Chemical Engineering Technology Program
Transition to Online Delivery Mode

Abstract

Chemical Engineering Technology (ChET) programs suffer from a phenomenon that is becoming quite commonplace in the educational environment: it is very difficult for a large majority of our potential student population to attend courses that are taught at a set time on certain days in a prescribed location. This phenomenon will likely affect Chemical Engineering programs in the future. The most prevalent explanations for this situation are:

1. many potential students are already employed in the Chemical Process Industries or other similar manufacturing industries and are currently working a rotating schedule (common to those industries) and

2. although there is a large demand for chemical process technicians in North America, those employment opportunities are not well-distributed and are actually concentrated in about 6 major regions.

It is unreasonable to believe that chemical process technicians can only be educated and trained in those geographic regions where employment demand is high. Furthermore, even in those geographic regions of high demand, it would be helpful if the students could progress their education without juggling their work schedule or putting their careers on-hold. It is also quite common for process technicians (or other individuals working in the CPI) to aspire for a full engineering career. The cost of a 4+ year Chemical Engineering education (or even a 2+ year Chemical Engineering Technology education) requires most of these individuals to continue their employment while pursuing their education. Therefore the engineering and technology education community must accommodate this new cadre of students.

Chemical Engineering Technology (ChET) courses are typically taught in a manner similar to normal Chemical Engineering (ChE) courses: lecture, homework, quizzes, recitation and exams. It is reasonably simple to automate the homework, quizzes and exams such that students can access and complete this material in an online environment at a convenient time and location. However the lectures and recitations are much more difficult to prepare and deliver in an asynchronous online mode. We have developed and tested a methodology to convert a well-established lecture course (Chemical Engineering Technology) to a fully online (asynchronous) delivery mode. The conversion of courses

that are primarily informational is relatively straightforward. However courses that involve a significant amount of problem solving require much more effort and skill to successfully convey the required knowledge and understanding while never meeting the students face-to-face. This latter type of course is extremely similar in style (but not rigor) as the majority of engineering courses. The use of recorded, synchronous recitation periods is very valuable in the delivery of these more technically-challenging courses.

The full paper and presentation will outline the process for the conversion of "normal" technology courses to a fully asynchronous, online delivery mode. The starting point (i.e. a well-established course complete with all of the material necessary to delivery the course in a normal lecture style) of the conversion process will be described in great detail. Then each step in the conversion process will be delineated and examples will be provided. Lastly some "lessons learned" from several painful (yet successful) conversion episodes will be discussed.