

2003 ASEE Annual Conference

Chemical Engineering Division Program

June 22-25, 2003 ♦ Nashville, Tennessee

Technical Sessions

Sunday, June 22, 2003

Session 0413: Teaching Teaming, Writing, and Speaking

Moderators: Steven W. Peretti, Lisa G. Bullard, Chris Anson, Deanna P. Dannels

ABET requirements, as well as communication-across-the-curriculum initiatives, have focused faculty attention on how to effectively integrate teaming, writing, and speaking instruction within the engineering curriculum. Sponsored by an NSF-Action Agenda grant, a multidisciplinary faculty team at North Carolina State University has developed a set of teaming, writing, and speaking instructional materials for an engineering design course and an engineering laboratory course. Workshop participants will receive a CD and hard copy of instructional materials for both courses, evaluation rubrics for written and oral reports, and recommendations on effective implementation models based on the size of the department, the expertise of the instructor, and available campus resources.

Monday, June 23, 2003

Session 1313: Novel Courses for ChEs

Moderators: Jason Keith and Veronica Burrows

1. "A New Chemical Engineering Senior Elective Course: Principles of Food Engineering," *Mariano Savelski*
2. "Integration of Microelectronics-Based Unit Operations into the ChE Curriculum" *Milo Koretsky, Chih-hung Chang, Shoichi Kimura, Skip Rochefort*
3. "Pediment Graduate Course in Transport Phenomena," *William Krantz*
4. "Sparkling Student Interest in Electrochemical Engineering," *Robert Hesketh, Stephanie Farrell, C. Stewart Slater*
5. "Teaching Packaging Engineering at Christian Brothers University," *Asit Ray*
6. "Fundamentals, Design, and Applications of Drug Delivery Systems," *Stephanie Farrell*

Session 1413: Design in the ChE Curriculum

Moderators: David Silverstein and Priscilla Hill

1. "Life-Long Learning Experiences and Simulating Multi-Disciplinary Teamwork Experiences Through Unusual Capstone Design Projects," *Joseph Shaeiwitz, Richard Turton*
2. "New Topics in Chemical Engineering Design," *Paul Blowers*
3. "An Economic Model for Capstone Design," *Rudy Rogers*
4. "A Web-Based Case Study for the Chemical Engineering Capstone Course," *Lisa Bullard*
5. "Challenging the Freshman: Freshman Design in ChE at Rose-Hulman Institute of Technology," *Atanas Serbezov, Carl Abegg, Jerry Caskey, Sharon Sauer*

Tuesday, June 24, 2003

Session 2213: Recruitment and Outreach in ChE

Moderators: Anne Marie Flynn and Mariano J. Savelski

1. "Cookies and Diapers and Chemical Engineering," *Lisa Bullard*
2. "Integrating Chemical Engineering into High School Sciences Classrooms," *Deran Hanesian*
3. "OSU GK-12 Program for the Enhancement of Science Education in Oregon Schools," *Willie Rochefort, Dan Arp, Edith Gummer, Tricia Lytton, Haack Margie*
4. "Science, Technology, Engineering, and Mathematics Talent Expansion Program," *Taryn Bayles*
5. "Using an Enrichment Program to Introduce High School Students to ChE," *Paul Dunbar, Rhonda Lee, David Silverstein, Jim Smart*
6. "Chemically Powered Toy Cars: A Way to Interest High School Students in a Chemical Engineering Career," *Christi Luks, Laura Ford*

Session 2313: Innovations in the ChE Laboratory

Moderators: S. Scott Moor and Jim Henry

1. "The Fuel Cell—An Ideal Chemical Engineering Undergraduate Experiment," *Suzanne Fenton, James Fenton, H. Russel Kunz*
2. "A Novel Unit Operations Project to Reinforce the Concepts of Reactor Design and Transport Phenomena," *Sundararajan Madihally, Benjamin Lawrence, R.*

Russel Rhinehart

3. "Simple, Low-Cost Demonstrations for UO II (Mass Transfer Operations)," *Polly Piergiovanni*
4. "Use of Lab Experiments to Build Transport Concepts," *Nam Kim*
5. "A Novel Fluid Flow Demonstration/Unit Operations Experiment," *Ronald Willey, Alfred Bina, Ralph Buonopane, Guido Lopez, Deniz Turan*
6. "Institutionalizing the Multidisciplinary Lab Experience," *R. Worden*

Session 2613: **The Biology Interface**

Moderators: Polly Piergiovanni and Stephanie Farrell

1. "Teaching of Engineering Biotechnology," *Raj Mutharasan*
2. "Seamless Integration of Chemical and Biological Engineering in the Undergraduate Curriculum," *Howard Saltsburg, Gregory Botsaris, Maria Flytzani-Stephanopoulos, David Kaplin, Kyongbum Lee*
3. "Integrating Biology and Chemical Engineering at the Freshman and Sophomore Levels," *Kathryn Hollar, Stephanie Farrell, Gregory Hecht, Patricia Mosto*
4. "Microbiologically Speaking: Preparing Chemical Engineers for Careers in Life Sciences," *William French*
5. "ChE Power! A Hands-On Introduction to Energy Balances on the Human Body," *Stephanie Farrell, Robert Hesketh, Mariano Savelski*

Wednesday, June 25, 2003

Session 3213: **Learning Enhancements for ChE Courses**

Moderators: Jim Smart and John Gossage

1. "Improving Critical Thinking and Creative Problem Solving Skills by Interactive Troubleshooting," *Nihat Gurmen, H. Scott Fogler, John J. Lucas*
2. "Incorporating Computational Fluid Dynamics in the Chemical Reactor Design Course," *Randy Lewis, Sundararajan Madhally*
3. "Web-Based Instructional Tools for Heat and Mass Transfer," *Jason Keith, Haishan Zheng*
4. "Experiments in the Classroom: Examples of Inductive Learning with Classroom-Friendly Laboratory Kits," *S. Scott Moor, Polly Piergiovanni*
5. "Thermo-CD: An Electronic Text for the Introduction to Thermodynamics Course," *William Baratuci, Angela Linse*
6. "Development of an Intelligent Tutor for Teaching Material Balances to First-Year Students," *John Harb, Paul Miller, Kenneth Solen, Richard Swan*

Session 3413: **Advisory Boards and Program Assessment**

Moderators: James Newell and Randy Lewis

1. "Using Standardized Examinations to Assess Chemical Engineering Programs," *Keith Schimmel, Shamsuddin Ilias, Franklin King*
2. "Structuring Program Assessment to Yield Useful Information for ChE Faculty," *Helen Qammar, Teresa Cutright*
3. "Program Improvements Resulting from Completion of One ABET 2000 Assessment Cycle," *Sindee Simon, Lloyd Heinze, Theodore Wiesner*
4. "Departmental Advisory Boards—Their Creation, Operation, and Optimization," *Michael Cutlip*
5. "Involvement of the Departmental Advisory Board with Curriculum and Student Recruitment Issues," *Dana Knox, Basil Baltzis*
6. "Effective Use of External Advisory Boards," *Kirk Schulz*

Session 3513: **Statistics in the ChE Curriculum**

Moderators: Valerie Young and Donald Visco

1. "Variation, variation, very-action, everywhere, but . . .," *Milo Koretsky*
2. "The Use of Active Learning in the Design of Engineering Experiments," *Gerardine Botte*
3. "Use of an Applied Statistical Method to Optimize Efficiency of an Air Pollution Scrubber Within an Undergraduate Laboratory," *Jim Smart*
4. "Designing a Statistics Course for Chemical Engineers," *Valerie Young*
5. "Teaching Statistical Experimental Design Using a Gas Chromatography Experiment," *Douglas Ludlow, Robert Mollenkamp*
6. "Integration of Statistics Throughout the Undergraduate Curriculum: Use of the Senior Chemical Engineering Unit Operations Laboratory as an End-of-Program Statistics Assessment Course," *Michael Prudich, Darin Ridgway, Valerie Young*

Session 3613: **Teamwork and Assessment in the Classroom**

Moderators: Joseph Shaeiwitz and Andrew Kline

1. "Imbedding Assessment and Achievement in Course Los with Periodic Reflection" *Franklin King, Shamsuddin Ilias*
2. "Assessment in High Performance Learning Environments," *Pedro Arce, Sharon Sauer*
3. "Developing Metacognitive Engineering Teams," *James Newell*
4. "Observations on Forming Teams and Assessing Teamwork," *Joseph Shaeiwitz*
5. "Rubric Development for Assessment of Multi-Disciplinary Team Projects," *Kevin Dahm, James Newell*

ChE Executive Committee Meeting

(Breakfast, Ticketed)
Monday, June 23, 2003
7:00 AM - 8:15 AM

**ChE Lectureship Award
Presentation**

Monday, June 23, 2003
4:30 PM - 6:00 PM

ChE Division Banquet

(Off-site; Ticketed)
Monday, June 23, 2003
6:30 PM - 9:00 PM

Division Business Meeting/Luncheon

(Ticketed)
Tuesday, June 24, 2003
12:30 PM - 2:00 PM

ChE Chairpersons Breakfast

(Ticketed)
Wednesday, June 25, 2003
7:00 AM - 8:15 AM