GEOS 470: Readings in Geology: Hydrostratigraphy
Class time: M & F 10:30 – 11:30
Credit: 0.5

Course Description: Hydrostratigraphy describes a set of methods used by scientists to describe and classify the structure of porous material in the subsurface as it relates to the movement of fluids, especially water. In this class, you will use USGS materials, including the Ground Water Atlas, to learn the categorization of different types of aquifer systems and the lithologic groups important to water supply. Although these resources focus on systems within the United States, the nature of the systems that you study can be applied globally as well.

Learning Goals:

- learn how geologic features of rocks and sedimentary materials affect hydrogeological properties (e.g. hydraulic conductivity);
- describe how depositional environments give rise to distinctive hydrostratigraphic units;
- evaluate the hydrogeology of different sites to determine their suitability for a variety of purpose and uses.

Assignments & Course Structure: Each week, you will be given a set of materials to read that we will discuss to assure the critical information. You will also be given questions to answer for homework; this will consist of 40% of your final grade. At the end of the week, I will quiz you on the material that will also account for 40% of your final grade. The remaining 20% of your final grade will be based on a final report that you write based on a hydrostratigraphic topic of interest to you.

Reading materials:
USGS Ground Water Atlas
https://water.usgs.gov/ogw/aquifer/atlas.html
https://water.usgs.gov/ogw/aquifer/map.html,
Regional studies that highlight the features of various lithologic groups:
High Plains aquifer system: High Plains Groundwater Availability Study (usgs.gov)
California Central Valley aquifer system: California's Central Valley (usgs.gov)
Mississippi Embayment aquifer system: Mississippi Embayment Regional Aquifer Study (MERAS) (usgs.gov)
Atlantic Coastal Plain aquifer system: https://pubs.er.usgs.gov/publication/pp1829 and https://pubs.usgs.gov/pp/2006/1731/.
Glacial Aquifer System: Glacial Aquifer System Groundwater Availability Study-Supplementary material for SIR2015-5105 (usgs.gov)
Great Basin Carbonate and Alluvial Aquifer System is another option: Great Basin Carbonate and Alluvial Aquifer System (GBCAAS) (usgs.gov),
National Water Census: Regional Groundwater Availability Studies (usgs.gov)

Classroom policies: this course will observe all the University Policies described in the Academic and Student Handbooks.