

ASEE ANNUAL MEETING

Anaheim, California

June 25-28, 1995

Program: Chemical Engineering Division

FEATURE SESSION: *Future Directions in Chemical Engineering Education*

● **Edward L. Cussler** *Chemical Engineering: The Curriculum in 2020*

The changes in the next 25 years will be societal rather than technical. Two such changes relate to the fact that the university system can produce more chemical engineers than can find technical jobs, and that the available jobs may be in non-traditional areas.

● **Richard M. Felder** *Current Issues and Future Directions in Engineering Education*

Proponents for change call for attaching greater importance to teaching and movement away from traditional lectures toward more active and cooperative learning. There is resistance among those who believe the present system works. Both sides of the issue will be discussed.

● **Thomas F. Edgar** *Chemical Engineering Computing: Revolution or Evolution*

Incremental changes in the use of computers have been observed, but it is unclear that this will ever have an impact on the way courses are taught. The potential for a revolution that restructures courses may lie with increased use of multimedia instruction and computer-based classroom facilities.

ADDITIONAL SESSIONS

● **Chemical Engineering Division Award Lecture**

Stanley Middleman, University of California, San Diego; "Modeling Flows in Films, Jets, and Drops"

● **Chemical Engineering Division Banquet**

Speaker, Frank L. Lambert

Art Conservation Today—A Remarkable Combination of Science and Art

● **Learning and Teaching Styles**

A workshop by Richard M. Felder (sponsored by Educational Research and Methods Division)

● **Incorporation of Biotechnology into Engineering Curricula**

Session Sponsored by Biological and Agricultural Engineering Division

REGULAR SESSIONS

● ***Innovative Uses of Computers in Undergraduate Chemical Engineering Education***

- Interactive Videodisc Case Studies in a Polymer Engineering Elective
- Computer Simulations of Thin Film Growth
- Animations, Simulations, and Other Learning Stimulations: An Electronic Laboratory Tour
- Virtual Reality in Chemical Engineering Education
- Process Dynamic Simulator for Dynamics and Control Demonstrations
- Addressing the Variety of Learning Styles of Chemical Engineering Using Multimedia

● ***Novel Curriculum or Course Content***

- Can We Teach Engineering Design to Freshmen? (Or is it our last chance?)
- Integration of Skills Development Across Engineering Programs
- Fitting Statistics Into the Chemical Engineering Curriculum
- An "Open-Ended" Chemical Engineering Laboratory
- The Video Laboratory Report: Enhancing Communication Skills in the Undergraduate Laboratory
- The Selling of Unit Ops Laboratory

● ***Novel Education Programs***

- Teacher Institute for Science/Mathematics Education Through Engineering Experience
- Introducing Freshman Students to Programming
- Hands-On Approach to Foundations of Engineering
- Introducing Chemical Engineering to Freshmen Through Measurement Oriented Studies in the Unit Operations Laboratory
- A New Approach to Introducing Freshmen Students to Chemical Engineering
- An Interdisciplinary Approach to Engineering Design Education
- A Different Approach to the First-Year Graduate Curriculum
- Engineering Education and Research: TQM and R&D in Bioengineering

● ***What Works? Tips From Chemical Engineering Faculty***

- Introducing Freshman Engineering Students to Design
- Modes of Contacting
- Explaining Distillation Arrangements Through Gradual Evolution of Flowsheets
- Students Coaching Students
- Making Statics Interesting

● ***Student Learning Assessment***

How do (should) we determine our success in engineering education? What Measures and analyses are being tried? Which work?

There will be a panel discussion on assessment of learning outcomes. Each panelist will speak for five minutes. A discussion with audience participation will follow.

● ***Education via Academic-Government-Industry Partnerships***

- Conducting Research, Development and Educational Programs in Partnership with the U.S. Department of Energy
- The SCUREF Graduate Internship Program
- A Practitioner-Educator Partnership for Teaching Engineering Design
- The South-Central Environmental Resource Alliance (SERA)
- Computerized Laboratory Course Material for Graduate Studies in Environmental Risk Assessment
- The Design of a Skill-Based Course Focused on Student Outcomes: A Partnership Template