SOIL 6583—Soil Physics Theory
Project Proposal Instructions

Each student will propose a soil physics modeling project suited to their research interests. The project must answer a specific, well-defined research question and must focus primarily on modeling water, solute, heat, or gas movement in soil. Plant or microbial processes may need to be included in the modeling project depending on the topic. Students may use an established soil physics model such as "Hydrus" or may develop a model of their own using Matlab, python, or other programming language. Modeling can be in 1-, 2-, or 3-D; can be for any relevant spatial scale; and can be transient or steady-state. The project must be described in a **research paper** (maximum 5 single-spaced pages with tables and figures embedded, not including reference list) and presented to the class with a **15 minute talk**. Projects will be evaluated competitively, with the top project receiving 150 points and the other projects scored relative to the top project.

Consider the following questions to help you identify a task for your tool:

1. What soil physics-related modeling tasks are relevant to your research?
2. What topics in our textbook's table of contents are most interesting to you?
3. What soil physics-related models have you seen or used previously?

Submit a **one page proposal** (which will count in the overall evaluation of your project) which answers the seven questions below about your modeling project.

1. What is the primary topic to be addressed in your project?
2. What are the most relevant "knowns" and "unknowns" based on prior research?
3. What is the specific research question motivating your project?
4. Why is this research question important?
5. What benefits will result from answering this question?
6. What specific objectives will guide your project?
7. What methods will you use for your project?
8. What timeline and milestones will guide your progress?

Submit by e-mail to tyson.ochsner@okstate.edu in .docx format.

The instructor will provide review comments on your proposal. You will then need to submit a revised proposal which adequately addresses the review comments. The review cycle will be repeated as needed until the proposal is approved by the instructor. Your proposal must be approved before you begin work on the project.