Fall 2016 Syllabus
WR416: Land Use Hydrology
Class times: MWF 10:00-10:50 am in Military Science 201

Instructor: Stephanie Kampf
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      Office Hours: Wednesday 11:00 am – 12:00 pm, Thursday 2:00-3:30 pm or by
appointment
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Teaching Assistant: Alyssa Anenberg
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Course overview and objectives:
Hydrology is the study of how water moves between the atmosphere, land surface, and
subsurface. This course presents fundamental concepts in the science of hydrology with a
particular focus on how different land uses affect the hydrologic cycle. The two main
objectives of the course are to (1) develop a rigorous quantitative understanding of hydrologic
processes, and (2) use this hydrologic process understanding to conduct hydrologic
calculations and evaluate hydrologic responses in areas with different land uses and climate
characteristics. Course work combines development of skills in hydrologic computation and
data analysis with practice in qualitative interpretation of hydrologic processes.

Text:
Optional textbooks: Readings from these books are listed in blue on the course outline. You are
      encouraged to read these to supplement lecture notes.
- *D&L*: Dunne, T. and L.B. Leopold, 1978. *Water in Environmental Planning*. W.H.
  Freeman and Co., New York, 818 pp.
- *D*: Dingman, S.L., 2015. *Physical Hydrology*, Third Edition. Waveland Press, Inc., 643
  pp.

Required readings: These are listed in orange on the syllabus, with a *, and all required readings
will be posted on Canvas.

Online resources: Course documents will be posted on Canvas, http://canvas.colostate.edu.

Exam dates:
Midterm: Friday, October 7 in class
Final: Friday, December 16, 7:30 – 9:30 am in Military Science 201

Course outline (subject to change):

Week	Monday	Wednesday	Friday
8/22	Course overview Reading: D&L Ch.1	Physics/conversion review Reading: D Ch.1, Appendix A	Precipitation, mechanisms HW1: case studies
8/29	Precipitation, climatology Reading: D Ch.2	Precipitation, measurements Reading: D Ch.4	Statistics review Reading: D Appendix C HW2: conversion practice
9/5	Labor Day	Precipitation, frequency	Precipitation, frequency *Reading: Wahl HW3: precipitation data
9/12	Energy, concepts Reading: D Ch.3; D&L Ch.4-5	ET, concepts, measurements Reading: D Ch.6	ET, calculations HW4: frequency analysis
9/19	ET, calculations *Reading: Jasechko	Snow, concepts Reading: D Ch.5; D&L Ch.13	Snow, measurements HW5: ET
9/26	Snow, calculations	Interception, vegetation change Reading: D&L Ch.3	Interception, vegetation change HW6: snow
10/3	Review *Reading: Biederman	Review	Midterm
10/10	Soils, concepts Reading: D&L Ch.6, D Ch.7	Soils, calculations Reading: D Ch.8	Soils, measurements
10/17	Groundwater, concepts Reading: D&L Ch.7, D Ch.9	Groundwater, concepts	Groundwater, calculations HW7: soil properties
10/24	Groundwater, examples *Reading: Tiwari, Castle	Runoff, concepts Reading: D&L Ch.9, D. Ch.10	Runoff, concepts Reading: D&L Ch.14 HW8: groundwater
10/31	Channel flow, concepts Reading: D&L Ch.10	Channel flow, measurements Reading: D&L Ch.11	Channel flow, calculations Reading: D&L Ch.16 HW9: hydrographs
11/7	Peak flow prediction *Reading: Vogel	Peak flow prediction	Flow volume prediction HW10: peak flow
11/14	Synthetic hydrographs Reading: D&L Ch.8	Hydrologic modeling *Reading: Ragletti	Hydrologic modeling HW11: runoff models
11/28	Erosion & mass wasting Reading: D&L Ch.15	Erosion & mass wasting Reading: D&L Ch.17, 18	Wetlands HW12: erosion models
12/5	Review *Reading: Montgomery	Review	Review

Grading:

Assignments:	60%
Midterm:	15%
Final exam:	20%
Quizzes and class participation:	5%

Course grades will be based on the following scale:

A+	≥98%	B+	≥88%	C	≥70%
A	≥92%	B	≥82%	D	≥60%
A-	≥90%	B-	≥80%	F	<60%

Expectations:

Attendance: You are responsible for attending all classes. Lecture notes will not be available electronically, so if you miss class you should make arrangements to get class notes from someone else.

Assignments: All assignments are due in class on the assignment due date. To avoid losing points on late assignments, you must request an extension at least 24 hours before the assignment is due. Late assignments lose 10% of the assignment grade per week after the assignment due date, up to a maximum point loss of 50%. You will have opportunities to re-submit assignments to earn extra points. Assignments are by far the largest portion of your total course grade, so be sure to complete them!

Academic integrity: You are responsible for adhering to all university policies on academic integrity and student conduct. TILT has a number of resources for students related to writing and study skills: http://tilt.colostate.edu/integrity/resources/forstudents.cfm.