

2015 Vadose Zone Hydrology

Lecture: Monday's 8:30-10 am with Computer lab on Thursday's from 1:10-4:30 pm

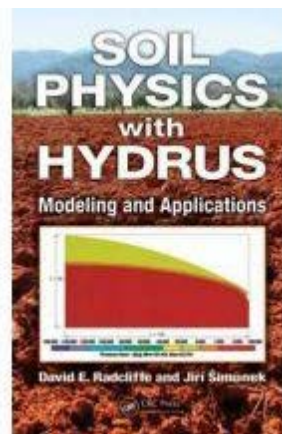
116 Veihmeyer and 253 Hunt

Course content: "Vadose Zone Hydrology (3). Prerequisite: Soil Science 107, programming language, or consent of instructor. Principles and modeling of water flow and chemical transport in the vadose zone, with specific applications to soils. Topics include estimation of soil hydraulic properties, finite difference application to unsaturated water flow, HYDRUS modeling, parameter optimization, root water uptake concepts and modeling, irrigation modeling, and vadose zone characterization and measurements.

1. March 30: VZ modeling introduction – Hopmans (problem 1)
2. April 6: Unsaturated flow review – Hopmans (problem 2)
3. April 13: Soil hydraulic properties – Furman (problem 3)
4. April 20 Finite Differences & Heat transport – Hopmans (problem 4)
5. April 27: Unsaturated flow modeling and infiltration – Hopmans (problem 5)
6. May 4 Root water uptake concepts and modeling - Kandelous
7. May 11: Solute transport – Hopmans
8. May 18: Optimization - Couvreur
9. May 25: Holiday
10. June 1: Vadose Zone Characterization and measurements – Hopmans

April 30: HYDRUS theory and applications – Dr. Jirka Simunek

Textbook:



Each of 10 modules will consist of Monday lecture (8:30-10 am) and Thursday (1-4:30 pm) computer laboratory application.

Though most assigned problems can be solved with Excel, experience with programming language (Fortran, Matlab, VisualBasic) is recommended.