

Hands-on Introduction to Chemical and Biological Engineering

Session 1526: We have revised our freshman seminar course by modeling it after Rowan University's exemplary Freshman Engineering Clinic course which utilizes a hands-on laboratory approach to introduce freshman students to engineering. Innovative laboratory modules developed and published by faculty at Rowan under NSF funding were adapted and implemented. These laboratories utilize common activities (such as brewing coffee, taking blood pressure, and delivery of medication) to teach fundamental engineering principles, techniques for experimental measurement, data representation and analysis, and group problem solving and communication skills. Many of these laboratories are designed to build upon the student's current base of knowledge and experience. A unique aspect of this laboratory based course is that many concepts are taught in an inductive learning format. Students are asked to predict experimental outcomes, perform the experiments, plot and analyze the data, and compare results to their predictions. All this occurs prior to exposing the student to the underlying theory, predictive calculations, and industrial applications. In this poster, we will briefly discuss the structure of the course and present assessment data from Fall 2004 and Fall 2005.