Practical assignments "Inleiding Modelleren en Simuleren 2014-2015"

General

The aim of the practical assignments is

1) To illustrate the material discussed in the lectures
2) To gain experience with the use of computers and computational models as an investigative instrument.
3) To illustrate the strength and weaknesses of these instruments

We have a limited amount of time (7 weeks) to explore a lot of material. To make the best of this, extensive written reports will only be required for the final assignment. The other assignments will be graded interactively by the assistants during the practical work sessions. Be there and make sure you can explain what you have done.

You are allowed to work in pairs. Both students should be present when an assignment is graded, both should understand the results.

The first three assignments may be graded excellent (9), good (7.5), sufficient (6), nearly sufficient(4.5) or insufficient (3). Therefore – ask assistance if needed before your assignments are graded and well before the deadline.

You must submit your code to blackboard plus any supporting files for all assignments, before the deadline. If you work in pairs, submit once only, but make sure all files list both contributors.

N.B. In order to be graded you must do both: submit your assignment and sit together with an assistant to have your work evaluated. Otherwise no grade will be entered, which is equivalent to scoring a zero.

The final assignment will be graded on a scale of 1-10. If the first two assignments are excellent, and the final assignment scores better than a 9, the latter alone determines the final grade for the practical work. This assignment will be graded on basis of the submitted material only.

Your presence at the practical work sessions will be logged.

How to do your assignments

All assignments have the nature of a small investigation. The best way to approach this is to:

1) Keep a log.
2) Make a plan. Write this plan in your log.
3) Sign off each part when completed and make notes of your results. Make sure these results are logged and/or that they can be reproduced.
4) When comparing results, make tables and/or graphs.
5) When making a graph, make sure you have enough points to make it meaningful.
6) Carefully choose and label your axes (e.g. linear or logarithmic). See if a reasonable fit can be made to your data (e.g. linear, power law, exponential).

7) Think about your results and formulate some conclusions.
8) If you cannot explain a result, discuss, ask.

The assignments

1) Floating-point arithmetic and numerical differentiation (2 weeks)
2) Numerical integration, root-finding and ODEs (2 weeks)
3) Final assignment (choice, 3 weeks)