

Course Analysis: SF2568, Parallel Computations for Large Scale Problems, 2021

- Course Data**
- Parallel Computations for Large Scale Problems, SF2568, 7.5 ECTS
 - Period 3/4, 2020/2021
 - Responsibility: Michael Hanke
 - Teaching hours:
 - Lectures/exercises: 28 h
 - Computer labs: 2 h
 - Registered students: 23 students
 - Literature: Wilkinson/Allen, Parallel programming 2nd ed., lecture slides
 - Credits:
 - homework+“mid-term quiz”: 4.5 ECTS
 - project: 3 ECTS
 - Examination index (according to VIS): 69.6%

Aim The present course is intended to provide an introduction into the basic ideas and methods used for developing parallel applications. We have been concentrated on distributed memory architectures. Applications include simple numerical algorithms, image processing, sorting, algorithms on graphs, as well as more advanced numerical techniques.

A great deal of work was spent in hands-on exercises. For those who are not comfortable with C or Fortran, a short introduction to C has been provided.

The course includes a larger project (almost) freely chosen by the students.

Changes compared to the last year As a consequence of the Corona pandemic, the course was given entirely by distance teaching.

Conclusions The first observation is that the course was considered as interesting and meaningful, with more than 50% of the answers considered it as very interesting. Teaching remotely had a huge influence on the performance of the students. Firstly, the number of participants was lower than usual. In particular, exchange students were not taking part. They make up usually a larger part of the audience. Many students dropped out which is manifested by the unusual low examination rate. The best students could finish the course successfully. This is indicated by the questionnaire where almost all students thought that the course was easy. This correlates with the estimation of having an interesting course.

Taking these two facts together indicates that the answers to the student questionnaire are heavily biased.

Another interesting observation is that the lectures were considered as being of minor worth since reading the lecture slides (published in advance) might have been sufficient for mastering the course contents. This is in sharp contrast to previous years where the lectures are considered most useful, which often culminated in the recommendation to the next generation of students not to miss any lecture. This is an indication that remote lectures were missing an important dimension of communication: Live discussions about the material and spontaneous questions by the listeners to discuss immediately with chalk and blackboard. However, in contrast to that, the students liked the zoom lectures a lot.

An immediate conclusion might be that the hybrid way of providing the material would be an interesting by having both (remote) lectures and afterwards in-classroom discussions (in a seminar setting). However, this does not solve the problem of spontaneous discussions where the students, in previous years, thought they learned most.

As usual, the project part received overwhelming estimates!

Teaching The teaching was done by lectures and computer labs in period 3. Period 4 consists of two introductory lectures, scheduled and unscheduled personal consultations, and project presentations.

Examination The examination based on homework problems and a mid-term quiz. The project was examined by a written report and an oral presentation in a “colloquium”. The examination activities were estimated as coming to the point and highly estimated.

Prerequisites With the exception of minor programming skills, no problem. However, a great plus would be if the students are comfortable with C from the beginning.

Planned changes Find a new course book!

One should think about rescheduling of the C++ course and this course. If they would have been taken in the opposite order (C++ before Parallelization), it would simplify this course a lot.

Grading Essentially no problems. However, some more explanations to the project part might be necessary. The mid-term quiz intended to check the theoretical knowledge was well received, however the time frame was often considered too short. A better communication of the grading criteria was sometimes proposed.