Modelling and Programming **IT & Health**

Week 8

Deliverables

- Report 2 (in final form). *Deadline*: 23:59 Tuesday 24 November 2009.

- Report 3: Problem formulation.

You can hand in Report 2 digitally using DTU CampusNet or in hard-copy in class.

Finding a subject for Report 3

Report 3 has no predetermined assignment text. We would like you to write your own problem formulation. First you need to find subjects that you think it would be interesting to work with for Report 3. To find these subjects, we will do a brain storm.

The ideas that come up during the brain storm will be grouped into the following three categories:

Analysis	Using calculus to analyse a problem.
Software	Constructing a program that controls a device or helps solving a task.
Simulation	Calculating the development of a dynamical system step by step.

While these categories are often interconnected, you should think about what category you would like to focus on in your Report 3.

Considering the subjects that you would like to work with for Report 3, you should form groups of 2–4 people that all find the same subject interesting. Report 3 is to be handed in as a group report, so you will work with this group for the remainder of the course.

Writing a problem formulation for Report 3

Before writing a problem formulation for Report 3, it is a good idea to look at other problem formulations. The "Problem" sections of **C** have many good examples of problems that would be suitable as Report 3 problems. Consider the following before writing your problem formulation:

- Read Problems 10, 14, 18, and 23 in Section 8.2.5 of **C**.

- Flip through Section 8.3 of **C** for inspiration.

- Read Problems 4–7 in Section 8.5 of **C**.

- Flip through the note about "Infectious Disease Modelling".

- Read the first two pages of Chapter 10 and Problem 18 in Section 10.1.1 of **C**.

- Read Problem 50 in Section 10.3.4 of **C**.

Please note that most of this material is from the curriculum of the two following weeks. In many ways, the material is also related to what you did for Report 1. You will learn more about how to work with these types of problems in lectures to come. Although these problems are within this last part of the curriculum, you are allowed to choose your problem for Report 3 freely from the entire curriculum.

Together, in your group, you need to agree on the specific problem that you would like to work with. When writing your problem formulation, you should describe the following:

- The subject (briefly).

- The problem.

- The expected input and output of your solution.

Curriculum

C   Sections 2.2 and 2.3. *Sequences* and *More Population Models*.
C   Section 5.5. *L'Hospital's Rule*.
C   Section 7.7. *The Taylor Approximation*.