from long-term precipitation records
- Describe major processes affecting urban runoff (quality and quantity) and simulate urban runoff using different methods/models
- Discuss and calculate the water quality capture volume (WQCV)
- Describe pollutant removal and runoff reduction processes provided by different stormwater best management practices
- Calculate urban runoff pollutant loading and pollutant removal using different stormwater best management practices
- Produce an inspection and maintenance plan for stormwater best management practices
- Select and design different stormwater best management practices to comply with stormwater regulations
- Estimate the life cycle costs of stormwater best management practices
- Simulate an urban stormwater system (quality and quantity) using EPA SWMM5 model
- Develop, design and evaluate a comprehensive stormwater management plan for a site

Tentative Schedule

Week	Topic	Dates
1	Course Overview/Introduction to Urban Stormwater Management	Jan. 20 and 22
2	Rainfall Analysis	Jan. 27 and 29
3	Urban Runoff Hydrology	Feb. 3 and 5

4	Introduction to EPA SWMM5 Modeling	Feb. 10 and 12
5	Urban Runoff Pollution	Feb. 17 and 19
6	Exam 1	Feb. 24 and 26
7	Introduction to Stormwater BMPs	Mar. 3 and 5
8	Sedimentation BMP Function, Design, and Performance	Mar. 10 and 12
	<i>Spring Break – No Class</i>	<i>Mar. 17 and 19</i>
9	Filtration BMP Function, Design and Performance	Mar. 24 and 26
10	BMP Modeling	Mar. 31 and Apr. 2
11	Exam 2	Apr. 7 and 9
12	Continuous Simulation Modeling	Apr. 14 and 16
13	BMP Inspection and Maintenance	Apr. 21 and 23
14	BMP Life Cycle Cost Estimation	Apr. 28 and 30
15	Advanced Topics: Stream Erosion/Channelization and Stormwater Quality Uncertainty	May 5 and 7
16	Finals Week: Final Project Presentations	Week of May 11 th – Date/Time TBD