SOCR 490 – Hydrus-1D Workshop

Prerequisite: SOCR 470 or consent of instructor.

Instructor: Dr. Greg Butters (C-109, Plant Sciences Building, g.butters@colostate.edu, 491-6314)

Course Material / Text: Hydrus-1D software and documentation is public domain and can be downloaded free of charge. Google "pc progress Hydrus 1D" and download latest version (e.g. v 4.16).

Course Objectives and Audience: Hydrus-1D is very useful software for solving and simulating flow and transport processes in soil. The purpose of this course is to bring this professional tool to undergraduate and graduate students in soil science, hydrology, civil engineering, and ecology. Through classroom demonstrations and a series of modeling project assignments, students will learn how to use Hydrus-1D for variety of flow and transport processes.

Meeting Times: This is a 1 unit course and we will **meet twice a week** (Tuesdays and Thursdays, 2:00 p.m. – 2:50 p.m.) **for 8 weeks only**.

Course Outline:

Week 1: Overview of model-processes and file management

Week 2: Water flow simulations – steady state and transient
(Student project assignment #1)

Week 3: Plant water uptake and evapotranspiration
(Student project assignment #2)

Week 4: Soil heat flow
(Student project assignment #3)

Week 5: Solute transport
(Student project assignment #4)

Week 6: Inverse analysis for parameter identification
(Student project assignment #5)

Week 7: Major ion chemistry (soil salinity)

Week 8: Final – Student presentations of integrated modeling projects

Assignments: Five single process projects (15 points each) and one integrated project (15 points).

Grading: Traditional grading
A = 100-90
B = 89-80
C = 79-70
D = 69-60
F = < 60