Educational Experience and Interests

A complete list of courses taught can be found at the end of my curriculum vitae.

Early experience in textbook writing and teaching

Soon after having finished my dissertation in 1973 — at which time I had become an experienced teaching assistant — I was asked to take over a course that had formerly been taught by the deceased Prof. Heinz Rutishauser, one of the most outstanding and ingenious numerical analysts and computer scientists of his time. Additionally, I was offered the honorable job of posthumously editing and publishing his hand-written lecture notes. So, at the same time I was faced with teaching for the first time a major course (with some 150 students) and publishing a textbook (which became a two volume set of nearly 400 pages). In the sequel I taught similar courses several times (using then my own notes) and also gave programming classes (in ALGOL, Fortran77, and Pascal) that were sometimes integrated in a numerical analysis course.

Years as a "Privatdozent" and lecturer

After completing my "Habilitation" thesis and thus becoming a "Privatdozent" in 1980, I was for eight years teaching roughly a full load, normally an introductory course in numerical analysis (for students from various fields — mathematics, physics, engineering, earth sciences, ...) and an advanced course on a special topic of numerical analysis and approximation theory (mostly for mathematicians and computer scientists). For nearly all of these courses I distributed hand-written, xeroxed notes to the students. Here and then I also taught other basic math courses. With respect to the number of students the climax came in 1984/85 when I taught linear algebra to more than 500 electrical engineers and computer scientists. Though I offered to teach the same course again two years later, when I returned from IBM Yorktown, the course was assigned to a full professor who, after critical remarks by the students, made his life easy by following my notes and distributing them!

Teaching and educational writing in recent years

After I became director of the Interdisciplinary Project Center for Supercomputing (IPS) in 1988, I had no longer the duty to teach low level courses. Actually, in 1989/90, I nevertheless gave a large calculus course, but after that I restricted my teaching to occasional advanced courses — some of them closely related to my research. This teaching is partly reflected in papers of mine that are to some extent survey papers, such as References [41], [47], [53], [60], and, in particular, [66] of my publication list. Writing survey papers and course notes is something I emphasize in my work. Naturally, I also have some tentative book projects.

For two years, 1995/96 and 1996/97 I taught additionally at another Swiss university (at Fribourg) a total of four numerical analysis courses. In the summer semester 1999 I held another such course.

Part of the educational program of IPS and CSCS/SCSC has been to provide short courses on a variety of subjects, from Fortran90/95 programming to computational methods for N-body problems. I have not only been involved in organizing these courses, but have also contributed as a lecturer.

Ph.D. students and postdocs

By now I have officially been the principal advisor of 5 students (who finished their Ph.D.), but honestly only two of them were exclusively advised by myself. However, on the other hand, I have been an active coadvisor for another three dissertations and a Habilitation thesis (in Germany) and a reader or referee for a number of other theses; see the list in my curriculum vitae. Currently, I have three Ph.D. students and a postdoc.

Outlook

Since I left CSCS/SCSC end of 1998 I have more time for research and teaching.

In research I am currently in the process of writing up a number of papers that I have been holding back in my desk for lack of time. But I have also started new collaborations and hope to intrude in new subjects.

On the undergraduate level I can teach various math courses, preferably about a well structured topic like linear algebra, complex analysis, or functional analysis, or an introduction to numerical analysis. On the advanced undergraduate and graduate level, I can offer a large variety of courses on topics in numerical analysis and parallel computing.

Clearly, I hope to have further Ph.D. students and postdocs.

Finally, let me mention that as a numerical analyst I am of course supporting the usage of computers in education. Actually, at ETH Zurich, there is now an emphasis on developing Web-based courses.

Curriculum in Computational Science and Engineering

In autumn 1997, ETH Zurich introduced a new curriculum for a diploma (Master) degree in Computational Science and Engineering. I was strongly involved in the definition and organization of this curriculum, and I am now also contributing courses to it and promoting this new study. This new curriculum consists mainly of courses that existed before or needed just some adaptation, and thus it can be realized at virtually no extra cost for ETH Zurich.