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ABSTRACT

Preparing Students to Succeed in the Global Energy Industry

Many experts believe that oil production will peak in the first quarter of the 21st century. The oil production peak will be followed by a decline despite an increasing demand for energy. The combination of increased demand and reduced supply will lead to a significant increase in the price of oil. According to this scenario, other sources of energy will begin to replace the increasingly expensive oil. The dominance of oil in the current energy mix will not continue.

Some companies have responded to market realities by transforming themselves into energy companies. These companies include oil and gas companies and utilities. The trend to form energy companies is driving the development of an emerging energy industry. The new energy companies will need to employ professionals that understand and appreciate the role of a variety of energy components in the energy mix. This creates both a challenge and an opportunity for educators: how do we prepare this new breed of engineer – an energy engineer?

The purpose of this paper is to explain why a course for energy engineers is necessary and to describe the design of an energy engineering course for technical majors. The course helps technical majors avoid the trap of being so specialized in one discipline that they cannot appreciate their specialty in either a broad technical or societal context.

The course described here presents an integrated overview of energy sources that will be available for use in the 21st century. The course is designed for technical majors rather than the general student population because it presumes knowledge of college level engineering physics and calculus. This allows the class to study concepts at a more sophisticated level than courses that are designed to satisfy the general science requirement for undergraduates. Students gain familiarity with the resources available to supply energy to both developed and developing nations. This broad perspective stimulates student interest in an emerging energy industry, provides future engineers with an expanded knowledge base and an awareness of trends that are expected to affect their lives during the course of their careers as energy professionals.