AMLAN MUKHERJEE

Teaching Statement

My teaching interests include teaching graduate and undergraduate courses in construction engineering and management. I have individually designed and instructed an undergraduate course in AutoCAD Design and extensively assisted and on occasion taught graduate classes in Construction Estimation, Project Management, Computer Applications and Construction Practice. My background in civil engineering and experience in having assisted in teaching junior and senior level courses in Engineering Statistics, Transportation Engineering and Surveying allows me to teach courses in the undergraduate Civil Engineering curriculum as well.

In my combined experiences as a student, a teaching assistant and an instructor I have realized that we often tend to teach courses that deal with different slices of the same problem without acknowledging the relationships and dependencies between them. As an instructor, teaching the fundamentals of using AutoCAD, Land Desktop and Civil Design packages I have encouraged students to bring in problems from other civil engineering courses like Transportation Engineering and Construction Engineering. For example, horizontal and vertical curve design in Transportation Engineering is often difficult to visualize for students. When they simultaneously learned curve design and used AutoCAD to visualize and produce design drawings they got a better understanding of the problem and command over AutoCAD. Similarly, students took advantage of AutoDesk Land Desktop to complement Surveying courses and used the various Civil Design utilities to visualize earth work and estimate costs of operation. Such an integrated approach to teaching creates a student centric and goal driven learning environment and emphasizes not only on the understanding of the independent courses, but also how they relate to each other within the theory and practice of Civil Engineering.

Information technology has undeniably become a very important part of the practice of Civil Engineering. I intend to incorporate in my teaching methods greater emphasis on innovations that combine existing practice with available software (like MS Project, Timberline Precision Estimating and Primavera) to reshape construction processes and information management. Also, my understanding and experience at working with various software packages, programming languages across different operating systems and a strong understanding of computing principles will help me design graduate and undergraduate level courses aimed at providing students the ability to customize and adopt technology into the practice of Civil and Construction Engineering. My teaching efforts will also emphasize the use of contextually rich virtual simulation and visualization environments for teaching. This will greatly enhance the classroom learning environment and complement my research efforts.

Even though decision making skills are extremely important in the construction industry, graduate level construction curriculum seldom aims at training students to become efficient decision makers. I plan to introduce the concepts of constraint satisfaction and system dynamics to traditional construction management graduate courses like scheduling, estimation, project management and construction safety to train students in efficient decision making. System dynamics models of the construction management domain capture inter-dependencies and use feedback loops to reflect the causal impact of changes globally and locally. Situations in construction management are often a series of constraint violations within such a dynamically evolving system. An approach that allows managers to classify scenarios into violation of precedence or resource constraints, will be valuable in understanding the “bigger picture.” I intend to incorporate these concepts in my teaching endeavors to help students become better decision makers.

My dissertation research focuses on simulation technologies and applications of artificial intelligence to the fields of construction engineering and management. In the course of my research, my experiences and interactions with faculty and students at the Human Interface Technology Laboratory at the University of Washington have provided me with a multi-disciplinary perspective that will be useful in teaching and developing courses related to programming languages, algorithmic approaches to problem solving, information visualization and human interface technologies relevant to civil engineering.