

Course Syllabus

(Last updated: August 17, 2019)

Instructor: Steven J. Burian, Ph.D., P.E., Professor of Civil & Environmental Engineering, 2044 MCE, steve.burian@utah.edu, 801-585-5721

Schedule: **Lecture:** WBB 820, TH 9:10-10:30 am
Dr. Burian's Office Hours: by appointment
Final Exam: Monday, December 9, 2019; 8:00 – 10:00 am

Catalog Description: An overview of stormwater management. Topics include stormwater management history and regulations, urban hydrology and hydraulics, stormwater quality and receiving-water impacts, design of drainage systems and best management practices, and computer modeling techniques.

Prerequisites by topic: 1. Hydrology, CVEEN 5410
2. Open Channel Flow, CVEEN 5420

Textbook: Readings posted on Canvas.

Course Canvas: Class notes, PowerPoint presentations, homework assignments and solutions, example problems and solutions, announcements, reading assignments, and an updated course syllabus/outline are available through the Canvas online learning management system.

Course Goal: The goal of this course is to help you plan, design, and implement solutions to stormwater management problems at the site to catchment scale. After completing this course, you will be able to:

1. Describe local and federal stormwater regulations.
2. Appraise a municipality's stormwater management program and system and recommend modifications to meet goals.
3. Interpret stormwater runoff quantity and quality impacts on receiving water systems.
4. Calculate stormwater runoff flow rates, volumes, hydrographs, pollutant loads, and pollutant concentrations.
5. Plan construction site erosion and sediment controls.
6. Analyze and design stormwater drainage systems and best management practices using computer tools.

The University of Utah seeks to provide equal access to its programs, services and activities for people with disabilities. If you will need accommodations in the class, reasonable prior notice needs to be given to the Center for Disability Services, 162 Olpin Union Building, 581-5020 (V/TDD). CDS will work with you and the instructor to make arrangements for accommodations. All written information in this course can be made available in alternative format with prior notification to the Center for Disability Services.

University of Utah and College of Engineering Policies: Fall 2019 Semester Guidelines may be viewed at: <https://www.coe.utah.edu/students/current/semester-guidelines/>

Attendance: You are expected to **attend class** and **be on time**. Material **will** be presented in class that is not included in the readings and you are required to know this material for homework assignments, quizzes, and exams. It is your responsibility to notify me prior to an expected absence and as soon as possible following an

unexpected absence. You will not be able to make up missed assignments, labs, quizzes, exams, and other material covered in class except in the case of a legitimate excused absence.

Assignments: You are expected to read assigned readings **prior** to the corresponding classroom session. Quizzes, in-class exercises, and questions during the classroom session will be based on the reading. Homework is due at the **beginning** of the class session unless otherwise stated. Homework will be graded as soon as possible and returned to you. You are encouraged to discuss homework and other assignments with classmates, but you are required to submit your own work. As engineers you will be responsible for upholding the Canons of Ethics of the profession. I also expect you to follow the University's Student Academic Code (Policy 6-400, Rev. 8, <http://regulations.utah.edu/academics/6-400.php>). **Academic dishonesty to any degree will not be tolerated.** The sanction for a violation will be failure of the assignment and reporting to the appropriate university officials. A second offense will lead to failure of the course. Homework must be submitted in a neat and orderly format. Homework not conforming to guidelines will be returned ungraded. Homework will be graded for completion, accuracy, and presentation.

Exams: The course includes two exams. Both are comprehensive and will test the student mastery of the stated learning objectives presented in class sessions prior to the exam date. Exams will include both closed and open book/notes sections.

Team Project: A team project is assigned at the beginning of the semester. Students are given several options for project topics and also given the option to define their own topic. The project will encompass a significant design or analysis element directly related to the course. Completion of the project requires preparing an engineering report and giving an oral presentation. Students learn to critique work of others and provide peer reviews.

Grading Policy: The course grade will be based on a weighted-average of homework assignments, quizzes, a mid-term exam, a team project, and a final exam. The weighting will be as follows:

HW Assignments:	20%
Class Participation and Quizzes:	10%
Mid-term Exam:	20%
Team Project:	30%
Final Exam:	20%

The tentative final letter grade scale is as follows (**scale may be adjusted as necessary based on the final average for all students in the course**):

90 – 100	A
80 – 90	B
70 – 80	C
60 – 70	D
< 60	E

At the end of the semester the +/- cutoffs will be chosen based on visible breaks in the final averages.

CLASS SCHEDULE

Date	Class #	Topic
8/20	1	Introduction to Stormwater Management
8/22	2	Stormwater Regulations
8/27	3	Stormwater Management Planning (Guest Expert: Jason Draper)
8/29	4	Urban Hydrology
9/3	5	Stormwater & Receiving Water Impacts
9/5	6	Stormwater Modeling Basics
9/10	7	Stormwater Pollutant Loading
9/12	8	Site Design
9/17	9	Construction Site Erosion and Sediment Control
9/19	10	Storm Water Pollution Prevention Plan (SWPPP)
9/24	11	Gutter Flow, Inlet Design, Source Controls, and Water Quality Inlets
9/26	12	Hydraulics of Storm Drains
10/1	13	Design of Storm Drains
10/3	14	Midterm Exam
10/8	---	Fall Break – No Class
10/10	---	Fall Break – No Class
10/15	15	LID and Green Infrastructure
10/17	16	Bioretention Design
10/22	17	Bioretention Modeling
10/24	18	Project Progress Reports
10/29	19	Permeable Pavement Design
10/31	20	Permeable Pavement Modeling
11/5	21	Design of Vegetated Swales
11/7	22	Design of Infiltration Basins and Trenches
11/12	23	LID Project Case Studies (Guest Expert: Paul Taylor)
11/14	24	Design of Detention Basins
11/19	25	Design of Dry Detention Basins
11/21	26	Design of Extended Detention Basins
11/26	27	Wet Detention Basins
11/28	---	Thanksgiving Holiday – No Class
12/3	28	Design of Wet Detention Basins
12/5	29	Final Project Presentations
12/9	---	Final Exam, 8:00 – 10:00 am