



# Freshman Programs Division Newsletter

Fall 2006 Edition

Editors: Rich Whalen, Beverly Jaeger, Sue Freeman - Northeastern University

## *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."

### Inside this issue:

Call for Papers 2007 Annual Conference-	3
Best Paper Competition -	4
Upcoming ASEE National Conferences -	5
Meet the Board -	6
FPD Business Meeting -	7
Notes From the Webmaster-	9
Highlighting Freshman Programs, MIT-	9
Perspectives-	12
Reflections-	13
Is There Anything Else Out There Besides FPD?-	14
2006 ASEE FPD Conference Activities	16

## A Message from the Chair

Chicago was great!

I hope to see you in Hawaii!

Join the American Society for Engineering Education in Hawaii for the 114th Annual ASEE Conference & Exposition!

**2007 ASEE Annual Conference  
June 24-27, 2007  
Honolulu, Hawaii**

Hilton Hawaiian Village - Hawaii Convention Center - ASEE Conference and Exposition Headquarters

I am looking forward to the rest of my year as chair of the Freshman Programs Division. Partly I look forward to a year of watching my dedicated colleagues do much of the work -Gunter Georgi is the program chair for the 2007 conference -please say YES when he calls on you for help! Bill Koffke is shepherding the new bylaws through the process of approval -a vote which will include a change of our name to Freshman



Programs Division. Sue Freeman, Beverly Jaeger & Rich Whalen (the team from Northeastern University) put together this newsletter and inspired the rest of us with their enthusiasm. Kris Craven handles such details as minutes of meetings and checks for award winners.

Board members: Sandy Wood, Chris Rowe, Scott Moor, Rick Freuler and past chairs: Bob Montgomery, Bill Koffke, Mara Knott, Nancy Lamm, and many more . . .The danger of naming the people that deserve thanks is that invariably some names are left off the list -often some of the most important- from them I ask forgiveness.

*(Continued on page 5)*

## Call for Papers – Hawaii 2007

In this newsletter is the official Freshman Programs Division (FPD) "Call for papers" for the 2007 Annual Conference in Honolulu, Hawaii.  
**Abstract submission will close on October 2nd.**

*(Continued on next page)*

## Call for Papers *(continued from previous page)*

Abstract submission, the initial step in getting a paper accepted for the conference, has already begun and **abstract submission will close on October 2<sup>nd</sup>**. It is not too late to volunteer to be a reviewer or session moderator – email me at following address if you are willing (or could be convinced) *even if you think I already know about you*: [georgi@poly.edu](mailto:georgi@poly.edu)

Abstracts and papers will be submitted via the *improved* ASEE SmoothPaper system: (<http://www.asee.org/smoothpaper>) according to ASEE deadlines which will soon be published on the website. Please view the link below for an update.

**<http://www.asee.org/conferences/annual/2007/Call-for-Papers.cfm>**

Since the system is new, 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 crisis management to others!

### **General Author Deadlines**

Abstract Submission	October 2, 2006
Abstract Status Notifications	November 2006
Draft Paper Submission	November 2006 – January 2007
Draft Paper Status Notifications	February 2007
Final Paper Submission	February – March 2007
“Accepted Pending Changes”	March 2007
Proceedings/Copyright Transfers	March 2007
Author Registration Deadline	April 2007
Housing Deadline	May 2007

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** guaranteed 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.

**It is not too late to volunteer to be a reviewer or session moderator.**

The Freshman Programs Division is proud to encourage quality papers and presentations: in addition to first and second place best paper awards *with new increased \$cash awards*\$, there are awards for the best presentation and for the best STUDENT presentation. The authors and presenters will receive a check and a suitable award at the FPD business meeting in Hawaii. We look forward to seeing you there!

Gunter Georgi  
Polytechnic University  
Program Chair  
[georgi@poly.edu](mailto:georgi@poly.edu)

**CALL FOR PAPERS**  
**Freshmen Programs Division**  
**ASEE Annual Conference & Exposition**  
**June 24-27, 2007 - Honolulu, Hawaii**

The Freshmen 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
- Linkages with K-12 education
- Plagiarism and academic dishonesty issues

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 new SmoothPaper system. (<http://www.asee.org/smoothpaper>) and according to ASEE deadlines.

**Abstract submission closes October 2, 2006.** Visit [www.ASEE.org](http://www.ASEE.org)

For more information, contact:

Gunter Georgi  
Polytechnic University  
General Engineering  
6 Metrotech Center  
Brooklyn, NY 11201

Phone: (718) 260-3701

FAX: (718) 260-3139

## 2006 FPD Best Paper Competition



Our first-place and second-place paper award winners, respectively, bracketed the conference. The first place paper authored by Ari Epstein, Alberta Lipson, Rafael Bras and Kip Hodges from Massachusetts Institute of Technology Paper is titled "Terrascope: A Project-Based, Team-Oriented Freshman Learning Community With An Environmental/Earth System Focus". The second-place winner is authored by Jennifer Light from University of Washington and Laura Girardeau, Jennifer Beller and Greg Crouch from Washington State University



and is titled "Using Reflective Essays As Part Of A Mixed Method Approach For Evaluating A Freshman Living-Learning Community For Engineering And Science Students". Awards were also presented for the ASEE 2005 conference in Portland for Best Student Presentation- Tamara Moore and best presentation Beverly Jaeger, Susan Freeman, and Richard Whalen from Northeastern University for their paper "Get With the Program: Integrated Project Instead of a Comprehensive Final Exam in a First Programming Course".



### Upcoming FIE Conferences:

- 2006 Frontiers in Education Conference  
San Diego, CA  
October 28 – 31, 2006
- 2007 Frontiers in Education Conference  
Milwaukee, WI  
October 10 – 13, 2007



## Message from the Chair (continued from page 1)

In the coming year I also look forward to working with the ASEE staff and leadership, to discussing with each of you the future direction and activities of our division, to reading abstracts and reviewing papers -*getting new ideas that I might be able to bring back to my institutions and to my students -and being inspired by the great things that are being done by so many* -changing the future of engineering education  
**ONE STUDENT AT A TIME.**

Most of all, I look forward to seeing old friends and meeting new friends at future meetings and conferences!

Jim Morgan  
 Texas A&M University  
 Freshman Programs Division Chair  
[jim-morgan@tamu.edu](mailto:jim-morgan@tamu.edu)



### FUTURE CONFERENCES:

5<sup>th</sup> Annual ASEE Global Colloquium on Engineering Education:

*"Engineering Education in the Americas and Beyond"*  
 October 9 – 12, 2006  
 Le Meridien Hotel  
 Rio de Janeiro, Brazil

Conference for Industry and Education Collaboration (CIEC):

*"Collaborating to Build Innovative Generations"*  
 February 3-10, 2007  
 Palm Springs, CA

### Upcoming Annual ASEE Conferences!:

2007 ASEE Annual Conference & Exposition  
 June 24-27, 2007 - Honolulu, Hawaii

2008 ASEE Annual Conference & Exposition  
 June 22 - 25, 2008 - Pittsburgh, PA

2009 ASEE Annual Conference & Exposition  
 June 14 - 17, 2009 - Austin, TX

It is not too early to put Pittsburgh on your calendar ;-)



## Meet the Board



Members of the 2006-2007 Executive Committee are (left to right) Jim Morgan (Chair), Bill Koffke (Past Past Chair), Kris Craven (Secretary/Treasurer), Gunter Georgi (Program Chair), Bob Montgomery (Past Chair), Richard Freuler, Sandy Wood, Chris Rowe (Webmaster), Scott Moor.

### 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.

We welcomed Scott Moor (IU Fort Wayne) to the FPD Executive Committee at the Division Meeting in Chicago. The entire 2006-2007 Executive Committee is pictured in the photo above which was taken following the Division Business Meeting. Contact information for each member of the executive committee is provided below. The number in parentheses indicates the year each member is scheduled to rotate off the board. Keep in mind that at the 2007 Annual Meeting in Hawaii :) we will be electing two persons to serve a four-year term on the board. If you are interested in being nominated please let the current past chair Bob Montgomery know.

#### Chair

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

#### Program Chair, Vice-Chair, Chair Elect

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

#### Program Chair, Elect

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

#### Secretary/Treasurer

Kristine Craven (2009)  
Basic Engineering Program  
Tennessee Technological University  
[kcraven@tntech.edu](mailto:kcraven@tntech.edu)

#### Past Chair

Bob Montgomery  
Engineering Education  
Purdue University  
[rmont@purdue.edu](mailto:rmont@purdue.edu)

*(Continued on next page)*

## Meet the Board (continued from previous page)

### "Members at Large":

Scott Moore (2010)  
Mechanical Engineering  
IU Purdue Fort Wayne  
[moors@ipfw.edu](mailto:moors@ipfw.edu)

Christopher Rowe (2009)  
Engineering Science  
Vanderbilt University  
[chris.rowe@vanderbilt.edu](mailto:chris.rowe@vanderbilt.edu)

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

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



## FPD 2006 Business Meeting Minutes

Chair, Bob Montgomery called meeting to order. Bob gave a brief introduction and recognized the contributions of various division members.

Minutes of the 2005 Business Meeting were previously distributed to the membership via e-mail and can be seen in the Freshman Programs Division (FPD) newsletter. These minutes were approved.

The Treasurer's report was distributed. Kris Craven stated that the Freshman Programs Division currently has \$790.00 in the operating account and \$7,675.19 in the BASS Account. We ended FY2005 with a balance of \$0 in the operating account and \$7,037.43 in the BASS account. The FY2006 operating account budget is \$790.00, which is the same as last year. There are two charges for Food & Beverage Costs, presumably incurred at the conference in Portland in

2005. The breakfast for the Division meeting was to be charged to the sponsor, and the division had no other functions with food. The matter has been reported to our PIC III chair who will attempt to resolve this issue. Expenses included best paper and best presentation awards and plaques for the award winners. The Treasurer's report was approved.

### 2006 Program Chair Report

Program Chair, Jim Morgan reported that of the 120 abstracts received, 50 were accepted and 45 will be presented in nine FPD technical sessions. Jim also suggested that having sessions around lunch with only 30 minutes break is not recommended for the future.

*(Continued on next page)*



## FPD 2006 Business Meeting Minutes *(continued from previous page)*

The 2006 Best Paper race was very close among 3 papers. Winners of the 2006 Freshman Programs Division Best Paper Awards are:

First Place: "Terrascope: A Project-Based, Team-Oriented Freshman Learning Community with an Environmental/Earth System Focus," Ari Epstein, Alberta Lipson, Rafael Bras, Kip Hodges, Massachusetts Institute of Technology. The paper will be presented in Session 1553, "Real-World Case Studies & Projects."

Second Place: "Using Reflective Essays as a Part of a Mixed Method Approach for Evaluating a Freshman Living-Learning Community for Engineering and Science Students," Jennifer Light, University of Washington, Laura Girardeau, Jennifer Belier, Greg Crouch, Washington State University. The paper will be presented in Session 2653, "Early Intervention & Retention Programs."

The 2005 Best Presentation awards were announced and plaques distributed:

Professional Members: "Get with the Program: Integrated Project Instead of a Comprehensive Final Exam in a First Programming Course. Beverly Jaeger, Susan Freeman and Richard Whalen, Northeastern University.

"First-Year Themed Seminar: A Mechanism for Conveying the Interdisciplinary Nature of Engineering," Tamara Moore, Purdue University.

Nominating Committee Report and Elections: Sandy Wood is the Program Chair Elect for 2007. Candidates for Board Members included: Jim Morgan, Scott Moor, Jenny Lo, and Jon Sticklen. After a second ballot; Jim Morgan and Scott Moor were elected.

### Old Business

FPD survey website: The site is currently being hosted at the Citadel ([cee.citadel.edu/fpd\\_survey](http://cee.citadel.edu/fpd_survey)), but will be moved to the ASEE site soon. The Executive Board has recommended that the survey be modified to include the results of the more recent study and then develop a system to update the

posted information at regular intervals. It was suggested that we explore the ability to submit updated information on-line. Another suggestion was to use money from the BASS account to support a graduate student to work on the project, with a small committee to oversee the process. Any additional comments should be forwarded to the webmaster Chris Rowe at [chris.rowe@vanderbilt.edu](mailto:chris.rowe@vanderbilt.edu).

FPD website: [www.vuse.vanderbilt.edu/asee](http://www.vuse.vanderbilt.edu/asee), Comments included: there needs to be a link from the ASEE site, include the last 2 newsletters, send suggestions to Chris Rowe.

Newsletter: Gunter Georgi, has been the current editor, and is stepping down to become the Program Chair for 2007. Gunter indicated that the newsletter is put out before Labor Day and does not require a lot of writing, mainly editing and layout. Richard Whalen, Susan Freeman, and Beverly Jaeger, volunteered.

Bylaws revision, including division name: Bill explained that the new bylaws would rename the division "First-year Programs Division". He also suggested that we revise the succession strategy such that members remain on the board until they complete the officer rotation (finishes as Past Chair), even if their elected term runs out first. Bill will send out the new version for a vote in late fall.

### New Business

Session topics for 2008: Send them to the Program Chair – Sandy Wood.

2007 abstracts are due by October 2<sup>nd</sup>. The review process is now a blind process.

Officers and other members were again recognized for their service to the division.

There being no further business, the meeting was adjourned.

Respectfully submitted by Kris Craven.



## Notes from the Webmaster:

The Freshman (First-year) Programs Division website is up and running. While this will be a continual work in progress over the next year, the web address will not change unless otherwise noted. You can look forward to significant formatting changes as the site develops.

This site has the potential to serve as the main source of information regarding the business of our division. Already on the site are the by-laws, newsletters, and contact information for officers and board members. The site will be updated more consistently in the near future. Soon to be added features include calls for papers, access to the freshman survey (more on this below), and news updates.

If you have any suggestions as to what else should be posted on the website, please let me know. The address is:

<http://www.vuse.vanderbilt.edu/asee>.

For feedback, my direct email address is:

[chris.rowe@vanderbilt.edu](mailto:chris.rowe@vanderbilt.edu).

You may access the famed first-year survey database at:

[http://cee.citadel.edu/fpd\\_survey](http://cee.citadel.edu/fpd_survey).

A link to this site will be available on the FPD website shortly. Please take a few minutes to review the survey site. If you want, please suggest any changes to the survey format and/or usage to me at my direct email address above.

Recommendations should be forwarded to me within the next few weeks. Based on the feedback I receive, we may be able to make desired changes in order to make this survey more useful to interested parties.

Submitted by Christopher Rowe

*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.*

## Highlighting Freshman Programs: Freshman Engineering at MIT

Freshmen at MIT, as at many technical universities, face a year taken up largely by required core classes, in which they build a base of knowledge and skills that they will rely on for the rest of their time at MIT (and beyond). Currently (although the situation is likely to change) the core, called the General Institute Requirements, does not include an opportunity for freshmen to work as they will probably work for most of their careers: in teams, taking on complex, open-ended projects that call for expertise in multiple disciplines. As one way to address that shortcoming, in 2002 a team of faculty, drawn largely from the departments of Civil and Environmental Engineering and Earth, Atmospheric and Planetary Sciences, developed Terrascope, a year-long optional experience in which students work in teams to address complex environmental problems and to develop ways to communicate about those problems with a variety of audiences. What follows is a brief description of Terrascope. For a more detailed

description, including a discussion of data gathered to assess and guide development of the program, please see the paper by Epstein, Lipson, Bras and Hodges, presented at the 2006 ASEE annual conference (Paper 2006-435).

Terrascope is at its heart a learning community. In addition to the academic program (described below), Terrascopers gather at weekly lunches, share advisors drawn from Terrascope-affiliated faculty and staff, participate in an annual field trip and other outings, and have exclusive access to a common space on campus, which includes a classroom, lounge, computer cluster and (most importantly) a kitchen. Many Terrascopers from previous years remain affiliated with the program, some serving as undergraduate teaching fellows (UTFs) in Terrascope classes, some working on Terrascope-supported research projects, and others simply attending lunches, using the Terrascope room, etc. *(Continued on next page)*

## Engineering at MIT *(continued from previous page)*

The academic program consists of four classes, two required (for Terrascopers) and two optional. In the fall semester, Terrascopers take a class called Solving Complex Problems, offered by the Department of Earth, Atmospheric and Planetary Sciences. Unlike all other Terrascope classes, this is open to any interested freshman, not just Terrascopers. At the beginning of the semester, students are given a complex, real-world problem and told that the class, as a whole, has a semester to solve it. The problem always involves environmental/Earth system topics, but it also always includes economic, social and political aspects as well. For example, in 2003-4, the class was told to devise the least environmentally harmful plan for extracting hydrocarbons from the Arctic National Wildlife Refuge, and then to determine whether the energy extracted would be worth the cost and environmental damage. The following year, the problem had three interlocking components: (1) devise plans for an international biopreserve for the Galapagos Archipelago; (2) develop techniques for sustainable development in the parts of the Galapagos that are settled; and (3) design a land/water monitoring system that will be able to track the success or failure of parts (1) and (2). As is apparent, these are open-ended problems, with no single right answer, and they would also generally be considered far beyond the scope of even exceptional college freshmen. But students generally don't see the problems as being impossibly difficult; if anything, they begin to think that college is harder than they expected.

The class is given very wide latitude in deciding how to address the problem—students generally organize themselves into teams, and they determine how to split the problem up among the teams, how to develop a timeline, etc. At first, the openness of the class structure gives many students a kind of “intellectual vertigo,” in which they simply aren't sure which way to turn. Gradually, though, they work out ways to provide their own structure, and they eventually come to deeply appreciate the independence they have been given. (I should note that the students are provided with substantial support mechanisms: each team is assigned one or two UTFs to facilitate its work, a librarian with interest and expertise in the team's general area of research, and an alumni mentor—an MIT alumnus with relevant experience or skills. Teams make varying use of these resources.)



At the end of the semester there are two deliverables: the class must describe its proposed solution in a detailed set of integrated web pages, and then it must present and defend the solution in front of an international panel of experts brought to MIT for the purpose. The presentation is open to the public, and it is also web-cast live. This event provides tremendous motivation for the students (far more than simple grades would), and they generally do work far beyond what they would have expected themselves capable of.

In the spring semester Terrascopers change gears, focusing on a physical design/construction project rather than a theoretical problem, and on communication with the general public rather than with experts. They do this in a class called Communicating Complex Environmental Issues: Designing and Building Interactive Museum Exhibits, offered by the department of Civil and Environmental Engineering. In this class, teams of students develop, engineer and build interactive, museum-style exhibits designed to teach public audiences about issues having to do with the year's core topic. At the end of the semester the exhibits are opened to the public for several weeks, and they are evaluated by a panel of museum professionals, as well as by groups of local high-school students (who are the exhibits' assigned target audience).

As in the fall, students in the spring-semester class are given near-total freedom in choosing and developing exhibit topics, designing exhibits, deciding how tightly to integrate the work of multiple teams, and other areas. Also as in the fall, they are provided with a strong support structure, including UTFs, librarians and a

*(Continued on next page)*

## Engineering at MIT *(continued from previous page)*

staff member with extremely strong design/fabrication skills (who works with the entire class, not a specific team). The class structure is also relatively open when compared with the other classes freshman take, but it is not as open as in the fall class. Teams are required to meet a number of intermediate goals, such as a preliminary proposal, a working prototype (tested by high-school students and other audiences), and a final proposal complete with design drawings, budget, timeline and other elements. Students thus have the chance to rebuild their notion of how to handle structure in working on an open-ended problem.

Individual students are also required to submit weekly "Developer's Journals," in which they describe their team's work and their own personal progress. This provides students with an opportunity to reflect regularly on their experience.

Like the fall-semester presentation, the spring exhibit opening is a major event for the students, and as the date approaches they push themselves and their teammates to extremely devoted, diligent work. That work shows in the final products. The final exhibits are generally extremely creative, well-conceived and engaging; many of them have later been adopted as prototypes by established museums and aquariums.

These required classes are complemented by two optional classes, one during MIT's January term and the other during the spring. In January, Terrascopers spend an intensive week developing an understanding of how people learn in museums. Every day the class visits a different local museum. At each museum students first meet with staff, go out on the exhibit floor to observe visitors interacting with exhibits (and to try out the exhibits themselves), and then meet again with staff to debrief and go over what they have seen. There are also daily brainstorming sessions, in which the students develop their own notions of what makes an exhibit successful and begin to sketch out exhibit topics that they feel will be appropriate for the spring class.

The spring-semester optional class is designed to satisfy MIT's "communication intensive" requirement, so that students can extend their Terrascope experience without falling behind on required work. In this class, called Terrascope Radio, teams of students develop their own radio program on subjects having to do with the year's core topic. This requires students not only to learn the technical ins and outs of recording, editing and processing audio material, but also (and much

more importantly) to develop a sense of how to understand a radio audience and how to structure a radio program in a way that is engaging, informative and meaningful to that audience. The class also involves considerable written work, which complements the analytical work done in class and the practical work done outside class time.

One more important feature of Terrascope is the annual Spring Break field trip, during which nearly all of the students and faculty, and many of the UTFs, travel to a place relevant to the year's topic. The trip gives students the chance to see the complexities of the reality on the ground, and to think about whether the theoretical plans they developed in the fall really would provide an adequate solution to the year's problem. It also informs the students' exhibit development, providing teams with new ideas, confirming or negating some of their existing ideas, and giving students the chance to take photographs, collect artifacts and interview local people. Of course, it also provides by far the richest source of audio material for students in Terrascope Radio. The trip also serves an important non-academic purpose: it solidifies and unites the Terrascope community in ways that no other experience could.

Students report very high levels of satisfaction with Terrascope, and they enthusiastically recommend the program to incoming freshmen. They also report strong gains in their ability to work in teams, their understanding of the design/engineering process and their understanding of complex environmental issues. For a detailed analysis of this and other assessment data, please see the paper referred to at the beginning of this article.

To learn more about Terrascope, please see [web.mit.edu/terrascope/www](http://web.mit.edu/terrascope/www). Terrascope is a young program, still evolving, and the faculty and staff would appreciate any comments, suggestions, or other input from others involved in team-oriented, project-based freshman programs.

Ari W. Epstein

Massachusetts Institute of Technology  
Cambridge, Mass.  
[awe@alum.mit.edu](mailto:awe@alum.mit.edu)



## Perspectives - A Message from the Past Chair

It is generally expected that the immediate past Chair of the Freshman Programs Division (FPD) write a "reflections" piece for the September newsletter. I spent a great deal of time, causing our editors some consternation as to whether I was going to come through with an article, trying to think of a topic. Finally, it came to me that whenever I thought about the 2006 ASEE meetings my mind was distracted in a particular direction – the future.

Okay, so the future isn't something you usually reflect on; it is rather something you wonder about, plan for, anticipate, or face with mild dread if you must mow the lawn during a heat wave – I think many of us can relate to this latter circumstance. However, and I trust you will bear with me and try to follow my thought train, thinking about the future revealed some important insights about events past. Looking ahead to 2007, ASEE plans a marvelous meeting in Honolulu, and I know that many will spend extra time to make the trip a vacation, in addition to their usual involvement in the ASEE activities. I am personally eager to take in the stellar FPD sessions, and also to enjoy some sessions sponsored by the Educational Research and Methods (ERM) and Civil Engineering (CE) Divisions.

Here's where the insights begin to take shape. In Chicago, the FPD was privileged to have a whopping total of nine (count 'em, 9!) technical sessions. This speaks volumes about how far FPD has come since its Constituent Committee days in my early years of ASEE membership. If you attended very many of these popular sessions, you may have noticed that the FPD officers were generally present and accounted for. Thus, while I have strong interests in the aforementioned ERM and CE Divisions, I attended exactly zero (0) technical sessions sponsored by them in Chicago.

Please don't misunderstand, this may be a ramble, but it is not a whine. The commitment to attend all, or nearly all, of the FPD technical sessions is one made by all of your many FPD officers. Putting it in a proper time perspective, I have only been an officer of FPD for a few years, and will not be an officer for much longer. Stepping back a bit further in order to see an even bigger picture, the number of ASEE members making the Chicago, or any annual meeting, successful is absolutely staggering. Given the efforts of the Program Chair (great job, Jim!), the session moderators, the paper reviewers, and



the authors the resulting excellence is not at all surprising. In total, these latter folks literally number in the hundreds, just for FPD! By any measure, that represents a great deal of commitment.

If your first love, educationally, is first-year engineering programs, please continue to make the FPD sessions among the best-attended of all ASEE technical sessions by your attendance, paper presentations, or other contributions. If you miss one or two of our sessions in order to take in a Women's, K-12, Minority, ERM, Liberal Education, or disciplinary program session, rest assured that your FPD officers also revel in the diversity that is ASEE. I plan to increase my attendance at sessions not sponsored by FPD very soon, probably in Honolulu.

I also plan to work on some of you to convince you that a few years of heavy focus on first-year programs can be a good thing, and that the leadership team of FPD needs you. As immediate past Chair, one of my responsibilities is to serve as the Nominating Committee Chair for 2007. If you would like to serve FPD as an officer, please contact me about a possible nomination to the Executive Board. Your effort in so doing will save me having to twist arms next spring. I have some ideas of whose arms to twist, but it is always better to have volunteers. Having served on the Executive Board on two different occasions, I can assure you – it's a good ride! See you in Honolulu.

Robert Montgomery  
Purdue University  
Past Chair, Freshman Programs Division Chair



## Reflections from the Program-Chair Thank You for making Chicago Great!

Our first-place and second-place paper award winners highlighted a cast of excellent presentations in Chicago. First place went to Ari Epstein who presented paper 435 Monday afternoon in our 4<sup>th</sup> FPD session and second place to Jennifer Light who presented paper 1278 Tuesday afternoon in the 6<sup>th</sup> FPD session. All in all there were 38 presentations in 9 sessions (4 sessions on Monday; business meeting + 2 sessions on Tuesday; & 3 sessions on Wednesday).

I need to thank the many people for helping to make this a successful conference:

- Reviewers who made this program possible -too many to mention and you know who you are;
- Session moderators who did much of the work coordinating the sessions: Susan Freeman, Rick Freuler, Beverly Jaeger, Jean Kampe, Mara Knott, Nancy Lamm, Scott Moor, James Sherman, and Julie Trenor;
- Authors for their valuable and timely contributions: 38 of 39 papers were presented to the members and friends of the Freshman Programs Division who attended the sessions.

If you have missed the ASEE meeting in Chicago, all is not lost –you missed good presentations and great discussions– but you can get a glimpse of the information in the proceedings on the ASEE website. I urge you to start with our award winners:

### FPD Best Paper Competition

#### 2006 Best Paper Awards

##### 1st Place

Ari Epstein, Alberta Lipson, Rafael Bras & Kip Hodges from Massachusetts Institute of Technology

Paper: “Terrascope: A Project-Based, Team-Oriented Freshman Learning Community With An Environmental/Earth System Focus”

##### 2nd Place

Jennifer Light from University of Washington & Laura Girardeau, Jennifer Beller & Greg Crouch from Washington State University

Paper: “Using Reflective Essays As Part Of A Mixed Method Approach For Evaluating A Freshman Living-Learning Community For Engineering And Science Students



Stay tuned for our 2006 Best Presentation & Best Student Presentation winners.

If you have missed out on the many contributions from previous years, I encourage you to start with our award winners from last year:

#### 2005 Best Paper Awards

##### 1st Place

Kenneth P. Brannan from The Citadel & Phillip C. Wankat from Purdue University  
For: "Survey of First Year Programs"

##### 2nd Place

Eric P. Soulsby, University of Connecticut  
Paper: "Using 'Advising Contours' for Placement in First Year Quantitative Courses"

#### 2005 Best Presentation

Beverly Jaeger, Susan Freeman, and Richard Whalen from Northeastern University "Get With the Program: Integrated Project Instead of a Comprehensive Final Exam in a First Programming Course"

#### 2005 Best Student Presentation

Tamara Moore from Purdue University  
"First-Year Engineering Themed Seminar - A Mechanism for Conveying the Interdisciplinary Nature of Engineering"

Jim Morgan

# Is There Anything Else Out There Besides FPD?

## FPD Newsletter Highlights Another ASEE Division

### Other Opportunities for Cooperative Involvement - Educational Research Methods in ASEE: An Interview

Our interviewee, Alisha Waller, is an active member of the Educational Research Methods (ERM) Division of ASEE and has held several positions on the ERM Executive Board. She has also presented multiple papers and conducted workshops for ASEE. She serves as a knowledgeable resource for engineering education research.

- o Alicia, briefly - what is ERM? What are the division's objectives?

*The Educational Research and Methods (ERM) Division of ASEE is devoted to improving the teaching and learning within engineering (and related) disciplines. Our activities support the two main goals of helping people become better teachers and helping people do high quality research on teaching and learning. We are concerned with faculty at all levels, as well as graduate students and instructors.*

- o Where would someone learn more about the educational objectives of the division?

*The ERM division has a website at <http://fie.engrng.pitt.edu/erm/>.*

- o If I were to try something new in my course or in class, or to implement a new curriculum component, what are the basic ways to assess this? By way of review or as a guideline could you provide a brief list or a reference to help direct the educational research methods to accompany such modifications?

*This is actually a very complex question. Conducting educational research in a rigorous way is actually quite different from doing engineering discipline research. The most important distinction is that education research involves humans, social interaction (teaching/learning/education) rather than on inanimate objects. Hence, IRB (Institutional Review Board) approval is legally required for any research supported through grant funds and is ethically required for any research which is published. This is a primary reason that we recommend that engineering faculty team with faculty in education, sociology, psychology, etc. for their formal research.*

*On the other hand, there are wonderful, fairly easy ways that a teacher can improve their practice using "classroom assessment techniques" in an action research way. The best reference for getting underway is "Classroom Assessment Techniques: A Handbook for College Teachers, 2<sup>nd</sup> Edition" by Thomas A. Angelo and K. Patricia Cross. They provide over 50 ways to assess student learning, course success, student values, reactions to instruction, etc. For each technique, they explain the goals (e.g. Directed paraphrasing: students paraphrase part of a lesson for a specific audience and purpose, using their own words), give examples (from many different disciplines), list the step-by-step procedure, and explain how to turn the data into useful information. Classroom research conducted in this way will typically increase student learning, enhance faculty's confidence in their teaching, and improve the students' evaluations of the instructor. This kind of work can also then be presented at professional conferences to inform others through one's own experience.*

*(continued on next page)*

## Is There Anything Else Out There Besides FPD? (continued from previous page)

*Once someone is more comfortable with classroom research, they should consult the "Program Evaluation" literature. We in ASEE call it "assessment", but in the education literature, it is program evaluation. My favorite book to start with in this area is a skinny paperback called "Thinking About Program Evaluation 2" by Richard A. Berk and Peter H. Rossi. This book would also be helpful for responding to ABET criteria for ongoing assessment. An important guideline in program evaluation is that the effects of a program should not be assessed until it has been in place for at least three years. Unfortunately, funders, administrators, and politicians may press for assessing program outcomes immediately, often not realizing that what is being measured is the start-up, not the steady-state. This is another reason why properly conducted classroom research is appropriate for initial assessment and fine-tuning implementation, but rigorous research on the outcomes of an innovation or program should wait until the program is well-established.*

o We are constantly trying to improve our effectiveness as instructors and program directors of first-year engineering students. If we were to change or include one thing in our assessment techniques, what would that be from an ERM perspective?

*I can't speak for the division (and I doubt we would agree on a single factor), but personally, I would say the one thing which every instructor should do is an informal check-in with students after the first three weeks of class, as many of us have heard about. I do this by giving each student an index card and asking them to respond to two questions: 1) What is helping you learn in this course? 2) What one or two changes would help you learn more effectively? I use the responses to 1) to plan further instruction. The responses to 2) get sorted into three categories: a) things I have no control over, e.g. the time the class meets; b) things I may change (perhaps negotiating with whole class), e.g. the dates of tests; and c) things I can change but won't (I usually explain why not), e.g. drop all homework. If I were a program director, I would conduct a similar survey after the students had been at the school for two months. This, as we know, meets several objectives, not the least of which is demonstrating to students that they are valued, something that could easily be overlooked in the first-year dynamic.*

o What are a couple examples of the latest research being conducted or trends within the ERM division?

*The work within the ERM division is as diverse as the people within it. The best overview is the proceedings of the Frontiers in Education (FIE) Conference at <http://fie.engrng.pitt.edu>. A few that come to mind are misconceptions of students and how they are developed, disrupted, and changed; issues of ethical behavior and academic dishonesty by students; assessing students' conceptual understanding; feminist pedagogy; and students' self-efficacy and identity as an engineer.*

*For more information and support in conducting education research, visit the Center for the Advancement of Scholarship on Engineering Education website (<http://www.caets.org/NAE/caseecomnew.nsf?OpenDatabase>) and the Annals of Research on Engineering Education ([www.AREEonline.org](http://www.AREEonline.org)).*

o Any other ERM wisdom, Alisha?

*Yes, ERM recommends that engineering faculty joins at least 3 ASEE divisions:*

*First, join a disciplinary division –to keep current with your chosen or current field*

*Second, join a special interest division that aligns with your teaching or engineering passion –we often cite your division, FPD, as an example*

*Finally, we recommend joining the Educational Research Methods Division – if you have responsibility for teaching and are looking to improve, we will be able to guide you, encourage, and even collaborate with you in your educational research efforts.*

[awaller.ie87@gtalumni.org](mailto:awaller.ie87@gtalumni.org)

## **2006 ASEE (Chicago) – FPD Program**

Following is the program for the ASEE Annual Meeting June 18-21 in Chicago, IL. The program included nine full technical sessions, an Executive Board meeting, and the Division meeting held Tuesday morning on June 20th. All sessions were held in the Acapulco and Water Tower Rooms of the West Tower.

**Monday, June 19, 2006**

### **1153: FPD1 -- Implementing a First-Year Engineering Course**

**7:00-8: 15 a.m. Acapulco (Gold Level, West Tower)**

Moderator: Jean Kampe, Virginia Tech

2006-1284: HOW TO PROVIDE FIRST-YEAR-STUDENTS WITH A REALLY GOOD START INTO THEIR STUDY PROGRAM

Manfred Hampe, Susanne Wolf, Technische Universitaet Darmstadt

2006-1574: TEACHING INTRO TO ENGINEERING IN CONTEXT – UVA ENGINEERING'S NEW CORNERSTONE

Dana Elzey, University of Virginia

2006-982: FULL IMPLEMENTATION OF A NEW FORMAT FOR FRESHMAN ENGINEERING COURSE AT VIRGINIA TECH

Jenny Lo, Vinod Lohani, Odis Griffin, Virginia Tech

2006-1360: REVISION OF A FIRST-SEMESTER COURSE TO FOCUS ON FUNDAMENTALS OF ENGINEERING

Michael Hagenberger, Barbara Engerer, Doug Tougaw, Valparaiso University

### **1353: FPD2 -- Highlighting First-Year Program\_**

**10:30 a.m. -Noon Acapulco (Gold Level, West Tower)**

Moderator: Susan Freeman, Northeastern University

2006-1362: THE SHOW MUST GO ON - REFLECTIONS ON THE PURSUIT OF ENGINEERING THROUGH INTER-DISCIPLINARY DESIGN CHALLENGES

P. Paxton Marshall, Benjamin Kidd, & Kristln Wilhelm, University of Virginia

2006-1554: MULTIPLE MODELS OF A FRESHMAN ENGINEERING EXPERIMENT

Jeffrey Connor, Vinod Lohani, Kumar Mallikarjunan, G. Loganathan, Jenny Lo,

Virginia Tech

2006-2292: A MODULAR APPROACH TO COMBINING FIRST-YEAR DESIGN\_

EXPERIENCES ACROSS ENGINEERING DISCIPLINES

Marc Christensen, David Willis, Scott Douglas, Southern Methodist University

2006-1001: ACTIVE TEACHING, ACTIVE LEARNING: INFUSING THE DESIGN PROCESS IN A FIRST-YEAR COURSE

Susan Freeman, Beverly Jaeger, Richard Whalen, Northeastern University

2006-223:SOLID MODELING AS THE CORNERSTONE OF AN INTRODUCTION TO ENGINEERING COURSE

William Howard, East Carolina University, Joseph Musto, Milwaukee School of Engineering



**1453: FPD3 -- Professional Issues for First-Year Courses  
12:30-2:00 p.m. Acapulco (Gold Level, West Tower)**

Moderator: James Sherman, University of Colorado-Boulder

2006-178: PROFESSIONAL ENGINEERING EDUCATION BEST PRACTICE STUDY FOR FIRST-YEAR, MULTI-DISCIPLINARY COURSES

Keith Buffinton, Elise Barrella, Bucknell University John Simmons, University of Queensland

2006-937: ENGINEERING STUDENTS' PERCEPTIONS OF ATTITUDE CHANGES IN TEAMWORK

Dwight Tolliver, Lauren Hines, 1. Roger Parsons, University of Tennessee

2006-911: THE ONE-MINUTE ENGINEER: GETTING DESIGN CLASS OUT OF THE STARTING BLOCKS

Beverly Jaeger, Northeastern University Sven Bilen, Pennsylvania State University

2006-983: PROOFREADING EXERCISES TO IMPROVE TECHNICAL WRITING IN A FRESHMAN ENGINEERING COURSE

John-David Yoder, David Sawyers, John K. Estell, Laurie Laird, Ohio Northern University

**1553: FPD4 -- Real-World Case Studies & Projects  
2:15-4:00 p.m. Acapulco (Gold Level, West Tower)**

Moderator: Julie Trenor, University of Houston)

2006-2023: LEVERAGING REHABILITATION NEEDS INTO FRESHMAN

ENGINEERING DESIGN PROJECTS

Bruce Ankenman, Stacy Benjamin, James Colgate, Northwestern University Roth Elliot, Rehabilitation Institute of Chicago

Phillip Jacob, Northwestern University

2006-435: TERRASCOPE: A PROJECT-BASED, TEAM-ORIENTED FRESHMAN LEARNING COMMUNITY WITH AN ENVIRONMENTAL/EARTH SYSTEM FOCUS Ari Epstein, Alberta Lipson, Rafael Bras, Kip Hodges,

Massachusetts Institute of Technology

2006-78: DISCOVERY BASED LEARNING IN THE ENGINEERING CLASSROOM USING UNDERWATER ROBOTICS

Liesl Hotaling, Stevens Institute of Technology,

Richard Sheryll, Rustam Stolkin, Center for Maritime Systems

Stevens Institute of Technology

2006-574: "WHO IS THE BIGGEST PIRATE?" DESIGN, IMPLEMENTATION, AND RESULT OF A ROBOTICS COMPETITION FOR GENERAL ENGINEERING FRESHMEN

Jason Yao, Gene Dixon, William Howard, Rick Williams, Keith Williamson, Geoffrey Dieck, Steve Mclawhorn,

East Carolina University

**Tuesday, June 20, 2006**

**2153: FPD Business Meeting  
7:00-8:15 a.m. Regency A (Gold Level, West Tower)**

Bring your own "brown bag" breakfast and join us for the Freshman Programs Division business meeting.

**2453: FPD5 -- Placement & Early Success  
12:30-2:00 p.m. Acapulco (Gold Level, West Tower)**

**Moderator:** Beverly Jaeger, Northeastern University

2006-771: USING THE SAT AND ACT SCORES FOR PLACEMENT INTO ENGINEERING FRESHMAN COURSES

Cindy Veenstra, Gary D. Herrin, University of Michigan

## 2006-933: INTEGRATED PRE-FRESHMAN ENGINEERING AND PRECALCULUS MATHEMATICS

Janet Hampikian, John Gardner, Amy Moll, Pat Pyke, Cheryl Schrader,

Boise State University

2006-1659: SELF-REGULATED LEARNING AND CLASSROOM ENGAGEMENT IN CALCULUS ACHIEVEMENT AMONG FRESHMEN ENGINEERING STUDENTS Mwarumba Mwavlta, Oklahoma State University

## 2006-775: INTERVENTION STRATEGY FOR IMPROVING SUCCESS RATES IN CALCULUS

Darryl Koch, Gary D. Herrin, University of Michigan

## 2006-1088: BACK TO BASICS: A STUDENT-TUTOR MATCHING PROGRAM

Mukul Shirvalkar, Ron Pieper, David Beams, University of Texas-Tyler

**2653: FPD6 -- Early Intervention & Retention Programs  
4:30-6:00 p.m. Acapulco (Gold Level, West Tower)**

**Moderator:** Nancy Lamm, Indiana University-Purdue University, Indianapolis

2006-1381: I WISH SOMEONE WOULD'VE TOLD ME: UNDERGRADUATE ENGINEERING STUDENTS OFFER ADVICE TO INCOMING STUDENTS

Deborah Trytten, Tyler Combrink, Cindy Foor, Lindsey McClure, Susan Walden, University of Oklahoma

## 2006-1936: LESSONS LEARNED: IMPLEMENTING A LARGE-SCALE PEER MENTORING PROGRAM

Whitney Edmister, Jean Kampe, Carrie Slater, Beville Watford, Virginia Tech

2006-1849: INCREASING RETENTION BY INCORPORATING TIME MANAGEMENT AND STUDY SKILLS INTO A FRESHMAN ENGINEERING COURSE

Walter Bradley, Baylor University

Steven Bradley, Indiana University

2006-1117: HOW DO STUDENTS IN A PROJECT-BASED FIRST-YEAR ENGINEERING CURRICULUM PERFORM IN A SOPHOMORE ENGINEERING MECHANICS COURSE?

Jefferey Froyd, Xiaofeng Li, Arun Srinivasa, William Bassichis, Jacque Hodge, Donald Maxwell, Texas A&M University

2006-1278: USING REFLECTIVE ESSAYS AS PART OF A MIXED METHOD APPROACH FOR EVALUATING A FRESHMAN LIVING-LEARNING COMMUNITY FOR ENGINEERING AND SCIENCE STUDENTS

Jennifer Light, University of Washington

Laura Girardeau, Jennifer Beller, Greg Crouch, Washington State University

## Wednesday, June 21, 2006

**3153: FPD7 -- Service Learning  
7:00-8:15 a.m. Water Tower (Bronze Level, West Tower)**

**Moderator(s):** S. Scott Moor, Indiana University Purdue University-Fort, Wayne (ET)

2006-824: LEARNING THROUGH SERVICE: ANALYSIS OF A FIRST COLLEGE WIDE SERVICE LEARNING COURSE

David Kazmer, John Duffy, University of Massachusetts-Lowell

Beverly Perna, Tsongas Industrial History Center

## 2006-1926: AN EVALUATION OF THE IMPACT OF A SERVICE LEARNING PROJECT

IN A REQUIRED FIRST-YEAR ENGINEERING COURSE

Lorelle Meadows, Samantha Jarema, University of Michigan

2006-2228: USING SERVICE-LEARNING TO INTEGRATE K-12 OUTREACH INTO A FIRST-YEAR ENGINEERING PROGRAM

Michael Thompson, William Oakes, Purdue University

2006-1150: INTRODUCTION TO ENGINEERING THROUGH REAL-WORLD CASE

STUDIES Chetan Sankar, P.K. Raju, Auburn University

**3453: FPD8 -- Systems, Nanotechnology & Programming  
12:30-2:00 p.m. Acapulco (Gold Level, West Tower) .**

**Moderator:** Mara Knott, Virginia Tech

2006-1878: USING SYSTEMS DESIGN TO CONSTRUCT A NEW FRESHMAN

COURSE John Robertson, Richard Newman, Arizona State University

2006-2326: LAB-ON-A-CHIP DESIGN-BUILD PROJECT WITH A NANOTECHNOLOGY COMPONENT IN A FRESHMAN ENGINEERING COURSE

Youssef Allam, David Tomasko, John Merrill, Bruce Trott, Phil Schlosser, Paul Clingan, Ohio State University

2006-2061: MUSIC IN MATLAB: PROGRAMMING CHALLENGES FOR AN

INTRODUCTORY COURSE

S. Scott Moor, Indiana University Purdue University-Fort Wayne (ET)

2006-1621: WHY SHOULD I CARE? STUDENT MOTIVATION IN AN

INTRODUCTORY PROGRAMMING COURSE

Helen Burn, James Holloway, University of Michigan

**3653: FPD9 -- Technology & Textbooks  
4:30-6:00 p.m. Acapulco (Gold Level, West Tower)**

**Moderator:** Richard Freuler, Ohio State University

2006-1446: USING MULTI-MEDIA\_ COURSEWARE TO ENHANCE ACTIVE STUDENT LEARNING IN THE CLASSROOM

S. Keith Hargrove, Morgan State University

Marie Dahleh, Harvard University

2006-2383: HIGH ENROLLMENT, EARLY ENGINEERING COURSES AND THE

PERSONAL RESPONSE SYSTEM

Mark Urban-Lurain, Jon Sticklen, Neeraj Buch, Michigan State University

2006-2076: ENHANCING LEARNING OF LOW ABILITY STUDENTS IN MULTI-SECTION FRESHMAN LECTURE/LABORATORY CLASSES

Jon Sticklen, Mark Urban-Lurain, Michigan State University

2006-804: DEVELOPING A FRESHMAN INTRODUCTION TO ENGINEERING TEXTBOOK

Robert Balmer, William Keat, Philip Kosky, George Wise, Union College