ta3220 Fluid Flow, Heat and Mass Transfer
Spring 2013
Special Assignment
Due before or at start of final exam (first sitting)

Compose an original homework or exam problem on any aspect of material covered in this course - fluid flow, heat transfer or mass transfer.

- The problem should be of suitable difficulty for ta3220 students.
- The problem statement must be typed (in English), although equations and mathematical notation can be added by hand. The solution can be handwritten, if easily readable.
- Any data required for solution to your problem (for instance, the viscosity of water) must be accompanied by data and a complete citation of where you obtained the data. It is not sufficient merely to cite a homework problem from this class; the point is to find the data in reference book or a reputable web site yourself.
- Your problem must be accompanied by a complete and accurate solution.
- For simplicity in grading, you should use SI units.
- Your problem must be your own work, and may not be the same as any other student's submission. It also must not simply be copied from a book or other source, or from another student's work from this or a previous year, nor a minor variation of a homework or exam problem from this or a previous year.
- For this problem, if you work with a Newtonian fluid, it's not sufficient to state "assume laminar flow," or to make that assumption in your solution. You must check Re to verify that flow is laminar. If flow is not laminar, solve using friction factors. This does not apply to problem with non-Newtonian fluids, or to shell-balance problems.
- Your problem and solution will be judged according to the following criteria:
    - complete specification of problem, with needed data and citation of sources for data
    - readability, correctness and completeness of solution
    - level of difficulty (i.e., appropriate to third-year BSc students)
    Some additional credit will be awarded for
    - relevance to geoscience and engineering
    - cleverness
- If you send me your special assignment by email, put your name on the assignment itself, not just on the email!

  Your work is due at the start of the first final examination (not the hertentamen). It will be graded as a final report - in other words, it should be as neat and professional as a final report (though the solution can be hand-written). If you submit your report more than 10 days before the final exam, I will try to grade it within a week and return it to you. If you do submit it early, half your grade will be based on the first submission, and half on the revision you may choose to do, which is then due at the start final examination. If you revise the report, the revision must be accompanied by the first submission and a separate list of changes you have made to it. If you are satisfied with your score on the first submission, you need not resubmit your work the second time, and your first score will be your score for the entire project. If you do not turn in your first submission more than 10 days before the final exam, there will be not chance for a revision. If you do not turn in anything by the final exam, you will lose half the credit for this assignment, but you still must turn in an assignment to complete this course.

  I encourage students to come and discuss their ideas well before the projects are due, and after the first submissions are handed back. If the draft is adequate, complete and accurate, no second report will be needed.