Spring 2019

ENE 672-102: Stormwater Management

H Hsieh

DEPARTMENT OF CIVIL & ENVIRONMENTAL ENGINEERING

EnE 672 - Stormwater Management (Spring 2019)
Section: 102

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Text: "Urban Hydrology, Hydraulics, and Stormwater Quality, Engineering Applications and Computer Modeling" John Wiley and Sons, Inc. 2003, by A. Osman Akan and Robert J. Houghtalen. ISBN: 978-0-471-43158-9.

References:

1. NJ Stormwater Best Management Practices Manual: http://www.nj.gov/dep/stormwater/bmp_manual2.htm
2. NJ DEP Municipal Stormwater Regulation Program: guidance, permits, and status: http://www.nj.gov/dep/dwq/msrp_home.htm
3. US EPA NPDES Stormwater Program: https://www.epa.gov/npdes/npdes-stormwater-program
4. NJ Stormwater Management Rules (N.J.A.C. 7.8): https://www.nj.gov/dep/rules/rules/njac7_8.pdf .
5. New Jersey Pollutant Discharge Elimination System (NJPDES) Rules (N.J.A.C. 7:14A): http://www.state.nj.us/dep/dwq/714a.htm.

Prerequisite: CE 320 and CE 321

Course Description: A comprehensive study of stormwater management with an emphasis on design practices. Topics include regulatory framework, an overview of structural and non-structural Best Management Practices, groundwater recharge analysis, estimate of runoff by SCS and rational methods, and design of detention basin and drainage systems. Software will be used to assist design.

WEEK	TOPIC	TEXT	HOMEWORK
1	Introduction, USEPA and NJDEP Stormwater Management Rules	NJ BMP Manual - Chapter 1	
2	Low Impact Development (LID), Stormwater Management Plan	NJ BMP Manual - Chapter 2, 3, & Appendix C	
3	Rainfall and Runoff; Infiltration	Chapters 2 & 3	2 - 2,7,10,13
4	Runoff and Open Channel Flow in Urban Watershed	Chapters 4 & 5	3 – 4, 15, 16 4 – 4, 12
5	Runoff Hydrograph	Chapter 5	5 – 2,3,7,13,17, 19,27 (Use Fig. 2-4)
6	Runoff – NJDEP Requirements, CSOs	NJ BMP Manual - Chapter 5	
7	Detention Basin Design	Chapter 7 – 7.1	7 – 2,5,9,18,21

8	Midterm Exam.		
9	BMPs - Infiltration Basin Hydraflow Hydrographs Software	Chapter 7 – 7.2	7 – 26 Software assignment
10	Storm drainage systems and culvert design	6.1 – 6.3	6 - 30, 33
11	Haestad StormCAD and CulvertMaster software		Software assignment
12	Groundwater Recharge Analysis; NJGRS	NJ BMP Manual - Chapter 6	
13	Stormwater Pollution Prevent Plan, Soil Erosion and Sediment Control, Structural Best Management Practices (BMPs)	Chapter 9; NJ BMP Manual – Chapters 4 & 9	
14	Project/paper presentation		
15	Final exam.		

Grade Policy:

Homework	20%
Project	10%
Mid-Term Exam.	35%
Final Exam.	35%

1. Homework problems are to be solved and turned in the week following the assignment. No late homework will be accepted after the due day. Excel is required for assignment calculations. The file name should include your name and assignment number, i.e. Smith_HW1.
2. Project can be a case study or any topic related to the stormwater management. A term paper and 10 – 15 minutes presentation are expected from the project. The length of the paper is approximately 10 pages and is due on 14th week.
3. Course materials and PowerPoint presentation, can be downloaded from NJIT Moodle. Go to https://njit2.mrooms.net/ and log in with your UCID and password.