**CRSS 4600/6600 and 4600L/6600L**
**SOIL PHYSICS**
D.E. Radcliffe
Fall 2009

**Description:** The objective of this 4-semester hour course is to describe the physical and hydrologic properties and processes of soils. The emphasis is on soil water movement in the unsaturated (vadose) zone and it differs from other hydrology courses offered at the University in this respect. Students will learn how to use the HYDRUS-1D computer model. There is an emphasis on learning how to measure water content and associated properties of soil and the laboratory exercises are chosen for this purpose. CRSS 3050, CRSS(FORS) 3060, ENGR 2150, ENGR 3050, or FRS 3110 can act as prerequisites along with MATH 2200 and PHYS 1111 or 1211.

**Textbook:** The textbook is draft chapters for Soil Physics with HYDRUS, posted on WebCT.

**Instructional Procedure:** There will be 3 lectures each week (Monday, Wednesday, Friday) and a on Thursdays. Attendance is mandatory for labs, but not for lectures although attendance is encouraged. Some labs will be devoted to calculus study sessions. Class participation in discussions is also encouraged. Problem sets will be assigned, posted on WebCT, and graded every other week. Several problems in each set will require the use of Microsoft Excel. Some problems will be for all students and others will be for graduate students, only. All problems are due at 4 pm on the Monday following the week in which they are assigned. Late submission without a valid excuse will result in a zero grade. Working together on the problem sets is encouraged. There will be two exams and a final exam. The final will be 12:00-3:00 PM Monday, December 15. There will be no make-up for exams unless you have a medical emergency or get prior approval from me. All academic work must meet the standards contained in "A Culture of Honesty". Students are responsible for informing themselves about those standards before performing any academic work. The course syllabus is a general plan for the course; deviations announced to the class may be necessary.

| Final Grade: | Lab | 20% | First exam | 20% | Final exam | 20% |
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| | Problem sets | 20% | Second exam | 20% | | |

Topics to be covered:

Chapter 1. Soil Solid Phase
Chapter 2. Soil Water Content and Potential
Chapter 3. Steady Water Flow
Chapter 4. Heat Transport
Chapter 5. Transient Water Flow

Laboratory Schedule: Rm 3209

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| Section 1 | Thursday | 8:00-10:45 |
| Section 2 | Thursday | l2:00-2:45 |