A ATM 301 Surface Hydrology and Hydrometeorology
Fall 2017, 3 credits
Class time: TuTh 02:45-04:05 pm; Class room: ES B13
Course website: http://www.atmos.albany.edu/facstaff/adai/ATM301/

Instructor
Professor Aiguo Dai
Office: ES 310; tel. (518) 442 4474; email: adai@albany.edu
Office hours: Tue 04:10-5:10 pm & Wed 10:00-11:00am, or by appointment

Teaching Assistant
Lukas Stewart: Office: ES 334; email: lmstewart@albany.edu
Office hours: MonWed: 2:00-3:30pm

Required Textbook
Available at bookstore and online.

Recommended Textbook:

Prerequisite
A ATM 210

Description
From the catalog:
A survey of the water cycle and its interactions with the earth and atmosphere, including the processes of precipitation, evaporation, and stream flow. Water resources and policy issues incorporated where applicable.

By the end of this course you should be able to:
- Identify, describe, and quantify the stores and fluxes of water in the atmospheric and terrestrial branches of the hydrological cycle.
- Understand and describe the observational methods used to measure various components of the hydrologic cycle, as well as their respective limitations and uncertainties.
- Understand and describe the major conceptual, theoretical, numerical, and empirical methods used to model various components of the hydrologic cycle, as well as their respective limitations and uncertainties.
- Perform quantitative analysis of water budgets for various scenarios and systems.
- Perform quantitative analysis of surface energy budgets for various scenarios, and relate energy fluxes to water fluxes.
- Access and analyze freely available hydrometeorological datasets.
- Utilize and interpret the key statistical measures and tools used in hydrology.
- Demonstrate a sound understanding of the basic physics governing: evaporation, transpiration, condensation, soil water storage and transport, turbulent boundary layer fluxes, surface energy balance, stream discharge.
- Describe how variability and extremes (e.g., floods & droughts) in the hydrologic cycle impact human and natural systems.
Grading
Grading will be on the A-E scale with the following weights:
Class attendance and participation 10%
Homework & projects (~8 times) 40%
Mid-term exam 25%
Final exam 25%

Topics Covered (tentative)
Overview and the basics
Precipitation
Soil water
Evaporation and transpiration
Snow hydrology
Groundwater
Runoff and streamflow
Floods & droughts, and water resource management

Advice & Expectations
• Assignments are due at the beginning of class on the due date. For any major conflicts (family emergencies, doctors appointments, etc.), discuss it with me in advance no less than 24 hours for homework or 1 week for exams. I will then make alternate arrangements with you. Otherwise, 25% will be deducted for each business day of lateness on assignments, and zeros given for missed exams. The only exceptions are the following: a physician’s note, a note from the Dean’s office, or a legal summons. Official university policy on medical excuses: http://www.albany.edu/health_center/medicalexcuse.shtml
• If you have a documented disability and may require some accommodation or modification in procedures, class activity, instruction, etc., please see me early in the semester. If you need forms or information, please visit: http://www.albany.edu/disability/index.shtml
• I will not generally be taking attendance. However, coming to class consistently will greatly improve your chances for success. On days with lab/field exercises absences or lack of participation will count against your grade.
• Your active participation in lectures is one of the primary ways you can enrich your education. Come to class prepared to answer and ask questions. This will make the class more worthwhile for everyone.
• If a concept or method is unclear to you, be sure to take advantage of office hours. Start assignments and studying early so you have time to get help if needed. Concepts introduced early in the class will be the foundation for later subjects, so don't fall behind.
• Homework assignments should show neat, detailed, organized work with a logical progression. Answers must be clearly denoted and include proper units. Group collaboration on homework is acceptable, but you must write up your own assignments and check your work independently. If your work is not independent, no credit will be given. If you do not personally master the skills required on the homework, you are almost certain to do poorly on the exams.
• Routine readings will be assigned, both from the text and supporting documents. You will generally find these most useful if you do the readings before class to familiarize yourself with the material and come up with questions to ask during lecture. On days with paper-discussions come to class prepared to actively discuss the paper.
• University "Standards of Academic Integrity" apply & will be enforced: http://www.albany.edu/undergraduate_bulletin/regulations.html