COMP 220

Computer Application and Computer Based Training in Chemical Engineering Curriculum at Jubail Industrial College

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ABSTRACT

The industrial complexes in Jubail offer exciting challenges for technical education, and the chemical engineering major at Jubail Industrial College has welcomed this offer with great impact to these industries since its inception in 1998. The Chemical and Process Engineering Technology program is designed to produce well qualified and skilled process plant operators for the chemical process industries with emphasis on process plant operation and control, environmental and pollution control, unit operation, chemical reaction engineering and process plant simulation.

The curriculum in this major is currently being revised by instructors in partnership with the companies in order to achieve a broad perspective of the industry's requirements. The result of this exercise would enable the students to acquire adequate knowledge of the course in order to easily adapt in the increasing surge in information technology and other technological advances employing the computer in solving process plant problems.

Although, the chemical engineering major focuses in producing process plant operators, some of the graduates opt to further their education in higher institutions in obtaining a baccalaureate or a B.Sc. equivalent after an additional two years of learning.

The Chemical Engineering department has employed various computer based training packages and software tools to aid in the delivery of its key core subjects such as Unit operations, chemical reaction engineering, process equipment, process plant simulation and instrumentation and process control. In process plant simulation, the department employs the Autodynamics Digital Process Simulation Training Equipment that uses the Honeywell TDC 3000 (Industry Standard), a real time process simulator that provides training in basic process equipment, instrumentation and control, distillation operation, compressor, heat exchangers, pumps and various process flow diagrams. The simulator enables the students to gain first hand knowledge of the plant startup, shutdown, emergency procedures and troubleshooting of process plants.

In addition, computer based training packages have been used as part of delivery methods, and have proven very useful to the students' learning activities thereby enhancing their understanding of the course. A Chemical Engineering Computer Laboratory comprising of twenty one Pentium 4 Compaq Computers and a server for intra-net activities (such as e-learning, and other forms of computer based training) has recently been commissioned in the department. Also, a Computer Application in Chemical Engineering course is now being introduced in the revised syllabus, where students will explore the use of application software such as Microsoft Excel and MATLAB in solving chemical engineering problems.

This paper reviews with case studies, the various computer tools that assist the teaching/learning process of both instructors and students. Employing these modes of delivery will equip JIC students from the Chemical and Process Engineering Department with a sound knowledge of the program and be ready to face the great expansion of e-commerce and information technology of the industrial complexes. Already, the feed back from these companies employing JIC graduates from this major has been very positive and encouraging.