

Hydrologic Processes (11:670:414 and 01:460:414)

Time & Place: Spring Semester, Monday & Wednesday, 3:55-5:15pm
ENR-223, Cook/Douglas Campus

Instructor: Ying Fan Reinfelder (yingfan@eps.rutgers.edu), Paul Romero (promerob@rutgers.edu)

Office Hour: (1). Mondays & Wednesdays, 2:00-3:30pm, Rm-230, Env. Sci. Bld., Cook
(2). By arrangement

Required Text: Physical Hydrology, 2nd edition, 2002, by S. Lawrence Dingman
Chapter 1-2-3: <http://envsci.rutgers.edu/~yreinfelder/Chapter-1-2-3.pdf>
USGS document: <http://envsci.rutgers.edu/~yreinfelder/USGS-circ1139.pdf>

Structure: Lecture on Monday, problem-solving on Wednesday
All homework assignments are due at class on Monday the following week
All exams are open-book & notes (no computers and internet access)

Grading: 10 Homework Assignments -----> 50%
Midterm Exam -----> 25%
Final Exam -----> 25%

A	>= 93
B+	>= 86
B	>= 79
C+	>= 72
C	>= 65
D	>= 52

Week (Date)	Monday Lecture	Week's Reading	Wednesday	Homework
1 (Jan 20)	Intro, basic concepts: pathways, watershed, mass balance, storage-flux	1, 2.1-2.5, 2.8	Monday lecture	
2 (Jan 25)	Global water cycle linking atmosphere, land, ocean – the large picture	3	Exercise-1	HW-1
3 (Feb 1)	From precipitation to river flow Precipitation: gauge under-catch	4.1, 4.2.1-4.2.2, 4.4.1-4.4.3	Exercise-2	HW-2
4 (Feb 8)	Snow and snowmelt, California snowpack, river flow, reservoirs and drought	5.1, 5.3, 5.4.1, 5.4.2 case-study	Exercise-3	HW-3
5 (Feb 15)	Water in soils: saturated zone Darcy's law, hydraulic head	8.1.1	Exercise-4	HW-4
6 (Feb 22)	Water in soils: unsaturated zone Soil water content, Infiltration and drainage	6.1-6.2, 6.3.1-6.3.2	Exercise-5	HW-5
7 (Feb 29)	Water in soils: soil water profile Head and conductivity for unsaturated flow	6.3.3-6.3.5, 6.4	Midterm review	
8 (Mar 7)	Midterm Exam	B1.1-1.3, B2.5, D3-D4, D6, 7.1	Exam review Evaporation	
9 (Mar 14)	Spring Break			
10 (Mar 21)	Evaporation from open water	7.3-7.4	Exercise-6	HW-6
11 (Mar 28)	Evaporation from soils Transpiration from vegetation potential vs. actual ET	7.5, 7.6.1-7.6.2, 7.7	Exercise-7	HW-7
12 (Apr 4)	Groundwater: aquifers and storage	8.1.2-8.1.4, 8.2	Exercise-8	HW-8
13 (Apr 11)	Groundwater-surface water exchange	USGS document	Exercise-9	HW-9
14 (Apr 18)	Rivers, lakes, and wetlands	9.1.1-9.1.2, 9.2, 9.4	Exercise-10	HW-10
15 (Apr 25)	Water cycle and global change		Final review	
16 (May 2)	Last Day of Class – No class – Office hour	Final Exam Date: May 11, Wednesday, 12-3pm		