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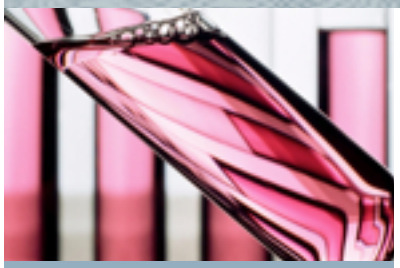
ASEE Chemical Engineering Division Newsletter



IN THIS ISSUE:

A Message from the Chair

Dear Colleagues:

Happy New (School) Year! As you move from the happy Start of Semester towards the dreaded First Exam, please remember to think ahead to June and ASEE 2011! There are some marvelous unique special sessions planned, so we hope to see you all in Vancouver. Remember that the abstract deadline is October 8, so submit early and avoid the rush!

This year, we are anticipating the approval from ASEE national of several new, national level awards for Chemical Engineering educators. Details will be forthcoming, but we are excited and can't wait to share the call for nominations with you as soon as we have clearance to do so (see page 16).

We are continuing to seek ways to compliment and work with the Education Division of AIChE. Through joint sessions, workshops, and novel programming, we are hopeful we can help all of our members reach our shared goal of creating the best possible chemical engineering education for our students.

Planning continues for the ever-approaching 2012 Chemical Engineering Summer School, at the University of Maine. This is once again going to be a great way for newer faculty to learn about best practices in teaching a variety of core subjects, gain access to key resources, and meet like-minded colleagues from across the country and (potentially) the world! If your department has new faculty this year, they will be perfectly positioned to attend; please let them know it's coming and encourage their application when the call is issued.

In honor of our upcoming conference, I visited the online Hall of Fame for the Canada Science and Technology Museum. I was struck by the following quote from Frederick Banting, discoverer of insulin: "It is not within the power of the properly constructed human mind to be satisfied." Even though we are all busy and working hard, we recognize there is always more to learn and more to do. And that's a good thing. So please, if you have questions, comments, or suggestions for ASEE ChED, feel free to contact me at mvigeant@bucknell.edu.

One final note - Lewis Urry, a Canadian Chemical Engineer (University of Toronto, '50) invented the alkaline battery for Eveready in 1959. So –anytime you see that Energizer Bunny in the next month, think of Chemical Engineers and Canada – and remember to get your abstract in!

Margot Vigeant, Bucknell University

2010 SESSION SUMMARIES

from the Louisville meeting

by Polly Piergiovanni, Allen Yang, Don Visco, Christi Patton Luks, Jason Keith, Jim Watters, Randy Lewis, David Silverstein, Allen Hersel, Anton Pintar, and Lale Yurttas

Monday June 21, 2010

[1413] Chemical Engineering Education: Underclass Years

Moderator(s): Polly Piergiovanni, Lafayette College; Allen Yang, Cornell University

The ChE Division sessions started Monday afternoon with "ChE Education: Underclass Years". Karen High from Oklahoma State University reported how showing middle school teachers how to integrate engineering in their classroom can have some exciting results, especially when undergraduate students go into the classroom to work with the middle school students. Next, Kwannin Kuo, from the Lunghwa University of Science and Technology (Taiwan) described a test that has been developed for fundamental concepts in chemistry. Researchers and industrial workers ranked concepts for their importance, and this will be used when measuring students' performance. David Silverstein from the University of Kentucky reported on Freshman Introduction to Engineering courses across the nation. Shanique Grant, Ohio University, spoke on how students perceive a variety of academic support methods, and which they recommend to peers. Finally, Lisa Bullard and Don Visco described some strategies for creating and sustaining a departmental culture.

[1513] Demonstration and Project Enhancements in Chemical Engineering Education

Moderator(s): Don Visco, Tennessee Technological University; Christi Patton Luks, University of Tulsa

Those who attended session 1513, Demonstration and Project Enhancements in Chemical Engineering Education, on Monday afternoon were introduced to four new twists on experimental methods for chemical engineering. The first talk used coffee brewing as a basis for introducing experimental design at the freshman level. In this paper, Stephanie Farrell presented the work that Zenaida Gephardt and she have been performing at Rowan University. Using a French press coffee maker, students consider the effects of water temperature and brew time on coffee strength to develop a predictive model for coffee concentration. The first-year students perform calculations by hand and then are introduced to Stagraphics for comparison of their results. The project was intended to teach students to generate a factorial design with appropriate ranges for their factors and determine the significance of the factors, the curvature of the factors, and the interaction between factors. This information was used by the students to predict the response of the system over their specified range of operating conditions. Their assessment of the project indicated an 85% success rate of student's learning to use basic engineering design at a skilled problem solver or mastery level.

The second presentation by Polly Piergiovanni of Lafayette College discussed an interesting fermentation laboratory exercise that is used in the first year to introduce students to material balance concepts. Through their analysis of this project, students also developed an improved understanding of log-transformed variables which should aid them in reading many of the graphs, such as the Moody chart, that they are asked to use in future courses. Polly and her co-author, J. Ronald Martin, have students in a first-year Introduction to Engineering course grow yeast cells in an airlift reactor. The students measure the glucose consumption and alcohol production using this information to look at the kinetics and the yield of cells on substrate and yield of product on substrate. The experimental apparatus was reasonably inexpensive and easy to use. An unfortunate problem is that the interesting part of the kinetics process occurs several hours after the process is started. The pair developed a simple and clever work-around for the time-constraints of their class session by sending the students home with a vial of yeast with appropriate nutrients the session before. The students were required to

2010 SESSION SUMMARIES CONTINUED

add water to the vial three hours before class began. If they did not do this, the students were still able to perform the experiment in class, but their results were not as interesting. Polly also discussed the assessment of the student understanding of log-transformed variable before and after the experiment during the freshman-level course and again in a sophomore-level course. Students appear to do well with log-transformed variables when using computer tools such as Excel, but persist in having difficulty with hand-graphing on logarithmic paper.

Allen Yang of Cornell University followed the presentation on fermentation with his own on alcohol metabolism. He and his co-authors, Kathryn Kimiduk and Susan Daniel, apply fundamental chemical engineering skills to a team project on human alcohol metabolism. They use simulations with a computer spreadsheet and a "body-on-a-chip" device to examine what happens to alcohol when it is in a human body. They then take these simulators and consider prospective drugs that will alter different parameters in their spreadsheet model. Some students are given drugs that are effective in correcting the given problem while others are given drugs that are actually detrimental. The spreadsheet tool appears to be an excellent way for students to see view the human metabolism. The students look at the degradation of ethanol into acetaldehyde and acetic acid in various parts of the body. Allen's students (as well as many in this audience) were excited to see the metabolic process broken down into a traditional mass-and-energy-balance schematic diagram. This was a very useful tool that allowed the students to see the power behind the methods taught in a typical MEB course.

The final paper by Baba Abdul and colleagues at Washington State University motivated many to consider ways that their research could be brought into the classroom. This team has developed a multichannel evaporator using novel open-coil capillary channels. They have developed a way for third-year students to stretch their understanding of heat and mass-transfer principles while they conducted tests on this new design. Examining systems that are not well-studied improves the critical-thinking skills of the students.

[1613] Chemstation Leactureship Award and Presentation

Moderator(s): Jason Keith, Michigan Technological University

Late Monday afternoon the Chemical Engineering Division Lectureship sponsored by Chemstations was delivered by this year's awardee, Dr. Frank Doyle, who is Associate Dean for Research and also holds the Duncan and Suzanne Mellichamp Endowed Chair in Process Control in the Department of Chemical Engineering at the University of California, Santa Barbara. In his talk entitled "Research at the Interface Between Control and Biology, Dr. Doyle discussed his group's efforts on three problems:

- Understanding the cell-autonomous mammalian circadian clock
- Developing models to explain insolation-driven entrainment of broadcast spawning in corals
- Real-time analysis of blood glucose response and development of an artificial pancreas to provide automated insulin delivery for patients with type 1 diabetes

The presentation showed how classical research in control theory was being applied to solve very exciting research problems and the role chemical engineers can play in collaborating with the medical profession to improve human health.

[1713] ChE Division Awards Dinner

Moderator(s): Jim Watters, University of Louisville; Randy Lewis, Brigham Young University

This year's ChE Division Awards Banquet was held at the Kentucky Derby Museum at Churchill Downs, famed location of the Kentucky Derby every first Saturday in May. Forty six members and guests enjoyed cocktails and hors d'oeuvres while viewing historic and contemporary exhibits related to the Derby, Churchill Downs and horse-racing in general, at this recently renovated facility, a true

2010 SESSION SUMMARIES CONTINUED

Louisville gem. A dinner featuring delicious "Kentucky Cuisine" was followed by the annual presentation of awards (winners are listed elsewhere in the newsletter). The evening was capped by a showing of the very moving video "The Greatest Race" that blends the history of the Derby with the tremendous excitement of the day of the race. The video, featuring clips from several notables in the world of horse racing such as winning jockey Pat Day, and trainers Bob Baffert and Nick Zito, was a fitting end to a wonderfully enjoyable evening.

Tuesday June 22, 2010

[2213] Contemporary Issues in Chemical Engineering Education

Moderator(s): David Silverstein, University of Kentucky; Allen Hersel, Trine University

Tuesday morning led off with a session on "Contemporary Issues in Chemical Engineering Education". Dick Zollars of Washington State opened the session, updating us on the most recent studies of the efficacy of software developed to aid students in visualization and formulation of process material balances. Milo Koretsky from Oregon State then detailed the motivation and underpinnings from the literature on a novel course on data analysis for sophomores. Up next was Patrick Mills of Texas A&M describing an online study and assessment system for teaching about microchemical systems. Finally, Jason Keith described how Michigan Tech is giving their students an opportunity to minor in hydrogen technology.

[2513] Learning By Doing in Chemical Engineering Education 2:15-4:00 p.m.

Moderator(s): Anton Pintar, Michigan Technological University; Lale Yurttas, Texas A&M University

The first paper by Larry Glasgow and David Soldan, Kansas State University, "RECONNECTING CHEMICAL ENGINEERING STUDENTS WITH THE PHYSICAL WORLD described an effort to address the problem of students in engineering and the applied sciences struggling to critically evaluate their work in problem-solving exercises. Student-directed experiments with thermoelectricity, a pump performance module, and a fluid flow experiment of unparalleled flexibility were designed to encourage exploration, to appeal to students with different learning styles, and to promote physical contact between the student and the underlying phenomena.

Shannon O'Brien and J.Patrick Abulencia from Manhattan College followed by presenting, "LEARNING THROUGH REVERSE ENGINEERING." Student's problem solving by repetition was replaced with recognition of familiar patterns, mental representation of problems largely in terms of underlying principles, planning solution strategies, and detecting constraints given in the problem statement. To incorporate these ideas into engineering education, a project called "Reverse Engineering" was created, and employed in a sophomore fluids mechanics class. Students were asked to generate their own problems related to a concept discussed during class and present the solution by breaking it down into its fundamental parts. Two student populations with similar GPAs were assessed over consecutive years. The first group participated in the standard curriculum, while the second group participated in the standard curriculum with the addition of the Reverse Engineering assignment between the second and third exams of the semester. Scores from the second exam showed no significant difference between the two groups. In contrast, comparison of the third and final exams showed a statistically significant difference in favor of the Reverse Engineering assignment.

Next, Paul Golter, Bernard Van Wie, Gary Brown, David Thiessen, and Baba Abdul, Washington State University discussed, "SHIFTING GEARS: MOVING AWAY FROM THE CONTROLLED EXPERIMENTAL MODEL WHILE IMPROVING RIGOR IN ENGINEERING EDUCATION RESEARCH." They describe a hands-on desktop learning module in a fluid mechanics and heat transfer course. A

2010 SESSION SUMMARIES CONTINUED

different class model centered around a project-based approach with design discussions reviewed for critical reasoning. They have been shifting away from traditional quantitative definitions of experimental rigor towards field research responsive to the realities of the classroom.

Peyton Richmond, John Gossage, and Qiang Xu from Lamar University discussed, "AN ALARMING EXPERIENCE: RESULTS OF AN UNDERGRADUATE CHEMICAL PROCESS ALARM LAB MODULE" which described an approach to solving the dilemma of excessive process plant alarms in Distributed Control System (DCS). The problem with over alarming a chemical process is that the operators, whose main responsibility is the safe operation of the process, will have to sift through the alarms to distinguish which are more important and require immediate action. This alarming problem has been identified as a contributing factor in numerous chemical process incidents, such as the Texaco Pembroke Refinery in the UK and others on the Gulf Coast. The authors developed the Alarm Documentation and Rationalization (D&R) Module to introduce alarm management concepts to undergraduate students. Groups of four to five students perform a D&R study on the process alarms for a reformate stabilizer column simulated in HYSYS and similar to such columns at many refineries. The module concluded by allowing the students to implement the alarms and test their operation on an actual DCS system.

Wednesday June 23, 2010

[3413] Chemical Engineering Education: Upperclass Years 12:30-2:00 p.m.

Jim Watters, University of Louisville; Valerie Young, Ohio University

The final ChE session of the meeting began with Lisa Bullard of NC State presenting "PROFESSIONAL DEVELOPMENT BUFFET: FROM BANQUET TO À LA CARTE", a very appropriate title since the session began at 12:30 pm, lunchtime for most of the attendees! Lisa described a 1-hour junior level seminar course which exposed students to a gamut of topics with bearing on ABET 3f through 3j, as well as their ultimate success as engineers. Topics addressed included writing, speaking, interviewing, ethics, and career options, which could be presented as a "banquet", i.e. in one course as at NC State, or "á la carte" spread out among several courses. Monica Cox from Purdue University discussed a comparison of formal and informal relational structures that contributed to student success in summer REU programs. The research concluded that while students generally preferred a structured set of activities to interact with other students, they are more inclined to favor informal or spontaneous interactions with their mentors. Lisa Bullard also presented the third paper on "IDEAS TO CONSIDER FOR NEW CHEMICAL ENGINEERING EDUCATORS: SENIOR DESIGN". This paper is a "must-read" for any instructor newly-assigned to teach the senior or "capstone" design course. Lisa provided a wealth of information on course content, literature and web resources, textbooks, team dynamics, etc., that would well serve someone new to this course. Richard Turton and Joe Shaeiwitz of West Virginia University presented a useful interpretation of materials on teaching batch operations excerpted from their design textbook. A discussion of rationale, equipment design and operations scheduling was highlighted by a student example of batch production of benzaldehyde derivatives, recently completed by students at WVU. The final presentation came from Brigham Young University led by Randy Lewis who presented information on "A REQUIRED SENIOR EXAM TO ASSESS LEARNING OF COURSE COMPETENCIES". The BYU faculty have gone to great lengths to identify their concept of basic competencies in several core undergraduate courses, and use a required senior level exam to ensure all graduates have grasped these competencies.

2010 Winner of the

CHEMICAL ENGINEERING DIVISION LECTURESHIP AWARD

sponsored by Chemstations

Frank Doyle

Duncan and Suzanne Mellichamp Endowed Chair in Process Control, Department of Chemical Engineering University of California, Santa Barbara

Research at the Interface Between Control and Biology

Natural systems are characterized by robust networks of regulatory systems, typically consisting of layers of feedback and feedforward control circuits. These multiscale networks occur at the levels of gene regulation, protein signaling, intercellular coupling, metabolism, and the whole organism. In healthy systems, one can bring the tools from control systems to unravel the underlying design principles and explain robust phenotypes. In disease systems, related tools from control theory can be utilized to identify biomarkers as well as therapeutic interventions. In this talk, I will describe a few of the exciting problems at the interface of control engineering and biology, drawing examples from neuroscience and diabetes.

Biographical Sketch

Dr. FRANCIS J. DOYLE III is the Associate Dean for Research in the College of Engineering at UC, Santa Barbara and he is the Associate Director of the Army Institute for Collaborative Biotechnologies. He holds the Duncan and Suzanne Mellichamp Chair in Process Control in the Department of Chemical Engineering, as well as appointments in the Electrical Engineering Department, and the Biomolecular Science and Engineering Program. He received his B.S.E. from Princeton (1985), C.P.G.S. from Cambridge (1986), and Ph.D. from Caltech (1991), all in Chemical Engineering. Prior to his appointment at UCSB, he has held faculty appointments at Purdue University and the University of Delaware, and held visiting positions at DuPont, Weyerhaeuser, and Stuttgart University. He is the recipient of several research awards (including the NSF National Young Investigator, ONR Young Investigator, Humboldt Research Fellowship) as well as teaching awards (including the Purdue Potter Award, and the ASEE Ray Fahien Award). He is a Fellow of the IEEE, and a Fellow of IFAC. He served as the editor-in-chief of the IEEE Transactions on Control Systems Technology from 2004-2009, and currently holds Associate Editor positions with the Journal of Process Control, the SIAM Journal on Applied Dynamical Systems, and Royal Society's Interface. In 2005, he was awarded the Computing in Chemical Engineering Award from the American Institute of Chemical Engineers for his innovative work in systems biology. His research interests are in systems biology, network science, modeling and analysis of circadian rhythms, drug delivery for diabetes, model-based control, and control of particulate processes.

2010 Award Recipients

William H. Corcoran Award

Dr. Heather Sheardown and **Dr. Donald Woods** of McMaster University of Hamilton, Ontario, Canada are recognized for their paper entitled *"Ideas for Creating and Overcoming Student Silences"***.** This was the best paper published in the previous calendar year in Chemical Engineering Education.

Sponsored by Eastman Chemical Corporation

Joseph J. Martin Award

Dr. Phillip Wankat of Purdue University is recognized for his paper, *"The Role of Chemical Engineering in Engineering Education Research"*. This was the best paper in the ChE Division at the previous ASEE meeting that also appeared in the proceedings.

Ray W. Fahien Award

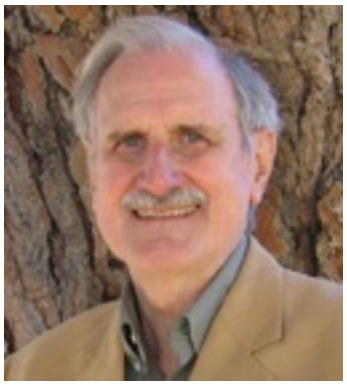
Lisa G. Bullard
North Carolina State University

Dr. Lisa G. Bullard is a Teaching Associate Professor and Director of Undergraduate Studies in the Department of Chemical and Biomolecular Engineering at North Carolina State University. She received her BS in Chemical Engineering from NC State and her Ph.D. in Chemical Engineering from Carnegie Mellon University. She served in engineering and management positions within Eastman Chemical Co. from 1991-2000. A faculty member at NCSU since 2000, Dr. Bullard has won numerous awards for both teaching and advising, including being named as an NCSU Alumni Distinguished Undergraduate Professor, the John Wiley Premier Award for Engineering Education Courseware, NCSU Faculty Advising Award, National Effective Teaching Institute Fellow, NCSU Alumni Outstanding Teacher Award, George H. Blessis Outstanding Undergraduate Advisor Award, ASEE Southeastern Section New Teacher Award, and ASEE-ERM Apprentice Faculty Grant Award. Dr. Bullard's research interests lie in the area of educational scholarship, including teaching and advising effectiveness, academic integrity, process design instruction, and the integration of writing, speaking, and computing within the curriculum.

CACHE Award

Dr. Duncan Mellichamp University of California, Santa Barbara

Duncan Mellichamp was a Research Engineer with Du Pont Textile Fibers for four years. A founding member of Chemical Engineering at the Univ. of Calif., Santa Barbara, he developed the process dynamics and control programs in 1966-67. His pioneering work with computers led to Real-Time Computing; Applications to Data Acquisition and Control (Editor, 1983) and to the award winning undergraduate textbook, Process Dynamics and Control, (3rd Ed: 2010, co-author). He was elected to CACHE early in his career, as trustee (1973-87) and president (1977-78). A Fellow of AIChE and recipient of numerous awards and honors, he is author of over 100 research publications on process modeling and plantwide control. Professor emeritus since 2003, he teaches & researches, pro bono, on profitability measures for plant conceptual designs subject to risk.



Sponsored by the CACHE Corporation

2010 Award Recipients, cont.

ASEE Award: Benjamin Garver Lamme Award

James Stice
Bob R. Dorsey Professor of Engineering (Emeritus) University of Texas at Austin

James Stice gave the first known college course on teaching engineering; created and administered the first engineering teaching center and subsequently the first campus- wide teaching center; introduced to engineering education the concepts of learning objectives, learning styles, and new faculty orientation; and was a pioneer in technology- based instruction. In the hundreds of teaching workshops he has given on campuses across the country, he has made many thousands of engineering educators better teachers and hundreds of thousands of their students better engineers.

The Benjamin Garver Lamme Award was established in 1928, and recognizes excellence in teaching, contributions to research and technical literature, and achievements that advance the profession of engineering college administration.

ASEE Award: Meriam/Wiley Distinguished Author Award

Antonios G. Mikos
Louis Calder Professor Bioengineering, Chemical & Biomolecular Engineering Rice University

Antonios G. Mikos is the Louis Calder Professor of Bioengineering and Chemical and Biomolecular Engineering at Rice University. He received his Dipl.Eng. (1983) from the Aristotle University of Thessaloniki, Greece, and his Ph.D. (1988) in chemical engineering from Purdue University. He was a postdoctoral researcher at the Massachusetts Institute of Technology and the Harvard Medical School before joining the Rice Faculty in 1992 as an assistant professor. Mikos' research focuses on the synthesis, processing, and evaluation of new biomaterials for use as scaffolds for tissue engineering, as carriers for controlled drug delivery, and as non-viral vectors for gene therapy. His work has led to the development of novel orthopaedic, dental, cardiovascular, neurologic, and ophthalmologic biomaterials. He is the author of over 400 publications and 25 patents. He is the editor of 14 books and the author of one textbook. He has been cited over 15,000 times and has an h-index of 67. Mikos is a Fellow of the American Institute for Medical and Biological Engineering, a Fellow of the International Union of Societies for Biomaterials Science and Engineering, and a Fellow of the Biomedical Engineering Society. His numerous awards include the Alpha Chi Sigma Award for Chemical Engineering Research of the American Institute of Chemical Engineers, and the Robert A. Pritzker Distinguished Lecturer Award of the Biomedical Engineering Society.

The Meriam/Wiley Distinguished Author Award recognizes authorship of an outstanding new engineering textbook that embodies technical excellence, clarity of presentation, and strong relevance to engineering practice. Jointly endowed by Professor James L. Meriam and John Wiley & Sons, the award consists of a $2,000 honorarium, a framed certificate, and reimbursement of transportation costs to the ASEE Annual Conference.

ASEE Award: Fellow

Jennifer Sinclair-Curtis
University of Florida

The fellow grade of membership is conferred upon an active member of ASEE who has been a member for at least 10 years, in recognition of outstanding contributions to engineering or engineering technology education.

ASEE Election: CHAIR-ELECT, ZONE III

Christi Patton-Luks
University of Tulsa

Christi Patton-Luks is Applied Professor of Chemical Engineering at the University of Tulsa. She earned a B.S. in Chemical Engineering from Texas A&M University, an M.S. in Applied Mathematics from the University of Tulsa, and a Ph.D. in Chemical Engineering from the University of Tulsa. In addition to teaching courses, such as ChE Problem Solving, Mass Transfer, and Process Control, Patton-Luks serves as faculty adviser to the student chapters of the Society of Women Engineers, Omega Chi Epsilon, and Engineers Without Borders. She has received multiple teaching awards at the college and university level as well as several awards for community service. She has been actively involved in several multidisciplinary research and design projects, which resulted in her being awarded the Challenge X Outstanding Faculty Adviser award in 2005 and being named one of Tulsa's Eco-Heroes in 2008.

Call for Nominations

The Chemical Engineering Division of ASEE presents awards to outstanding chemical engineering educators at the Division Banquet during the annual ASEE meeting. Nominations of candidates for awards to be presented at the 2011 meeting in Vancouver, BC are due by January 15, 2011, with the winners notified in March 2011. Please consider nominating one of your faculty or colleague at another school for an ASEE Chemical Engineering Division Award.

Award packets should be sent (as a single file) to:

Valerie Young
ASEE ChE Division Awards Co-Chair
youngv@ohio.edu

Instructions for Assembling Nomination Packets

Please assemble the nomination package in the following order. These instructions parallel those available at www.asee.org. Nominating a faculty member for an award implies that the nominee has been informed and consents to the nomination and conditions of the award.

Do not submit to ASEE headquarters or through their web page.

Submit nominations electronically following the procedure described below to the ASEE ChE Division Awards Co-Chairs, Valerie Young and Jason Keith, at youngv@ohio.edu by January 15, 2011.

Paper submissions will not be accepted.

Nominations should be sent as ONE Word or PDF file. The document should have sections for nominee information, citation, rationale, curriculum vitae, additional information as required for that award, and letters of support. It is the nominator's responsibility to assemble all of the pertinent information into ONE electronic document that committee members can easily read.

1. Nominee Information – list the information found on the general ASEE awards form that may be found http://www.asee.org/members/awards/nomForm_paper.cfm
2. Include a 100-word maximum Citation, which will be used if the nominee wins the award.
3. Include a 700-word maximum description of the Rationale for the Nomination.
4. Include a Curriculum Vitae containing the following information: Degrees earned (university and granting dates); other postgraduate study; record of positions held; publications, including all books, published papers and articles; ASEE activities and offices held; awards, honors and inventions, etc.
5. Include Other Supporting Information as required for that particular award. Please see the Chemical Engineering Division web site for details on particular award criteria.
6. Include a maximum of 8 Letters of Support for the nomination. These letters may be from peers, students, and/or former students as appropriate to the award.

Any nominee for an award may be re-nominated using the original nomination package for one additional year only by sending an email to the Awards Chair along with the electronic award nomination. However, reference letters should be updated for the year of the renewed application. After the re-nomination a complete new nomination is required.

Submit the entire nomination as ONE electronic file to youngv@ohio.edu by January 15, 2011. General, procedural or other questions about the awards should be directed to Valerie Young at youngv@ohio.edu or 740-593-1496.

Contact the Awards Committee Co-Chair, Valerie Young (youngv@ohio.edu) or consult the Division website (http://www.asee-ched.org) for more information.

Announcing ASEE ChE Division Awards for 2011

The Chemstations Lectureship Award

This award, sponsored by Chemstations, is presented to a distinguished engineering educator to recognize and to encourage outstanding achievement in an important field of fundamental chemical engineering theory or practice. The individual shall demonstrate achievement through the formulation of fundamental theory or principles, improvements of lasting influence to chemical engineering education with books and/or articles, and the demonstration of success as a teacher. In addition, evidence of the ability to conduct original, sound, and productive research, and an interest in the progression of chemical engineering through participation in professional and educational societies shall be demonstrated. The recipient presents a lecture at the ASEE summer school. The award consists of a $3,000 honorarium, $500 travel allowance, and a commemorative plaque presented at the Chemical Engineering Division Banquet of the ASEE Annual Conference.

CACHE Award for Excellence in Computing in Chemical Engineering Education

This award, sponsored by the CACHE Corporation, is presented for significant contributions in the development of computer aids for chemical engineering education. The award consists of a $1,000 honorarium and a commemorative plaque presented at the Chemical Engineering Division Banquet of the ASEE Annual Conference.

Ray W. Fahien Award

This award is given in honor of Ray Fahien, who was editor of Chemical Engineering Education from 1967-1995, and who was effectively the founding father of the journal, establishing it as a premier publication vehicle in the field of chemical engineering education. Professor Fahien selflessly gave his time and talents to advance pedagogical scholarship, particularly in the careers of young educators, through his dedication to the journal and the profession. The award is given annually to an educator who has shown evidence of vision and contribution to chemical engineering education, consists of a $1,500 honorarium and a commemorative plaque presented at the Chemical Engineering Division Banquet of the ASEE Annual Conference. See the Division web site for more details on the award criteria. Educators who have been faculty members for not more than ten years as of July 1st in the year of the award are eligible.

Lifetime Achievement in Chemical Engineering Pedagogical Scholarship

This award will normally be given for lifetime achievement, recognizing a sustained career of pedagogical scholarship that not only caused innovative and substantial changes, but also inspired younger educators to new behaviors that benefit students in Chemical Engineering. The award will be presented on an as-merited basis, not necessarily annually. Acceptance of the award implies the obligation to attend the Chemical Engineering Division Awards Banquet at the ASEE Annual Conference.

The following do not require a formal nomination packet:

William H. Corcoran Award

This award, sponsored by Eastman Chemical Corporation, is presented each year to the author of the most outstanding article published in Chemical Engineering Education. Nominations are not accepted. All published papers in a calendar year are automatically considered. The award consists of a $1500 honorarium (per paper) and a commemorative plaque presented at the Chemical Engineering Division Banquet of the ASEE Annual Conference.

Best Poster Award

The Best Poster Award is presented for the most outstanding Chemical Engineering Division poster presentation at the ASEE Annual Conference. Nominations are not accepted. Papers must be presented at the chemical engineering division poster session to be considered. The award consists of a commemorative plaque presented at the Chemical Engineering Division Banquet of the ASEE Annual Conference.

Joseph J. Martin Award

The Joseph J. Martin Award is presented for the most outstanding Chemical Engineering Division paper presented at the ASEE Annual Conference. Nominations are not accepted. All papers presented that also appear in the conference proceedings are automatically considered. The award consists of a commemorative plaque presented at the Chemical Engineering Division Banquet of the ASEE Annual Conference.

A condition of receiving most of the above awards is attendance at the Chemical Engineering Division banquet at the 2011 ASEE Meeting in Vancouver, BC June 26 - 29.

Nomination Deadline: January 15, 2011 For more information on ChE Division awards, see http://www.asee-ched.org/

CALL for PAPERS!

2011 ASEE Annual Meeting June 26 - 29, 2011
Vancouver, BC, Canada

The Chemical Engineering Division invites contributions for 1) topical sessions on all topics relevant to chemical engineering education, 2) panel sessions organized to address salient themes in chemical engineering education, 3) interactive workshops, and 4) distinguished lecture nominations.

TOPICAL SESSIONS:
Abstract submissions are welcomed; they should be approximately one page in length and provide a clear objective statement, its relevance to the chemical engineering community, any assessment methods used, and results. Topic areas include, but are not limited to, the following:

- Curriculum (revisions / enhancement; nontraditional applications; innovative concentrations or experiences; incorporation of safety; ethics and the environment),
- Courses (innovation in laboratory or classroom, including design; managing capstone courses; new required or elective courses),
- Department / Faculty (ABET processes; program outcomes and assessment; contemporary faculty issues; mentoring new faculty; professional development), and
- Students (advising and career development; nontraditional and underrepresented student populations; recruitment, outreach, and retention; undergraduate research).

SPECIAL SESSIONS:
Panels, posters, and presentation-rich sessions are being organized. There are two mechanisms for contributing to the ASEE ChED Special Sessions.

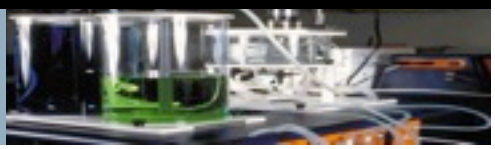
Mechanism #1: Submit an individual abstract through the regular Monolith Call for Papers mechanism listing yourself as author (described on the ASEE conference web site: http://www.asee.org/conferences/annual/2011/index.cfm, click login in top right corner of the header). As for all ASEE conference submissions, a written paper will also be required and peer-reviewed. In order to identify your paper as a submission for this special session, please give it the title of Special Session Title: XXXXX. It is recommended that you also contact the appropriate organizer to let them know you'll be submitting a full paper.

Mechanism #2: Submit abstracts to your organizer listed below no later than October 5, 2010. Your organizer will compile these abstracts and then submit one paper on everyone's behalf via Monolith (the new smoothpaper). This will be listed as one paper with the organizers name first followed by all other contributing authors. The final paper will be a compilation of all contributors' extended abstracts (individually 1 to 2 pages in length); the entire article will be peer-reviewed.

NOTE: Contributions from Mechanism #1 and Mechanism #2 will both be included in the session. The currently identified topic areas are (detailed descriptions on the following pages):

- Educational Methods and Tools to Encourage Conceptual Learning (Milo Koretsky koretsm@engr.orst.edu, David Silverstein silverdl@engr.uky.edu)
- Interdisciplinary Course Design Opportunities for Chemical Engineers (Don Visco dvisco@tntech.edu, Bernard J Van Wie bvanwie@wsu.edu)
- Poster Session for Tenure-Track Faculty (Don Visco dvisco@tntech.edu, Jason Keith jmkeith@mtu.edu)
- The Impact of the Gulf Coast Oil Spill on Chemical Engineering Education (Tamara Floyd Smith tamara.floyd@tuskegee.edu)

CALL for PAPERS!



- New and Evolving Cultures in Chemical Engineering Departments (David Silverstein SilverDL@engr.uky.edu, Lisa Bullard lisa_bullard@ncsu.edu)
- K-12 Outreach with a faculty perspectives panel and a teacher perspectives panel (Christi Luks patton@utulsa.edu, Taryn Bayles tbayles@umbc.edu)
- Preparation, Execution and Integration of Chemical Engineering Courses Related to Current Emerging Areas (Arthur Felse afelse@northwestern.edu)
- Teaching Chemical Engineering Concepts to Non-chemical Engineers (Arthur Felse afelse@northwestern.edu)
- Unit Operations Lab Bazaar (Michael E. Prudich prudich@ohio.edu)
- What Works to Retain Students in Chemical Engineering Programs (Don Visco dvisco@tntech.edu, Adrienne Minerick minerick@mtu.edu)
- High Performance Learning Environments [Hi-PeLE] (Pedro Arce PArce@tntech.edu)

INTERACTIVE WORKSHOP APPLICATIONS & DISTINGUISHED LECTURE NOMINATIONS:
Please email the chair (minerick@mtu.edu) to receive application information. The proposed workshop idea will require full contact information for all facilitators, a complete description of the topic, a list of equipment / resources requested, and a sample schedule for the workshop. Distinguished lecture nominations require a talk abstract, complete biographical sketch for the candidate, and a description of the riveting lecture of interest to the entire ASEE membership.

Deadline dates for the 2011 Annual Conference (Vancouver, BC):
- Sept 6 – Oct 8, 2010 Abstract Submission Process Open
- Sept 6 - Oct 15, 2010 Workshop Proposals & Distinguished Lecture Nominations Due
- Dec 6, 2010 – Jan 7, 2011 Draft Paper Submission Process Open
- Feb 26 - Mar 12, 2011 Final Paper Submission Process Open
- Apr 1, 2011 Author Registration Deadline
- **June 26 - 29, 2011 See you in Vancouver, BC!!!**

For more information, contact the program chair: Adrienne Minerick, Department of Chemical Engineering, Michigan Technological University, Houghton, MI 49931. Phone: 906-487-2796, Email: minerick@mtu.edu

Special Session Descriptions

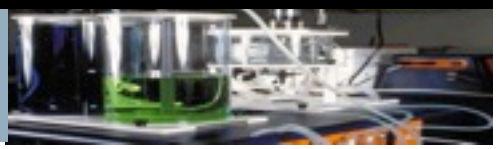
Educational Methods and Tools to Encourage Conceptual Learning

Session coordinators: Prof. Milo Koretsky, School of Chemical, Biological, and Environmental Engineering, Oregon State University, Corvallis, OR 97331; (541) 737-4591 (O); milo.koretsky@oregonstate.edu

Prof. David Silverstein, Department of Chemical Engineering, University of Kentucky, Paducah, KY 42002; (270) 534-3132 (O); SilverDL@engr.uky.edu

The goal of this special session is to provide educators with an overview of specific educational methods and tools that they can bring back to the classroom to encourage their students to think deeply about the concepts central to core chemical engineering courses. Presentations will focus on the use of concept inventories, peer instruction and conceptests, repair of misconceptions, and technology-based tools to facilitate active pedagogies. The session will culminate in a panel discussion to address barriers to implementing these methods. The intent of this session is to create a dialog amongst educators and a community of instructors interested in increasing attention of their students towards learning core concepts in the classroom.

Special Session Descriptions



Interdisciplinary Course Design Opportunities for Chemical Engineers

Session coordinators: Prof. Donald P. Visco, Jr., Department of Chemical Engineering, Tennessee Technological University, Cookeville, TN 38505; 931-372-3606 (O); dvisco@tntech.edu

Prof. Bernard J. Van Wie, Voiland School of Chemical Engineering & Bioengineering, Washington State University, Pullman, WA 99164-2710; 509-335-4103 (O); bvanwie@wsu.edu

There are courses within chemical engineering curricula with interdisciplinary impact and others that can benefit from input from a breadth of engineering disciplines. For example chemical, mechanical, civil and bio- engineers all need courses from the thermal and transport series. At the same time there are many instances in which the various disciplines are intertwined with computer & electrical engineering principles such as in courses that focus on process control, hydroelectric power, heat engines, etc. Other elective courses taught within the chemical engineering discipline attract non-chemical engineering students – topics such as bio-energy, materials, the environment and biotechnology serve as examples. Finally, there are new capstone courses that involve entrepreneurship where projects require interdisciplinary teams that mirror those seen in industry. Many of these courses are team taught by two or more faculty representing more than one discipline. In this session, we invite submissions from faculty who have designed and/or taught such multidisciplinary courses. Of particular interest are novel pedagogical approaches suitable for such classes where faculty use collaborative, cooperative, hands-on, active, problem and project-based paradigms to enhance learning. In addition to the course description, a discussion of relevant logistical issues such as dividing up responsibilities, assigning faculty credit and origin of the interaction is encouraged.

Poster Session for Tenure-Track Faculty

Session coordinators: Prof. Donald P. Visco, Jr., Department of Chemical Engineering, Tennessee Technological University, Cookeville, TN 38505; 931-372-3606 (O); dvisco@tntech.edu

Prof. Jason M. Keith, Department of Chemical Engineering, Michigan Technological University, Houghton, MI 49931; 906-487-2106 (O); jmkeith@mtu.edu

Are you looking for an opportunity to share your research efforts and your pedagogical interests with your peers at other institutions? Perhaps start a collaboration with faculty at another university to aid the goals of your research and/or teaching? We invite non-tenured faculty (at the tenure-track or instructor level) to present both their research and teaching efforts in a special poster session. About half of the poster should contain information on your research related pursuits while the rest should contain information on your teaching efforts/interests.

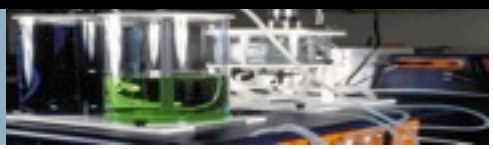
The Impact of the Gulf Coast Oil Spill on Chemical Engineering Education

Session Coordinator: Tamara Floyd Smith, Ph.D., PE, Chemical Engineering, Tuskegee University, Tuskegee, AL 36088; 334-727-8975 (O); tamara.floyd@tuskegee.edu

This session will include papers that describe the current and proposed impact that the Gulf Coast oil spill has on chemical engineering education. Appropriate topics are wide ranging. Examples include the incorporation of lessons learned into classroom content and the Gulf Coast Oil Spill and ABET outcomes f, h or j.

Please provide information to special session coordinators by October 5th, Abstract deadline via ASEEs Monolith is October 8th, 2010. Submit via the ASEE conference web site: http://www.asee.org/conferences/annual/2011/index.cfm, click login in top right corner of the header.

Special Session Descriptions



New and Evolving Cultures in Chemical Engineering Departments

Session coordinators: Prof. David Silverstein, Department of Chemical Engineering, University of Kentucky, Paducah, KY 42002; (270) 534-3132 (O); SilverDL@engr.uky.edu

Prof. Lisa Bullard, Department of Chemical Engineering, North Carolina State University, Raleigh, NC 27695; 919-515-7455 (O); lisa_bullard@ncsu.edu

The Chemical Engineering Division is planning a Special Session facilitating a discussion around effective methods for establishing or changing department cultures in chemical engineering departments. For the purposes of this session, department culture refers the relationships, activities, and attitudes held by students and faculty in an academic unit. Presenters will be given the opportunity to describe the goals and objectives reflecting intended changes in department culture, the specific mechanisms intended to effect changes, and the results from implementing their plans. The session will culminate with a panel discussion interacting with the audience.

Preparation, Execution and Integration of Chemical Engineering Courses Related to Current Emerging Areas

Session coordinator: Arthur Felse, Master of Biotechnology Program and Department of Chemical & Biological Engineering, Northwestern University, Evanston, IL 60208; 847-491-7387 (O); afelse@northwestern.edu

Chemical engineering principles are applied in increasingly diverse, emerging areas such as biotechnology, nanotechnology, green chemistry, climate change, sustainability, clean energy, etc. This session will include papers on preparation, delivery and assessment of courses in chemical engineering that are related to such emerging areas. Also included in this session are papers that discuss integration of emerging topics in traditional chemical engineering courses such as reaction engineering, transport processes, and stoichiometry. This session will provide a platform for chemical engineering educators to discuss the progression and future of chemical engineering applications in emerging fields and the prudence of including those in chemical engineering curriculum/courses. Participants will benefit from the several contemporary ideas and examples for inclusion in various chemical engineering courses.

Teaching Chemical Engineering Concepts to Non-chemical Engineers

Session coordinator: Arthur Felse, Master of Biotechnology Program and Department of Chemical & Biological Engineering, Northwestern University, Evanston, IL 60208; 847-491-7387 (O); afelse@northwestern.edu

Several chemical engineering concepts are becoming an essential part of the knowledge matrix for scientists and engineers working in numerous cross-disciplinary areas. Consequently, there is a desire for students and professionals from other disciples to learn the basic and sometimes advanced concepts of chemical engineering. This session will discuss the various challenges, methodologies, assessment and nuances in teaching chemical engineering topics to non-chemical engineers outside of the traditional chemical engineering curriculum. Papers that explore the teaching of chemical engineering concepts to biologists, chemists, physicists, bioengineers, mechanical engineers, environmental engineers, food scientists, pharmaceutical scientists, etc. will be included in this session. Contributions on topics related to cross-disciplinary chemical engineering instruction in the form of lectures courses, lab courses, survey courses, independent study, project work or a combination of these are strongly encouraged. It is expected that this session will provide the participants with several new thoughts and ideas on design, development, and implementation of chemical engineering courses for non-chemical engineering students.

Special Session Descriptions

Unit Operations Lab Bazaar

Session coordinator: Prof. Michael E. Prudich, Department of Chemical Engineering, Ohio University, Athens, OH 45701; (740) 593-1501 (O); prudich@ohio.edu

It is envisioned that this poster session will be a sharing of information regarding novel unit operations laboratory experiments and/or experiences as well as innovations related to more traditional unit operations laboratory topics. Innovations and experiences in terms of overall unit operations laboratory course design and course assessment would also be legitimate topics for a poster presentation. Ideally, we will all be able to go home with a number of ideas that might be applied to the improvement of the unit operations laboratories at our home institutions.

What Works to Retain Students in Chemical Engineering Programs

Session coordinators: Prof. Donald P. Visco, Jr., Department of Chemical Engineering, Tennessee Technological University, Cookeville, TN 38505; 931-372-3606 (O); dvisco@tntech.edu

Prof. Adrienne R. Minerick, Department of Chemical Engineering, Michigan Technological University, Houghton, MI 49931; 906-487-2796(O); minerick@mtu.edu

Student retention is an important issue that every department and college must face, especially as more states link their appropriation to student retention rates (and shift from entering student head count). Some examples of topics include: Are there factors which contribute to the retention of students of differing demographics (gender, race / ethnicity, first generation college students, etc.)? How do course-level aspects, especially at the Freshman/Sophomore level, contribute to retention or attrition? What approaches most enthuse students to continue to study chemical engineering? Accordingly, this session looks to attract submissions from those individuals involved in retention activities at their school. Detailed studies and anecdotal observations are both welcome. We encourage your submission to this session in order to share these practices with your colleagues at other institutions.

High Performance Learning Environments (HiPeLE)

Session Coordinator: Pedro E. Arce, PhD, Professor and Chair, Department of Chemical Engineering, Tennessee Technological University, Cookeville, TN 38505; 931-372-3189 (O); PArce@tntech.edu

Sound pedagogical and high retention instructional environments are built on four key pedagogical principles: learned-centered, knowledge-centered, assessment-centered, and community centered. These effective help students to critically explore a new concept build a fact-knowledge pool, and when to apply it, eliminate misconceptions, and connect with the (engineering) culture to be effective professionals. High Performance Learning Environments or Hi-PeLE are unique in the sense that they capture the four centerness described above not only by using typical learning cycles but also by adding a linear engineering sequence (LES). This important aspect uses functional-team based learning and highlights the use of an experimental prototype (or other student-based outcomes) that it is not usually present in others environments. This aspect promotes an important innovation and creativity from the students. Hi-PeLE also promotes lifelong learning by documentation cycles and reduces effectively the number of subjects in a course by employing “principal objects of knowledge” (POK’s). In this session, authors are invited to share experiences in Hi-PeLE type of environments and highlight, in particular, aspects related to improve the student skills in innovation, creativity, and critical thinking as well as the role of teams.

Please provide information to special session coordinators by October 5th, Abstract deadline via ASEEs Monolith is October 8th, 2010. Submit via the ASEE conference web site: http://www.asee.org/conferences/annual/2011/index.cfm, click login in top right corner of the header.

Selection of Ongoing Scholarly Research related to Chemical Engineering Education:

The Chemical Engineering Division is beginning to compile a list of ongoing research efforts. We're aware this is not an exhaustive list (by a long shot!), so please nominate your work to be included in our list which will be published again in the spring newsletter. Please contact Margot Vigeant at mvigeant@bucknell.edu with updates.

ciHUB – a selection of concept inventories, including those relevant to Chemical Engineering, on the web. http://cihub.org/

ConcepTests & ScreenCasts for Chemical Engineering Courses – Clicker questions and supplemental video material for common Chemical Engineering courses. http://www.learncheme.com/page/welcome-1

Thermal and Transport Concept Inventory – A concept inventory covering concepts related to a wide range of transport topics. http://www.thermalinventory.com/

Virtual Chemical Vapor Deposition – A realistic 3-D laboratory simulation to teach design of experiments with CVD application. http://cbee.oregonstate.edu/education/VirtualCVD/

Working on a study that you would like highlighted in future newsletters? Email your link and one-sentence blurb to Margot Vigeant at mvigeant@bucknell.edu

New Division Awards: Awaiting Approval

The Chemical Engineering Division is pleased to announce three new awards in the final stages of approval. The awards are designed to grow the numbers of chemical engineering educators active in ASEE.

ChE Division Graduate Student "Future Faculty" Grant

All current graduate students in a chemical engineering or related program are eligible, and they must be nominated by a faculty member who is a member of ASEE. There will be at most one grant per year to subsidize travel to the ASEE Annual Conference. This grant is intended to build upon the existing ASEE "Bring-A-Student" program. Preference will be given to first- time attendees who have coauthored a paper and will be giving an oral or poster presentation at the ASEE Annual Conference. The nomination consists of the student's resume, a one-page letter of support from the faculty member, and the abstract of any ASEE talks with the student as co-author. Nominations are due at the abstract submission deadline. Applications will be reviewed by a committee consisting of the awards chairs and directors. If there is a conflict of interest, the directors will identify another member of the committee. Grants will be announced about two weeks after the paper acceptance deadline. The amount of the grant is $500 and will include a ticket to the ChE Division Banquet. A condition of the grant is that the grant winner attend the meeting and present their paper. The grant will be presented at the ChE Division Banquet. The grant winner will be provided with a ChE Division mentor (an individual determined by the ASEE CHED executive committee) other than their nominating faculty mentor who will meet with the grant winner for both formal and informal interactions during the meeting.

ChE Division "Engineering Education" Mentoring Grant

All chemical engineering or chemistry faculty who have not attended an ASEE Annual Conference in the past five years are eligible for this grant. More than one grant may be given annually. A faculty member may apply for this grant by the last day of February. The application consists of a curriculum vitae and a maximum one-page statement of interests in educational scholarship. Applications will be reviewed by a committee consisting of the awards chairs and directors. If there is a conflict of interest, the directors will identify another member of the committee. The grant will be a ticket to the ChE Division Banquet. The grant winner(s) will be provided with a ChE Division mentor (an individual determined by the ASEE CHED executive committee) who will meet with the grant winner for both formal and informal interactions during the meeting.

ChE Division Mentoring and Travel Grant for New Attendees

All chemical engineering or chemistry faculty who have not attended an ASEE Annual Conference are eligible. There will be at most two grants per year. A faculty member may apply for this grant by the end of October to attend the following year's conference. The faculty member must have submitted an abstract for that conference. The application consists of a curriculum vitae, a maximum one-page statement of interests in educational scholarship and a copy of any submitted abstracts. The faculty member may or may not be collaborating with other faculty who are active in ASEE. Applications will be reviewed by a committee consisting of the awards chairs and directors. If there is a conflict of interest, the directors will identify another member of the committee. The amount of the grant is $400 and will include a ticket to the ChE Division Banquet. A condition of the grant is that the grant winner attend the meeting and present their paper. The grant will be presented at the ChE Division Banquet. The grant winner(s) will be provided with a ChE Division mentor (an individual determined by the ASEE CHED executive committee) who will meet with the grant winner for both formal and informal interactions during the meeting.