Teaching Statement

In my opinion, teaching is one of the most enjoyable ways to lifelong learning experience and to discover the inner potential. It gives an unique opportunity to share knowledge and free exchange of ideas in a conducive atmosphere. As Will Durant rightly said “Education is the progressive discovery of our own ignorance”. Research enables us to push the limits of knowledge farther and teaching helps us prepare minds for research. I think teaching is one of the noblest professions that can bring positive change in a society. Every teaching lesson is a new way for an instructor to rediscover himself/herself.

Teaching Experience

I was a visiting lecturer at Govt. College of Engineering, Pune (India) during Jan- May 1999. Along with another colleague I taught a master level course ‘Computer Aided Design for VLSI’. As I was also working as Senior ASIC Design Engineer with CG-CoreEl Logic System during this time, it provided a good opportunity for me to enable students understand relevance of the coursework in real life. I also engaged some classes for ‘Integrated System Design’ course in the Instrumentation and Control Department at Govt. College of Engineering, Pune (India) during 1996-1997. This course dealt with several concepts like electromagnetic compatibility, system design, etc.

At CG-CoreEl Logic Systems I gave a series of seminars on topics like design for testability, I\_DDQ testing, future of CMOS VLSI, and ASIC management. I had to research the related material before giving a seminar to the group. It required a lot of multitasking as I was working as an ASIC design engineer on time-critical projects. At Texas A&M University, I substituted several classes for my advisor (Dr. Hank Walker). Most of the classes were for the undergraduate class Microcomputer System Design course that focused on the architecture of Motorola 68000 processor and important concepts in microprocessor interfacing.

Teaching Philosophy

I believe in Thomas Carruthers’s statement that a good teacher is someone who makes himself progressively unnecessary. A teacher’s role in the learning process should be that of a map for a wandering traveler. Once students know the basic concepts, a teacher should encourage them to be on their own, to question the known, find the unknown and reason about it. This requires a teacher to develop independent thinking ability among students, which is so crucial for research.

I like teaching most when it is an interactive process in which both the teacher and the students are involved in a quest for finding new directions to expand boundaries of knowledge. For this to happen, a teacher must continuously instill students’ curiosity and keep them inquisitive. Therefore, I think, a teacher should not only impart knowledge, but also let students obtain joy of “discovering something new” through the learning process. This should form a positive loop and, as boundaries between students and teacher collapse, a teacher gets to learn from students as well.

As a teacher it is important for me to make each student realize his/her true potential, and attain the highest goal possible by setting the highest standards for himself/herself. It also is important for me to make them realize their duty to society or humanity in a broader sense. As
teacher-student relationship grows, together they should recognize that all their efforts are towards unraveling Nature’s secret and strive towards perfection.

I learnt a lot from the Graduate Teaching Academy’s seminar series organized by Center for Teaching Excellence at Texas A&M University (2000). I learnt about different strategies to make class instruction more interesting and fun for students. I wish to implement many of those ideas as a faculty member. I would also like to make use of technology for improving interaction among students and with the instructor outside the classroom.

**Teaching Plan**

My undergraduate degree is in Instrumentation and master’s degree is in electronics design and technology. My industrial experience is in the area of ASIC design and research is in the area of VLSI testing. Instrumentation is basically a science of measurement. This degree has taught me the “fundamentals” of several engineering aspects – from electrical to computer systems and control systems. My post-graduate training was oriented towards product development. This has taught me to think in terms of systems. I think it is very important to have a system-level perspective in order to get an appreciation for many things taught in classes. Without such perspective students are often lost, thinking they are studying in isolation or for purely academic interest. I am interested in making my students realize how their courses connect to the real world problem and then enable them to solve them.

My doctoral work has taught me many things. I learnt the importance to understand the core of the problem. This is crucially important as a simple, elegant and beautiful solution is possible only when the problem is fully understood. Secondly, I have learnt to grasp the essence of approaches followed by different researchers. Knowing what has been tried before and why it worked or did not work, is an important step in research. I wish to implement this in my classes by asking students to propose different ideas to solve a problem and implement them to learn why things work or do not work as expected. I think there is tremendous value to this approach. Learning is at its best when it is applied to solve a problem. I want my classes to provide both a broad overview of a topic and specialized knowledge in a specific domain. I will carefully draft homework assignments that will require students to apply concepts.

**Undergraduate and Graduate Teaching**

I am interested in working with undergraduate students and teach basic courses in electrical/computer engineering. Teaching a basic course provides an opportunity to refresh your concepts and keep your research in a proper perspective. I am capable of teaching undergraduate courses in microcomputer systems, digital design, instrumentation and measurement. I can teach other undergraduate/graduate fundamental computer science courses like software engineering, computer architecture and analysis of algorithms as well.

For graduate-level courses, my approach will be to provide a synergetic environment. I have taken many classes where interaction with my classmates was intellectually stimulating and rewarding. I always preferred classes where instructors allowed such free interaction and encourage questions. I would like to implement a similar approach in my classes. I would like to offer courses related to VLSI design, design automation, test and CAD for VLSI.