Operations Research and Engineering Management
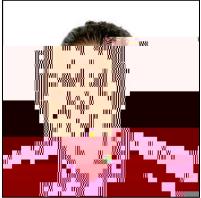## Seminar Series

Research Seminar

Inverse Optimization for Imputing Constraints in Mathematical Programs

Dr. Archis Ghate
Professor of Industrial Engineering and
Fluor Endowed Chair at Clemson University

Friday, November 10th
11:00am - 12:15pm
Caruth 383

Abstract: In a typical (forward) optimization problem, a decision-maker uses given values of model parameters to compute the values of decision variables. The goal in inverse optimization (IO) is instead to infer parameters that render given values of decision variables optimal. Most papers on IO utilize duality to impute objective function parameters. A corresponding literature for imputing constraint parameters is essentially non-existent, even for linear programs. The difficulty is that these IO problems include nonconvex bilinear constraints and/or objectives. We will discuss models and solution algorithms designed to tackle these difficult problems. We will illustrate key ideas through the motivating problem of imputing transition probabilities in Markov decision processes (MDPs). If time permits, we will also extend these ideas to inverse semi-definite programs (SDPs) and inverse Quadratic Programs (QPs), where matrices on the left-hand-sides of constraints are unknown.

Biography: Archis is a Professor of Industrial Engineering and holds the Fluor Endowed Chair at Clemson University. Prior to joining Clemson, he was a Professor of Industrial & Systems Engineering