



# Freshman Programs Division Newsletter

Fall 2004 Edition

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## *ASEE Vision Statement*

"ASEE will serve as the premier multidisciplinary society for individuals and organizations committed to advancing excellence in all aspects of engineering and engineering technology education."

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## A Message from the Chair



Another Annual Conference has come and gone. The 2004 Conference at Salt Lake City has again given members the opportunities to share ideas in the broad area of freshmen programs and curriculum; the CAPS system has streamlined the submission and review process for papers to the ASEE Annual Conference and the division continues to work on other ways to share ideas electronically. The number of abstract submissions and attendance in our sessions indicates the continued strong interest in freshman programs.

The FPD programs at the conference are detailed elsewhere in this newsletter. We were pleased that there were seven division

technical sessions and one session co-sponsored with the Liberal Education Division to accommodate all this interest. I hope you 'stole' as many ideas as I have from the presenters in the sessions and by networking with others dealing with the challenges in freshman programs. As Program Chair for the 2004 conference, I would like to thank the presenters for providing our program and the moderators and reviewers for their hard work in making the sessions happen.

We are anxious to receive your input on ways the Freshman Programs Division can serve you better or how you can serve the division. If you are interested in serving on the ex-

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## Call for Papers - Portland 2005

In this newsletter is the official Freshman Programs Division (FPD) "call for papers" for the 2005 Annual Conference in Portland, Oregon. For the uninitiated, some explanation may be in order. First, though the official call for papers does not include any dates, they do exist, and you

should know them. Abstract submission, the initial step in getting a paper accepted for the conference, has already begun on August 2. **Abstract submission closes on October 6,** but the last-minute rush makes it difficult to

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# CALL FOR PAPERS

## Freshman Programs Division

2005 ASEE Annual Conference  
Portland, Oregon

June 12—15, 2005

The Freshman Programs Division seeks papers relating to educational activities associated with first-year engineering students. Topics under consideration include those below, and papers on other pertinent topics are very welcome.

- Instructional use of computers and computer software,
- Creative problem-solving courses,
- Project-based and hands-on courses,
- Innovative approaches to first-year engineering education,
- Integrating design into the freshman year,
- Integrated curricula for the freshman year,
- Advising and orientation programs,
- Retention programs,
- Pre-college programs, and
- Linkages with K-12 education

Peer review occurs for both abstracts and papers. Final papers must be written and accepted in order for the work to be presented at the annual conference, as the Freshman Programs Division has a Publish-to-Present requirement. Submission of abstracts and final papers will be via the CAPS system according to ASEE deadlines. **Abstract submission closes October 6, 2004.** Visit [www.ASEE.org](http://www.ASEE.org)

For more information, contact:

Robert E Montgomery, Associate Professor, Purdue University, Department of Engineering Education, 400 Centennial Mall Drive, West Lafayette, IN 47907-2016  
Phone: (765) 494-3890, Fax: (765) 494-5819, E-mail: [rmont@purdue.edu](mailto:rmont@purdue.edu)

## FPD Business Meeting

Following a robust lunch, thirty-four members of the Freshman Programs Division, led by Division Chair Mara Knott, conducted business at the Division's annual business meeting in Salt Lake City.

Awards were presented for the 2004 conference best papers. First place went to William Oakes and Michael Thompson for their paper titled, "Integration of Service Learning into a Freshman Engineering Course." Second place went to Jennifer Light and Denny Davis for their paper titled, "Impacts of a Combined Living-Learning Community on Attitudes and College Engagement of Engineering Freshmen."

The Division elected three members to the Executive Committee. They are Rick Freuler who will serve three years, and Gunter Georgi and Sandy Wood who will each serve four years. Officers for the upcoming year are listed in the "Meet the Board" article. It was announced that the Division's By-Laws will be revised in the upcoming year. This revision is necessary to clarify the abstract submittal process in CAPS.

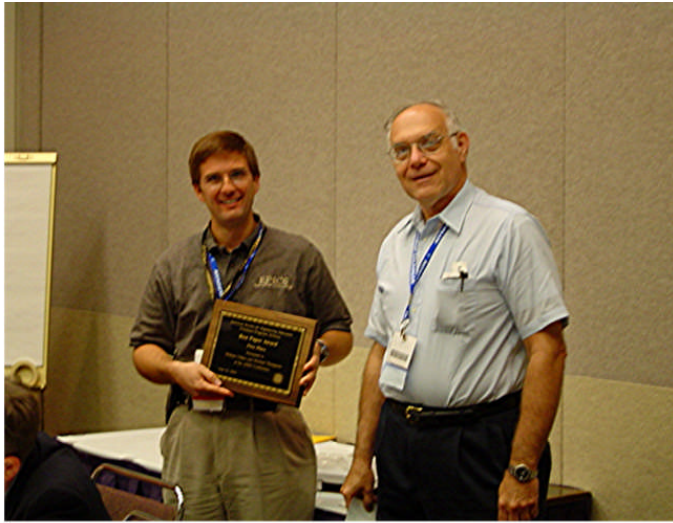


Some members expressed concern on the naming of the division "Freshman Programs" and suggested it might be more accurate to name the division "First-Year Programs."

The Executive Committee will be considering enhancing the best paper awards for future years, including items such as the monetary amounts, plaques for multiple authors, possibly a best presentation award, etc.

Keith Mazachek  
Washburn University  
Secretary/Treasurer

# 2004 FPD Best Paper Competition



Winners of the 2004 Freshman Programs Division Paper Competition were:

**First Place (left photo):**

**”Integration of Service Learning into a Freshman Engineering Course”**

William Oakes & Michael Thompson, Purdue University

**Abstract**

Service learning (SL) is a pedagogy that integrates community service into the academic experience. Studies have shown that service learning can positively impact student learning, provides a rich environment for students to learn the “soft” skills that are often difficult to teach in traditional classes, can increase retention in participants, and can broaden the view of

engineering among the participants. Service-learning can greatly enhance the services of local community service organizations that lack the technical staffs and/or resources to take full advantage of current technology. The potential benefits of service learning have motivated the department of Freshman Engineering at Purdue to begin implementing service learning into the first-year engineering courses. 143 students participated in an service-learning experience at Purdue University in the Fall semester of 2003. Student and community partner evaluations have shown initial success and in depth investigations are underway to characterize these experiences.

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## Call for Papers

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navigate the CAPS system within the last 24 to 48 hours prior to closing. Therefore, it is important to have abstracts ready somewhat before the deadline, and submit them at least a couple of days early, just to be safe. Leave the last-minute stuff to others!

The review of abstracts lasts only three weeks, with notifications to authors going out October 27. At that point, the draft paper development must be in full swing by authors, as submission of draft papers begins November 16, terminating on January 5, 2005. Authors will be notified of the status of their papers by February 9, 2005. Accepted papers, including **both** those needing revision and those not, must be submitted, beginning February 7, 2005, by March 9, 2005. Note that the FPD has a Publish-to-Present requirement. What this means to authors is that if your abstract is accepted, you are **not** guar-

anteed a spot in a technical session to present your work. To be assured of a place on the program, you must write, submit, and re-submit, if required, a paper deemed acceptable by the reviewers assigned to your paper topic.

All abstracts and papers will be peer-reviewed. The reviewers will include members of the FPD executive board, session chairs for the conference, and volunteer reviewers. During the course of the review process, the most outstanding abstracts will be noted by the reviewers, and the best papers for each session will be noted, with nominations of one or two papers assigned to each session for the FPD best paper award. The papers so nominated will be reviewed by members of the executive board and a winner and a second-place paper will be determined. The authors will receive a suitable award in Portland. Be there, and be one of them!

Robert Montgomery  
Purdue University  
Program Chair



# Perspectives

Following winter break during the year I served as the Program Chair for the division I found a red notebook in my mailbox. Curious, I thumbed through the pages and discovered that it contained a variety of records of the FPD dating back to the mid 1980's. At some point in its existence the book was kept by Bill Beckwith, now retired from Clemson University. In November 2000, one of Bill's colleagues sent it to Barry Crittenden, who was then chair of the division. When Barry retired at the end of 2002 he placed the notebook in my mailbox.

Other than the quick look I gave the book when I first received it I'll admit it sat on my book shelf, until now. As I sat down to write a brief history of the division I realize that I knew very little about the division prior to my joining in 2000. I asked headquarters for information about former division officers, membership, and information on sessions we have sponsored at the annual conference. With a little digging they were able to provide some detail, but I've learned even more from the red notebook.

The Freshman Programs Constituent Committee of the American Society for Engineering Education was formed in 1981-1982 to provide a forum for those people interested in lower division engineering students and the various program connected with them. By mid 1990 the membership of the division had grown to 213 and the Freshman Programs Constituent Committee was awarded status as a Division. By 1992, membership in FPD increased to almost 400, and since 2000 we have maintained a membership of around 600.

In the early years the Freshman Programs Constituent Committee routinely co-sponsored three to four sessions at the

ASEE Annual Conference; co-sponsors included Engineering Design Graphics, Women in Engineering, Minorities, Co-Ed, and Design in Engineering Education. As a letter to a potential author in October 1987 indicates, even in these early days the competition for the slots in the FP sessions was tough, with far more papers being submitted than there were openings. In 1993 we sponsored four sessions with attendance at each session ranging between 35 and 100+. By the 2002 conference we had increased the number of sessions we sponsored to six. That year we had about 130 abstracts submitted for 33 slots. In 2003 we were able to add an additional session. Although we had fewer abstracts submitted that year (around 80) we still were only able to accept 38 papers. At this year's conference in Salt Lake City we sponsored seven technical sessions and co-sponsored an additional session. And as those of you who were able to attend know, we still have overwhelming attendance at most of our sessions. Over the years, in addition to the technical sessions, we have sponsored several pre-conference workshops on topics ranging from Myers-Briggs Type Inventories in the mid 80's to TK solver in the early 90's, and more recently, hand's-on exercises in 2002 and 2003.

The Freshman Programs Division continues to be a very strong division within ASEE. This year, in addition to planning for the 2005 annual conference, we will be looking into developing an on-line journal for the division, and will be updating our bylaws to reflect the current review processes for the annual conference. Be sure to watch your email (or mail) for ways in which you can get involved with the work of your division.

Tamara Knott,  
Virginia Tech  
Past Chair

## Upcoming ASEE Conferences

### [2005 ASEE Annual Conference and Exposition](#)

June 12-15, 2005

Portland Oregon

*"Exploring the World of Engineering Education"*

### 2006 ASEE Annual Conference & Exposition

Chicago, IL

June 18 - 21, 2006

### 2007 ASEE Annual Conference & Exposition

Honolulu, HI

June 24 - 27, 2007

### 2008 ASEE Annual Conference & Exposition

Pittsburgh, PA

## A Message from the Chair

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ecutive board or want to nominate a colleague or provide help with an electronic journal, website or e-forum, please contact a board member. Past Chair Tamara Knott is currently working on updating the division bylaws to match the CAPS system and other details of division operation. We are hoping to set up an electronic forum to discuss these and other future changes.

We have a possible sponsor for the annual business meeting, watch for detail closer to the time of conference next year. Abstract submission opened August 5<sup>th</sup>. Let's keep this year's program chair Bob Montgomery busy; submit abstracts 'soon and often'.

I am looking forward to seeing more members than ever at Portland.

William C. Koffke  
Villanova University, Freshman Programs Division Chair

# Meet the Board

The Freshman Programs Division Bylaws provide for an Executive Committee to administer the affairs of the division and to formulate policy. This committee has eight members elected by the FPD membership for terms of four years each, with the terms staggered so that two members are elected each year. Elections are held each year at the division business meeting during the Annual Conference. Officers for the division are selected by the Executive Committee from its eight members at the Annual Conference prior to the business meeting. The officers include the Chair, Program Chair, Program Chair-Elect, Secretary, and Treasurer. In recent years the positions of Secretary and Treasurer have been combined into a single position. The Bylaws provide for a succession from Program Chair-Elect to Program Chair and then to division Chair over a three-year period. Following a term as Chair, the past chair remains on the Executive Committee for an additional year and becomes the ninth member of the committee unless his/her term on the committee has not yet expired.

The photo was taken in Salt Lake City at the meeting of the 2003-2004 Executive Committee. Members shown (left to right) are Nancy Lamm (past chair), Jim Morgan, Bill Koffke (program chair), Bob Montgomery (program chair-elect), Keith Mazachek (secretary-treasurer), and Mara Knott (chair). Gunter Georgi, not pictured, was the photographer.

At the 2004 business meeting two new members were added to the Executive Committee. Members of the 2004-2005 Executive Committee are:

## Chair

William Koffke (2007)  
Mechanical Engineering,  
Villanova University  
[william.koffke@villanova.edu](mailto:william.koffke@villanova.edu)



Program Chair, Vice-Chair, Chair Elect  
Robert Montgomery (2006)  
Engineering Education  
Purdue University  
[rmont@purdue.edu](mailto:rmont@purdue.edu)

Vice-Program Chair, Program Chair Elect  
James Morgan (2006)  
Civil Engineering, Texas A & M  
[jim-morgan@tamu.edu](mailto:jim-morgan@tamu.edu)

Secretary/Treasurer  
Keith Mazachek (2005)  
Physics and Astronomy  
Washburn University  
[keith.mazachek@washburn.edu](mailto:keith.mazachek@washburn.edu)

## Editor

Gunter Georgi (2008)  
General Engineering  
Polytechnic University  
[georgi@poly.edu](mailto:georgi@poly.edu)

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# 2004 Best Paper

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## Second Place (right photo of page 3):

### “Impacts of a Combined Living-Learning Community on Attitudes and College Engagement of Engineering Freshmen”

Jennifer Light, Denny C. Davis, College of Engineering & Architecture, Washington State University

#### Abstract

Preparation for a diverse workforce of engineering graduates suited for professional practice or graduate school is a major challenge to engineering educators. Immense challenges occur during student's first year in higher education where high attrition typically occurs among prospective engineering students. A living-learning community model was developed for engineering students at Washington State

University combining residential and academic learning community features as a means for improving retention and academic success in engineering. Living-learning community freshmen shared four classes, lived in a common residence hall, and engaged in facilitated group activities. Self-reporting surveys were used to document attitudes and activities of both learning community and control students at the start and end of their first semester. Results indicated that the living-learning community offers significant benefits toward achieving important goals of these students and produces more positive attitudes about engineering.

At the business luncheon held on Tuesday, June 22, 2004, the first place plaque and cash awards was presented to William Oakes. The second place awards were presented in Session 3453 on Wednesday, June 23, 2004 to Jennifer Light and Denny C. Davis.

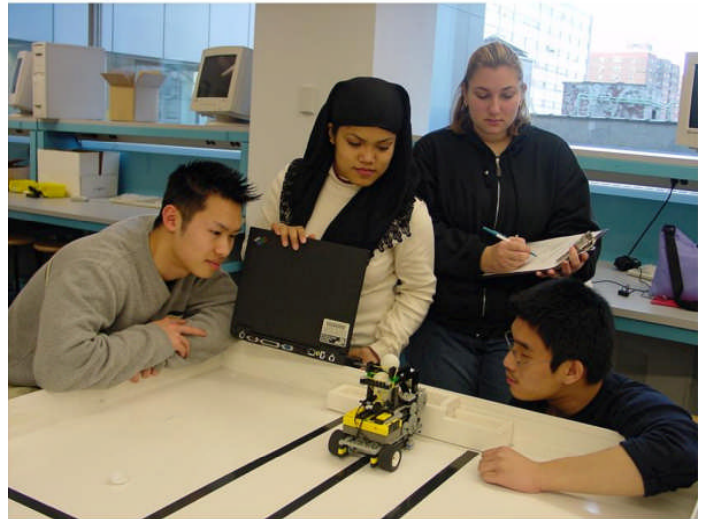
*Below is one of a series of articles highlighting freshman engineering courses at different engineering schools. Contact the Editor if you wish to contribute a short article about your school.*

## Freshman Engineering at Polytechnic University

Polytechnic University teaches a 4-credit course in Freshman Engineering that introduces students to software and hardware tools, teamwork, written and verbal communication skills, project management, as well as overview lectures on major technical and non-technical disciplines. Several laboratory experiments and a required semester project emphasize engineering design.

Polytechnic University's EG1004, Introduction to Engineering and Design, provides freshman students with an overall perspective on engineering, and useful tools and work methods that will be of great utility to the students in the years to come. This course is a required course for all Polytechnic freshmen.

The course consists of lectures (1 hr/wk), laboratory work (3 hrs/wk), and recitations (2 hrs/wk) for an academic semester. Activities and examples from a variety of engineering disciplines are presented and a selection of professional tools (MS Word, MS Excel, MS PowerPoint, MS Project, AutoCAD, LabView) are introduced. Students are exposed to team building activities and must make presentations (both written and oral), as an individual and as a member of a team. Some laboratory work involves design competitions and the students must select one of several semester-long design projects that require teamwork and develop project management skills.



The class is unique in that it primarily uses undergraduate teaching assistants (TAs) for the laboratory supervision. The recitations and semester projects are run by the technical faculty and writing consultants together with the TAs. Lectures are given weekly by invited speakers who are specialists in their various fields.

The class recitations consist of presentations of lab activities (MS PowerPoint) and submission of electronic/paper lab reports. Periodically a project progress report is given. All these activities are graded and the students get immediate feedback about their performance. Technical writing specialists from the Humanities department act as writing consultants, playing a crucial role to help improve both the written and oral presentation skills of the students.

Laboratory work covers many disciplines. The undergraduate teaching assistants help freshmen get familiar with new technical tools and concepts.

Students must complete a semester-long design project. This is a 12-week team project done by groups of two or three students. It requires selection of one of several projects, presentation of a preliminary design, planning the project schedule, making periodic progress reports, preparing engineering drawings, building a working model of the design utilizing required software programming, and a final "sales presentation" where the student teams compete against each other to "make the sale". Minimal design is encouraged; i.e., minimum cost, minimum time, or the fewest parts and the least amount of programming to do the task.

Current semester projects include the design of a house or a supermarket, design of an automatic switching mechanism

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## Meet the Board

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### Past Chair

Tamara Knott (2005)  
Engineering Education  
Virginia Tech  
[knott@vt.edu](mailto:knott@vt.edu)

### "Members at Large":

Richard Freuler (2007)  
First Year Engineering Program  
Ohio State  
[Rick.Freuler@osu.edu](mailto:Rick.Freuler@osu.edu)

Sandy Wood (2008)  
Freshman Engineering Program  
University of Alabama  
[swood@coe.eng.ua.edu](mailto:swood@coe.eng.ua.edu)

Nancy Lamm  
Indiana University-Purdue University Indianapolis (IUPUI)  
Past past Chair



## 2004 ASEE FPD Conference Activities



The Freshman Programs Division sponsored seven technical sessions at the 2004 annual conference and co-sponsored one session with the **Liberal Education Division** on Monday, June 21, 2004. There were a total of 42 papers presented; Thirty-seven of the papers were in the seven division sessions. The following listing of the sessions provides the moderators and the primary author and title of the papers presented each session.



### Session 1153 (Monday, 7:00-8:15) State of the Art in Freshman Programs, Moderator-John Demel

- Pierre Larochelle (928) A Cornerstone Freshmen Design Experience  
 Daniel Walsh (2213) A Freshman Design Experience Using Rapid Prototyping  
 Steven Brandt (477) Get 'Em While They're Young – Integrated Engineering for Freshmen  
 Margot Vigeant (318) Introducing first-year students to engineering, economics, and social responsibility ADA compliance as a first project  
 Helen Qammar (1952) Impact of Vertically Integrated Design Projects on First Year Students

### Session 1353 (Monday, 10:00- 12:00) Design in Freshman Year, Moderator-Kenneth Hunter

- Philip Parker (1869) Assessment of a First-Year Introduction to Civil and Environmental Engineering Course  
 Daniel Suchora (957) First Year Engineering Curriculum at Youngstown State University  
 Christopher Rowe (1707) Module-based Freshman Engineering Course Development  
 George Catalano (1169) The Freshmen Engineering Program at the State University of New York at Binghamton  
 H. Joel Lenoir (1595) The Wobbler Steam Engine: A Connection Between the Past, Present, and Future of Mechanical Engineering

### Session 1661 (Monday, 4:30-6:00 pm) Technological Literacy I – w/ Liberal Education

#### Moderator: John Krupczak & Don Visco

- David Ollis (441) Installing a New "Technology Literacy" Course: Trials and Tribulations  
 Michael Robinson (421) Middle School Science Using Robotics For ESL Students

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## Polytechnic University

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for trains on multiple tracks, and the design and building of 4 different types of robots.

This is only a brief outline of Polytechnic University's Introduction to Engineering and Design course. More details can be found in papers presented at ASEE conferences every year since 2000 by Gunter Georgi, Lorcan Folan, David Doucette, Nick Russo, Elisa Linsky, and Chris Leslie.

Gunter Georgi  
 Polytechnic University  
 georgi@poly.edu



## 2004 ASEE FPD Conference Activities

(Continued from page 7)

- Jean Nocito-Gobel (907) Project-Based Introduction to Engineering - a University Core Course  
 Ahmad Sarfaraz (1387) Responding To Expectations Of Non-Engineering Students  
 Albert Rosa (604) Technology 21 – A Course on Technology for Non-Technologists

### Session 2253 (Tuesday 8:30-10:15) Recruiting, Retention & Advising, Moderator-Sherly Sorby

- Kay C. Dee (514) First-Year Students Who Leave Engineering: Learning Styles and Self-Reported Perceptions  
 Andrew Gerhart (1224) Shock and Awe - Methodology for Recruiting Students  
 Bevlee Watford (1552) ASPIRE - Academic Summer Program Introducing Resources for Engineers  
 Taryn Bayles (1602) Improving the Freshman Engineering Experience  
 William Jordan (1848) Introducing Engineering to Teenagers through a Summer Camps Program

### Session 2453 (Tuesday, 12:30-2:00) Division Business Lunch

This is the division's annual business meeting, open to all members of the division. The meeting starts approximately one half-hour after the start of the session. The lunch required purchasing a ticket (see Chair's Message for a hint at next year)

### Session 2653 (Tuesday, 4:30-6:00) Introduction to Engineering and More, Moderator-Robert Ward

- Margaret Pinnell (72) kidslearn in Introduction to Engineering Design  
 Ian Campbell (487) Model making (and breaking) in freshman statics  
 Craig Somerton (685) An Engineering Laboratory Experience for a Freshman Engineering Class  
 Craig Gunn (1059) Providing Connections Between Freshmen and Senior Engineers  
 Heidi Diefes-Dux (1392) Preeminence in First-Year Engineering Programs  
 Jared Berrett (2401) Teaching Technological Literacy K-12: "Preparing Future Engineers And Nurturing A Democratic Society" -- A Case Study Of Exemplary Practice

### Session 3153 (Wednesday, 7:00-8:15) Projects, Teams & Cooperative Learning, Moderator-James Morgan

- Kenneth Hunter (2249) A Multidisciplinary Team Design Project for First-Semester Engineering Students and Its Implementation in a Large Introduction to Engineering Course  
 Gregory Mason (1475) Assessing Student Design Team Performance in a Learning Community of University Freshman and High School Students  
 Bouzid Aliane (1817) Project Planning & Development for Engineering Freshman  
 Elizabeth Eschenbach (2131) Teaming in Freshman Design Using a Studio Teaching Approach and Blackboard®  
 Janet Schmidt (1350) Relation of Collective Efficacy Beliefs to Group Cohesion and Performance in Student Project Teams

### Session 3453 (Wednesday, 12:30-2:00 pm) Unique Courses & Services for Freshmen, Moderator-James Sherman

- Carol Mullenax (250) Adding Mini-Labs to ENGR101, Tulane's Freshman Intro to Engineering Course  
 Richard Freuler (1649) Building a Successful Fundamentals of Engineering for Honors Program  
 Sayward Touton (1288) Engineers Need Mentors Too!  
 Jennifer Light (825) Impacts of a Combined Living-Learning Community on Attitudes and College Engagement of Engineering Freshmen  
 William Oakes (1879) Integration of Service Learning into a Freshman Engineering Course  
 Catherine Blat (2169) Maximizing Academic and Professional Success

### Session 3553 (Wednesday, 2:30-4:15 pm) How We Teach Problem Solving?, Moderator-William Koffke

- Amy Miller (964) The Alchemy of Helping Freshmen Turn Dreams into Reality  
 Craig Gunn (1054) Making Sense of Those Early Required Courses  
 Jon Sticklen (1626) Application of Scaffolding to Introductory MatLab  
 Leo Hubbard  
 McWilliams (1729) Modifications to a Freshman Engineering Course Based on Student Feedback  
 Christopher Rowe (2104) Incorporation of Fourth Generation Computing Environment into Freshmen Engineering Program: An Historical Perspective