Course evaluation: 2D1266 Mathematical Models, Analysis and Simulation, part I, 2006/07

Course data
- 2D1266 Mathematical Models, Analysis and Simulation, part I, 5 credits
- P1, P2 2005/06
- Personal: Michael Hanke, Claes Trygger, Jelena Popovic, Murtazo Nazarov
- Teaching sessions
  - Lectures: 48 timmar
  - Laborations: 12 timmar
- Students: 26 (including 6 PhD students)
- Credits: Laboration 2.5, written examination 2.5.
- Prestationsgrad: 60% (per 2006-05-31) (13+18)
- Examinationsgrad: 50% (per 2006-05-31) (13)

Aims The goals of the course are to expose the students to and give them experience of important parts of applied and numerical mathematics, give the students experience of numerical experiments using MATLAB so that they will be able to analyze equilibrium models and dynamical systems with a finite number of degrees of freedom both theoretically and computationally.

Changes compared to the last year As a consequence of the experiences during the last few years, some changes have been made:

- The third part of the course has been increased by one lecture.
- The consideration of nonlinear hyperbolic conservation laws have been dropped.
- An introduction to singular perturbation is given.
- The amount of home work has been reduced a lot.

Conclusions The following conclusions are based upon the answers to the course avaluation form, chats with the students, and experiences from the homework evaluation. They have been discussed with the teaching assistents.

General opinions
- The course was considered to be interesting and meaningful.
- The course was considered to be quite difficult. In the beginning, it was estimated rather easy while later parts (especially on numerical methods) were really hard to understand.

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- Many students thought that their prerequisites for the course have been sufficient.

More detailed
- Some students arrived only very late to start the course. This led to real problems!
- The number of lectures spent to the three parts (linear algebra and optimization/dynamical systems/numerical methods) is not related to the complexity and pure amount of new contents. While the third part is rather short it is not well represented in the homeworks.
- The most important problem was the number and amount of work required in the homeworks. Most students indicate that they spent more than half of their study time to this course - a time mainly spent in doing homeworks.
- Occasionally, there is the feeling that the course focuses too much on mathematics while leaving applications alone.
- Interestingly enough, the interest in the different topics is equally distributed.

Teaching In a usual fashion using lectures and lab work. Assignments: One assignment each week, from paper and pencil work to parameter studies of dynamical models in ecology and mechanics. Even partial differential equations were solved using Femlab.

Examination Written examination and computer labs

Kurslitteratur
- G. Strang: Applied mathematics, Wellesley-Cambridge, 1986
- Lecture notes, copies of OH-slides

Prerequisites No problem.

Planned changes change in schedule.