Flow & Transport in the Unsaturated Zone 206-25261 – 2.5 credits
Prof. Alex Yakirevich

Syllabus

1. Introduction to soil and rock structure with reference to interactions between solid and liquid phases: grain size distribution, mineralogy, surface area, effective porosity.
2. Characteristics of the liquid phase relevant to flow in porous media: molecular structure, hydrogen bonds, influence of solutes, vapor pressure, surface tension, capillarity, density and viscosity.
3. Hydraulic head: Matrix pressure, osmotic pressure, measurement of potential of water in the soil.
4. Flow equation in unsaturated zone: hydraulic diffusivity, measurement and characterization of unsaturated hydraulic conductivity
5. Movement of solutes in the unsaturated zone.

Bibliography

Course reading materials are placed by the instructor on the course Web page during trem time.

Course Requirements

2 hours lecture
1 hr exercise

Grading

40% home exam
30% 3 computer tests (10% for each test)
30% theoretical exam