

FALL 2013

CE 561 SURFACE HYDROLOGY

Instructor: Dr. Alfonso Mejía
Office: 215B Sackett Bldg.
Email: amejia@enr.psu.edu
Phone: (814) 865-0639
Class location: 111 Sackett Bldg.
Office hours: T 1:30pm-3:30pm, R 1:30pm-2:30pm, or by appointment

GOALS

To develop a sound **intuitive and quantitative** understanding of hydrologic processes and the way in which water moves through the land phase of the hydrologic cycle. Gain exposure to **current research** problems and issues involving the physical understanding and conceptual representation of hydrologic processes.

TEXTBOOK (required)

Physical Hydrology. Dingman, S. L. (2002), Macmillan, pp. 646.

OTHER GOOD AND USEFUL TEXTS

- *Water in Environmental Planning*. Dunne, T., and L. Leopold (1978), W.H. Freeman and Co., pp. 818.
- *Elements of Physical Hydrology*. Hornberger, G. M., & others (1998), Johns Hopkins University Press, pp. 302.
- *Hydrology, An Introduction*. Brutsaert, W. (2005), Cambridge University Press, pp. 605.
- *Hydrology, An introduction to hydrologic science*. Bras, R. L. (1990), Addison Wesley, pp. 643.
- *Applied Hydrology*, Chow, V. T., D. R. Maidment, and L. W. Mays (1988), McGraw Hill, pp. 572.
- *Handbook of Hydrology*, Maidment, D. R., ed. (1993), McGraw Hill, pp. 1424.

COMPUTING TOOLS

For assignments requiring numerical computations, Matlab, R, Python, Mathematica, and Excel can be used. Other tools are fine as well.

GRADING

Participation	10%	Bring class notes, pocket calculator
Assignments	30%	Approximately 10 assignments. Please submit before class on due date, no late submissions
Quizzes	30%	Closed book, based on lectures/reading/homework
Term Projects	40%	Individual or group project (2 persons max.)

Letter grades will be based on the weighted average specified above and assigned as follows:

- A = 94-100%
- A- = 90-93%
- B+ = 87-89%
- B = 84-86%
- B- = 80-83%
- C+ = 76-79%
- C = 70-75%
- D = 60-69%
- F < 60%

I reserve the right to adjust your grades. Your grade will only improve if adjustments are necessary. Feel free to contact me during office hours or by appointment if you have grade-related questions or concerns.

ON-LINE CLASS PARTICIPATION

All course emails and web postings will be made using the ANGEL course management software. You will need to regularly login (<https://cms.psu.edu/default.asp>) to check course announcements, and download class notes and homework assignments.

Important: When you 1st login into the system you must configure "My Settings" to forward course emails to your primary email account as follows:

Step 1: Login into system

Step 2: Click "Preferences"

Step 3: Click "System Settings"

Step 4: Type your PSU Email under "Forwarding Address" and set "Forwarding Mode" as shown below:

Forwarding Address

Forwarding Mode

Step 5: Click "Save". You now should receive all course announcements in your primary email account as well as your ANGEL account.

ACADEMIC INTEGRITY

The University's statement on academic integrity, from which the following statement is drawn, is available at <http://www.psu.edu/dept/oue/aappm/G-9.html>.

“Academic integrity is the pursuit of scholarly activity in an open, honest and responsible manner. Academic integrity is a basic guiding principle for all academic activity at The Pennsylvania State University, and all members of the University community are expected to act in accordance with this principle. Consistent with this expectation, the University's Code of Conduct states that all students should act with personal integrity, respect other students' dignity, rights and property, and help create and maintain an environment in which all can succeed through the fruits of their efforts.

All students are expected to act with civility, personal integrity; respect other students' dignity, rights and property; and help create and maintain an environment in which all can succeed through the fruits of their own efforts. An environment of academic integrity is requisite to respect for self and others and a civil community.

Academic integrity includes a commitment to not engage in or tolerate acts of falsification, misrepresentation or deception. Such acts of dishonesty include cheating or copying, plagiarizing, submitting another persons' work as one's own, using Internet sources without citation, fabricating field data or citations, "ghosting" (taking or having another student take an exam), stealing examinations, tampering with the academic work of another student, facilitating other students' acts of academic dishonesty, etc.

Students charged with a breach of academic integrity will receive due process and, if the charge is found valid, academic sanctions may range, depending on the severity of the offense, from F for the assignment to F for the course.”

OFFICE OF DISABILITY SERVICES

“Penn State welcomes students with disabilities into the University's educational programs. If you have a disability-related need for reasonable academic adjustments in this course, contact the Office for Disability Services (ODS) at 814-863-1807 (V/TTY). For further information regarding ODS, please visit the Office for Disability Services Web site at <http://equity.psu.edu/ods/>.

In order to receive consideration for course accommodations, you must contact ODS and provide documentation (see the documentation guidelines at <http://equity.psu.edu/ods/guidelines/documentation-guidelines>). If the documentation supports the need for academic adjustments, ODS will provide a letter identifying appropriate academic adjustments. Please share this letter and discuss the adjustments with your instructor as early in the course as possible. You must contact ODS and request academic adjustment letters at the beginning of each semester.”

COURSE OUTLINE AND SCHEDULE (proposed)

TOPIC	THEMES	WEEK/DATE (approx.)
Introduction	Course introduction; basic hydrologic concepts	Week 1 / Aug.27-Aug.29
Global hydrology and climate	Energy budget of the earth; general circulation; global hydrologic cycle	Week 2 / Sep.03-Sep.05
Water in the atmosphere	Precipitation	Week 3 / Sep.10-Sep.12
	Evaporation/evapotranspiration	Week 4 / Sep.17-Sep.19
	QUIZ 1	Week 4 / Sep.17-Sep.19
	Snow/snowmelt	Week 5 / Sep.24-Sep.26
	Interception	Week 5 / Sep.24-Sep.26
Water below the surface	Soil and water	Week 6 / Oct.01-Oct.03
	Infiltration	Week 6 / Oct.01-Oct.03
	Infiltration/baseflow	Week 7 / Oct.08-Oct.10
	Baseflow	Week 8 / Oct.15-Oct.17
	QUIZ 2	Week 8 / Oct.15-Oct.17
Water on the surface	Overland flow	Week 9 / Oct.22-Oct.24
	Overland flow/streamflow routing	Week 10 / Oct.29-Oct.31
	Streamflow routing	Week 10 / Oct.29-Oct.31
Basin geomorphology	Stream networks as fractals; hydrogeomorphic regularity	Week 11 / Nov.05-Nov.07
Basin-scale hydrology	Runoff generation	Week 12 / Nov.12-Nov.14
	QUIZ 3	Week 12 / Nov.12-Nov.14
	Hillslope-scale hydrologic response	Week 13 / Nov.19-Nov.21
	Basin-scale hydrologic response	Week 13* / Nov.19-Nov.21
	NO CLASS ☺	Week 14 / Nov.26-Nov.28
Project presentations		Week 15 / Dec.03-Dec.05
	QUIZ 4	Week 16 / Dec.10-Dec.12
Online talk/seminar		Week 16* / Dec.10-Dec.12