

Public Abstract

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Graduation Term:SS 2009

Department:Chemical Engineering

Degree:MS

Title:DEVELOPING, IMPLEMENTING, AND ASSESSING COUPLED-TANK EXPERIMENTS IN AN UNDERGRADUATE CHEMICAL ENGINEERING CURRICULUM

Five experimental modules that fit into the Undergraduate Chemical Engineering Curriculum were developed using the existing Coupled-Tank Apparatus. Students of different educational levels get an opportunity to develop practical skills like modeling, simulating and model validating, as well as real-time process control and Proportional-Integral (PI) controller tuning in a laboratory setting. These experimental modules are self-contained and each module can be used individually or in combination. These experiments developed were tested by engineering graduates and undergraduates and are ready for use in teaching. Discussions for the experimental results as well as problems encountered during the lab sessions are included so that the lab instructor can get the maximum use from this work. Finally, an outline of the project and recommendations for future work were added so that one can expand on this work starting from a firm foundation.