

218a A Hands-on, Multidisciplinary, Fun Engineering Team Design Project and Competition for Freshman

Randy Weinstein and Kenneth Muske

To begin introducing engineering students to multidisciplinary team work and the principles of engineering design early in their educational careers, a freshman design project and competition was developed requiring skills typically associated with the four engineering departments (the Departments of Chemical Engineering, Civil and Environmental Engineering, Electrical and Computer Engineering, and Mechanical Engineering) in the College of Engineering at Villanova University. In short, the students needed to build a model car with proper gearing, construct a bridge, and supply power through an electrochemical reaction to complete a specific set of tasks. They could only use the limited materials supplied to them. The competition was fourfold and involved an aesthetics contest, a race (including a hill), a load pull, and a load test of the bridge. The project began teaching the students in their first semester at college about team work, open ended design issues, long-term deadlines, creativeness, the multidisciplinary nature of engineering, as well as the “fun” of engineering.