

Teaching and Learning Project Assessment Report

Program or Unit: Process Technology (PTEC) Program

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What we wanted to learn about our students:

The Process Technology (PTEC) Program prepares women and men for careers in the petrochemical, chemical, power generation, food processing, water, waste water, and related industries. To run a plant as an operator, our graduates will need to have excellent math and communications skills, “people skills”, and technical training in process technology. The following ISLO and PSLO map directly into these important skills:

ISLO #4 - Appropriately apply **industry materials and technology**.

PSLO # 4 - Demonstrate knowledge of the process technology and apply the technical skills necessary to operate complex process equipment and systems such as distillation, fired boiler, refrigeration, cooling tower, reactor, and similar unit operations.

What we did:

Students from the second PTEC cohort which graduated on June 22, 2007, the third PTEC cohort which graduated on November 20, 2007, and the first traditional semester class which graduated on May 22, 2008 were selected for study. A total of 74 students were included in the study group.

The first assessment instrument chosen was a demonstration of the process knowledge and technical skills necessary to operate a distillation unit by successful start up and steady state operation of a first principles computer simulation of a methanol / water distillation system.

Thirteen students in the 2008 Spring Semester were also assessed by demonstrating their process knowledge and technical skills to the PTEC instructor by successfully separating water from propylene glycol using a 2 inch continuous distillation column in the PTEC laboratory.

In addition, these 13 students were assessed by a third assessment instrument by demonstrating their process knowledge and technical skills necessary to operate a fired boiler by successfully completing a first principles computer simulation module of the fired boiler system.

What we learned about our students:

All 74 students successfully demonstrated the necessary skills to start up and bring a computer simulation of a methanol / water distillation column to steady state operation. We learned that the student’s process technology knowledge gained from the simulation assessment was reinforced and expanded by the hands-on laboratory experience using the 2 inch continuous distillation column.

The first 61 students in the study group were unable to obtain adequate knowledge of fired boiler systems because we did not have a computer simulation module for fired boilers until the 2008 Spring

term. Thirteen students successfully demonstrated the necessary skills to operate a fired boiler by completing the fired boiler module during the 2008 Spring term.

What we plan to do next to improve student learning:

The instructor for PTEC 44 – Petrochemical Simulation Laboratory and the instructor for PTEC 48 – Process Trouble Shooting will develop strategies to strengthen the student’s knowledge and application of technical skills to distillation. Specifically, the instructors will coordinate the timing for the computer simulation class module in PTEC 44 class with the hands-on laboratory experience in PTEC 48 class to maximize student understanding. In addition, each instructor will refer to both the simulation example and the hands-on laboratory example in their class lectures to tie the experiences together in the student’s mind. This action plan will be implemented in the Fall 2009 term by Gary Calkins, PTEC 44 instructor, and Curtis Stubbings, PTEC 48 instructor, when the classes are next offered.

An electronic version of this form is available under Planning on the LMC intranet.