GEOS-252/ENVR-252 Hydrology Spring 2008

Lecture: Mondays & Wednesdays, 10:00 to 11:15, Mallory 258

Professor: Dr. Josh Galster
Office: Mallory 358-N, X4123
Email: galsterj@mail.montclair.edu
Office hours: Mondays, 11:15-12:15
Wednesdays, 11:15-12:15, or by appointment

Class Summary and Course Goals: Hydrology will introduce the major components of the hydrosphere including groundwater, surface water, and atmospheric water. Groundwater and surface water systems will be covered in more detail, including how humans interact with these systems. By the end of the course, you will hopefully understand basic concepts such as:

- Groundwater flow
- Aquifers
- Human dependence on the hydropshere
- Contamination of hydrosphere
- Surface water resources
- Hazards
- Flooding

Required Texts and Readings: Hydrology: An environmental approach, by Watson and Burnett, is the textbook. Other readings will be posted to Blackboard.

Materials: Notebooks and pencils/pens required for lecture. Other materials will be provided.

Class attendance and activities: I don't take attendance in class. However, there will be several in-class activities, some of which are graded, that you can't participate in if you're not there. Readings are meant to supplement, not replace, the lectures, so you will miss valuable material if you miss class. Can you pass this class and not come lecture? Probably. Will you do well? Probably not. However, missing lab is different. Exercises done in lab almost always involve material physically in the lab room; if you're not there, you can't do it. If you need to rarely miss lab for a pre-excused absence, arrangements can be made. However, rescheduling will not become a routine and will only be done on a case-by-case basis. If you need to miss lab arrangements must be made BEFORE lab, unless there are emergency circumstances.0-

Exams: There will be 2 in-class exams and a final. The final will focus on the material covered in the last part of the course but will include other material presented throughout the semester. Unless there are dire circumstances, make-ups will not be provided for tests or other assignments without prior arrangements.

Case-study: Each of you will be responsible for studying and presenting a particular case-study to the class that is related to one of the topics covered in class. I will have a list of examples for you to choose from, although if you different one you are particularly interested in we can talk about it. You will prepare a 2 page report to hand out to the class and present a ~30 minute talk to the class on your topic. This will be done in small groups of 2 or 3.

Homeworks: Self-explanatory. There will be a handful of short assignments that you will need to complete outside of class. Homework turned in late will lose 10%per day unless you have made prior arrangements with me.

Grading: The total points for the class are:

Exams:	35%
In-class participation:	10%
Case study assignment:	15%
Homeworks:	15%
Final EXAM:	25%
TOTAL:	100%

Final grades are determined on the standard system:

A: 93% or greater
A-: 90 to <93%
B+: 87 to <90%
B: 83 to <87%
B-: 80 to <83%
C+: 77 to <80%
C: 73 to <77%
C-: 70 o <73%
D+: 67 to <70%
D: 63 to <67%
D-: 60 to <63%
F: <60%

Academic honesty: I expect your final grade in this course to reflect the effort and thought **you** put into it. I further expect each of you to hold yourself to the highest standard when it comes to academic integrity. On group assignments I encourage sharing and collaborating, but there are certain exercises when you and you alone are responsible for the work. If you have any questions about this policy, please just ask me.

This is directly from the university's code of conduct: *"Academic dishonesty is any attempt by a student to submit as his/her own work that which has not be completed by him/her or to give improper aid to another student in the completion of an assignment, i.e., plagiarism. No student may intentionally or knowingly give or receive aid on any test or examination, or on any academic exercise, that requires independent work.*"

For a complete list see: http://www.montclair.edu/deanstudents/regulations1.html#violations

Hydrology (GEOS 252/ENVR 252): subject to change, so pay attention!

1	Wed	Jan 23	Class #1	Welcome to the course, intro to hydrology, course outline	
2	Mon	Jan 28	2	Surface water and groundwater	Watson & Burnett, Ch 1
2	Wed	Jan 30	3	Hydrologic cycle and groundwater flow	W&B, Ch. 2
3	Mon	Feb 4	4	Physical properties of water	W&B, 141-143
3	Wed	Feb 6	5	Precipitation & condensation	http://ga.water.usgs.gov/edu/watercycleprecipitation.html http://ga.water.usgs.gov/edu/watercyclecondensation.html
4	Mon	Feb 11	6	Evapotranspiration	http://ga.water.usgs.gov/edu/watercycleevaporation.html http://ga.water.usgs.gov/edu/watercycleevapotranspiration.html
4	Wed	Feb 13	7	Geologic materials	W&B, Ch. 3
5	Mon	Feb 18	8	Geologic materials	W&B, Ch. 3; CASE STUDY: SINKHOLES
5	Wed	Feb 20	9	EXAM 1	
6	Mon	Feb 25	10	Groundwater flow properties	W&B, 67-75 USGS Circular 1139, Box A
6	Wed	Feb 27	11	Aquifers and regional groundwater	W&B, Ch. 8 http://ga.water.usgs.gov/edu/watercyclegwstorage.html
7	Mon	Mar 3	12	Wells; human use of aquifers; irrigation	W & B, Ch. 14 USGS Circular 1139, pp. 54 – 60 CASE STUDY: AQUIFERS

7	Wed	Mar 5	13	Groundwater pollution	W & B, Ch. 7 USGS Circular 1139, pp. 61-66 CASE STUDY: GROUNDWATER POLLUTION
8	Mon	Mar 10	14	Groundwater remediation	W & B, Ch. 10
8	Wed	Mar 12	15	Groundwater and geologic hazards	W & B, Ch. 13 CASE STUDY: ENGINEERING GEOLOGY
9	Mon	Mar 17	NO CLASS	SPRING BREAK	SPRING BREAK
9	Wed	Mar 19	SPRING BREAK	SPRING BREAK	SPRING BREAK
10	Mon	Mar 24	16	Engineering geology and hydrology	W & B, Ch. 12
10	Wed	Mar 26	17	Exam 2	
	Mon	Mar 31	18	Surface water Runoff, infiltration	W & B, pp. 453 - 455
11	Wed	Apr 2	19	Hydrographs & Flood analysis	W & B, Ch. 22, CASE STUDY: RUNOFF
11	Mon	Apr 7	20	Flood control	W & B, Ch. 23
12	Wed	Apr 9	21	Flood control	USGS Circular 1139, p. 66- 71; CASE STUDY: FLOOD CONTROL
12	Mon	Apr 14	22	Flood hazards	
13	Wed	Apr 16	23	Reservoirs	CASE STUDY: FLOOD HAZARDS
13	Mon	Apr 21	24	Biologic considerations of surface waters	USGS Scientific Investigations Report 2007-5206, p. 1 – 10; CASE STUDY: BIOLOGIC HYDROLOGY
14	Wed	Apr 23	25	Glaciers and cryosphere	
14	Mon	Apr 28	26	Atmospheres & Oceans	
15	Wed	Apr 30	27	GIS and hydrology	
15	Mon	May 5	28	Course summary, review	