

Rajan Batta: Teaching Statement

Briefly described below are the three types of teaching that I am actively involved with.

Formal classroom teaching:

I have taught a number of undergraduate classes. Currently I am not doing undergraduate teaching due to my administrative responsibilities in the Dean's office. The most recent undergraduate class I taught was Engineering Solutions, EAS 140. This is a large class (approximately 100 students in each section) and I thoroughly enjoyed teaching it. My major achievement was the development of a simulation model for design of a pedestrian crossing using Excel. This teaching tool was used in a case study informing students about the field of Industrial Engineering.

My current teaching is at the graduate level, where I have taught Stochastic Methods, Facilities Design, and Urban Operations Research.

When teaching Stochastic Methods, IE 575, a required graduate course for our operations research students, I focus on the fundamentals of applied probability. The course is challenging and yet very rewarding both for the students and for myself. The material covered is of significant use in other classes that the students take.

When teaching Facilities Design, IE 504, a required graduate course for our production systems students, I focus on the specifics of the field of facilities design. Here I heavily use my experiences on industry-sponsored projects. I report back to the class the results of two recent industry projects that I undertook with former students of the class. I also tie in the results of recent research work that has been accomplished by my graduate students into the course.

When teaching Urban Operations Research, IE 678, an elective graduate course for our operations research students, I focus on applications of operations research in the area of urban systems. In this course I challenge the students extensively, both in class and in assigned homework. The material is conceptually difficult but yet it is very much possible to discuss it in an interesting way, which is why I cherish the opportunity each time I teach the course.

Interaction with masters and doctoral students:

I have had the good fortune of advising many graduate students. For me the most challenging part of working with a student for a doctorate or masters is to train them to be an independent researcher and to instill in them the desire for scientific enquiry. I pride myself with my work with graduate students and in the fact the overwhelming majority of my journal papers

have been co-authored with former students. Also, the vast majority of these papers are published in the best journals of my field, like **Operations Research**, **IIE Transactions**, **Transportation Science**, **Networks**, **Management Science**, **Computers & Operations Research** and **European Journal of Operational Research**. This is a direct testimony to the academic strengths of the graduate students I have worked with.

Interaction with graduate students to execute industry-sponsored projects:

I have worked on many local industry projects (usually 1-2 per year) through The Center for Industrial Effectiveness and some directly through companies. All of these projects have involved the use of graduate students. I have used these opportunities to train graduate students on how to execute a project, i.e. first conceptualize the problem, gather the relevant data, perform the analysis, and finally present results in a coherent presentation. This training—particularly that of project completion within a slated timeframe—has had several benefits. First, it has been excellent practical experience for students who have used it successfully to find a suitable job upon graduation—it is a great conversation piece at an interview. Second, I have taken materials from several of these projects and incorporated them in my IE 504 class—this has a magnifying effect on the impact to students. Third, it has led to several

research papers, both directly (write ups of the project in a journal) and indirectly (by identifying inherent theoretical problems in a specific type of industry, leading to proposals to NSF and/or journal papers).