

**ASEE 2011
ERM Business Meeting
Tuesday, June 28, 2011
Session T422, 12:30-2:00 p.m.**

Vancouver International Conference Centre, East Building - Room 10
Moderator(s): Matthew Ohland, Purdue University

Agenda

Call to order – The meeting was called to order by Matt Ohland, outgoing chair. The minutes from the last meeting were approved by acclimation.

Introductions

Anderson	Kevin	UW - Madison	kanderson8@wisc.edu
Bailey	Reid	Univ. of Virginia	rrbailey@virginia.edu
Barross	Luciana	Texas A&M	lbarroso@civil.tamu.edu
Besterfield-Sacre	Mary	Pittsburgh	mbsacre@engr.pitt.edu
Borrego	Maura	Virginia Tech	mborrego@vt.edu
Brophy	Sean	Purdue	sbrophy@purdue.edu
Brown	Shane	Washington State Univ.	shanebrown@wsu.edu
Brunhauer	Samantha	Stanford University	sbrunhauer@stanford.edu
Budny	Dan	Univ. of Pittsburgh	budny@pitt.edu
Cady	Elizabeth	Nat. Acad. Of Engr	ecady@nae.edu
Carberry	Adam	Tufts University	adam.carberry@tufts.edu
Cardella	Monica	Purdue University	mcardell@purdue.edu
Cass	Cheryl	Clemson	parzel@clemson.edu
Crede	Erin	Virginia Tech	ecrede@vt.edu
DeAntonio	Michael	New Mex State Univ.	mdeanton@nmsu.edu
Demetry	Chrys	WPI	cdemetry@wpi.edu
Donohue	Susan	Univ. of Virginia/CASEE	susand@virginia.edu
Douglas	Elliot	Univ. of Florida	edoug@mse.ufl.edu
Eschenbach	Elizabeth	Humboldt State Univ	beth.eschenbach@humboldt.edu
Finelli	Cindy	Univ. of Michigan	cfinelli@umich.edu
Harding	Trevor	Cal Poly	tharding@calpoly.edu
Herman	Geoffrey	Univ of Illinois Urbana-Champaign	glherman@illinois.edu

Heywood	John	Trinity College - Dublin	heywoodj@eircom.net
Holloway	Beth	Purdue	holloway@purdue.edu
Holmes	Archie	UVA	archieholmes@virginia.edu
Husman	Jenefer	Arizona State University	jenefer.husman@asu.edu
Imbrie	P.K.	Purdue University	imbrie@purdue.edu
Jonte	Bernhard	Linkoping Univ.	jonte.bernhard@liu.se
Jordan	Shawn	Arizona State	ssjordan@alumni.purdue.edu
Kellogg	Stuart	SD School of Mines	stuart.kellogg@sdsmt.edu
Kimball	Jorja	Texas A&M	j-kimball@tamu.edu
Korte	Russ	University of Illinois@uc	korte@illinois.edu
Lande	Micah	Stanford University	micah@stanford.edu
Layton	Richard	Rose-Hulman	Layton@rose-hulman.edu
LeBold	Bill		billlebold@aol.com
Lindsay	Euan	Curtin University	e.lindsay@curtin.edu.au
Linsey	Julie	Texas A&M	jlinsey@tamu.edu
Lord	Susan	U. of San Diego	slord@sandiego.edu
Martin	Julie	Clemson	jtrenor@clemson.edu
McCahan	Susan	Univ. of Toronto	mccahan@mie.utoronto.ca
Moore	Dan	Rose-Hulman	dan.j.moore@rose-hulman.edu
Morgan	Jim	Texas A&M	jim-morgan@tamu.edu
Orr	Marisa	Clemson Univ.	mkorr@alumni.clemson.edu
Paretti	Marie	Virginia Tech	mparetti@vt.edu
Pawley	Alice	Purdue Univ.	apawley@purdue.edu
Pembridge	James	Virginia Tech	jpembrid@vt.edu
Radcliffe	David	Purdue Univ	dradcliffe@purdue.edu
Ramirez	Nichole	Purdue Univ	nramire@purdue.edu
Reed-Rhoads	Teri	Purdue University	trhoads@purdue.edu
Ricco	George	Purdue University	gricco@purdue.edu
Richards	Larry	University of Virginia	lgr@virginia.edu
Salim	Amani	Purdue University	asalim@purdue.edu
Schmucker	Doug	Zahl Ford	dschmucker@zahlford.com
Schnittka	Chris	Univ. of Kentucky	christine.schnittka@uky.edu

Selby	Melodie	Walla Walla Univ.	melodie.selby@wallawalla.edu
Shuman	Larry	Univ. of Pittsburgh	shuman@pitt.edu
Smith	Karl	Purdue University/Univ. of Minn	ksmith@umn.edu
St. Omer	Ingrid	Univ. of Kentucky	istomer@engr.uky.edu
Strutz	Michele	Purdue University	mstrutz@purdue.edu
Thomas	Lauren	Virginia Tech	laurendt@vt.edu
Utschig	Tris	Georgia Tech	tris.utschig@cefl.gatech.edu
VanTyne	Natalie	Colorado School of Mines	nvantyne@mines.edu
Variawa	Chirag	University of Toronto	variawa@mie.utoronto.ca
Verleger	Matthew	Utah State University	matthew.verleger@usu.edu
Watson	Melanie	Louisiana Tech Univ	mgwatson@latech.edu

Officer reports

1. Chair – Matthew Ohland

Matt appreciates all of the support the membership has given each other as various members faced challenges and opportunities throughout the year. He announced the election results. Fewer than 100 members participated in the election. There was a discussion regarding automating and anonymizing the voting process.

2. Secretary/Treasurer – Daria Kotys-Schwartz

Treasurer report as of March 31, 2011 shows \$0.00 in the Operating account and \$96,623.22 in the Bass account. Historical comparisons are as follows: Treasurer report as of June 22, 2010 in the Operating account was \$0.00, \$0.00 as of 6/30/09, and \$1330.00 as of 7/28/08. In the Bass account, there was \$126,358.10 as of 6/22/10, \$132,001.76 as of 6/30/09, and \$94,315.59 as of 7/28/08.

3. Vice-Chair for FIE 2010 (Northern Virginia / Washington, DC, October 27–30, 2010) Programs – Maura Borrego; General Chair – Larry Richards

We had 633 registered attendees; twenty percent of those were from outside the United States. Thirty countries were represented – including the United States. The greatest number of non-US participants came from Spain, followed by Australia, Brazil, United Kingdom and Canada. Between 1/3 and 1/2 of this year's participants attended FIE for the first time.

The 40th Annual Frontiers in Education Conference was hosted by the Schools of Engineering at the University of Virginia (James Aylor, Dean) and Virginia Tech (Richard Benson, Dean) and sponsored by three professional societies - ASEE Educational Research and Methods Division (Matt Ohland, Chair), IEEE Education Society (Susan Lord, President), and the IEEE Computer Society (Elizabeth Burd, Vice President for Educational Activities)

FIE 2010 had 76 technical sessions, 22 special sessions, panels, and mini workshops, 11 pre-conference workshops and 17 exhibitors. The number of exhibits increased from previous years; all available exhibit space was taken.

Special events at FIE 2010 included the 40th Anniversary Reception, the FIE Awards Banquet, a plenary address by Sorel Reisman, 2011 IEEE Computer Society President, the Frederick Emmons Terman and Harriet B. Rigas Awards Luncheon, the Premier Award Luncheon, and a Birds of a Feather Student Networking Session.

In terms of financials, FIE 2010 produced a surplus: our expenses were \$351,162.02, and our income was \$376,961.00. Our profit of \$25,798.98 will be allocated to the three sponsoring societies.

Larry mentioned that he was appointed general chair in 2005, and that it truly took five years to secure a venue, develop a budget and program, identify speakers, and, in general, perform the many tasks that contribute to the success of an international conference. Larry and Maura thanked everyone who served on the program committee and who reviewed papers.

See addendum to the minutes for full report.

4. Vice-Chair for ASEE 2011 (Vancouver, BC, June 26-29, 2011) Programs – KC Dee

KC could not attend the meeting, so her report was given via multimedia slide show with Matt Ohland providing supporting comments as needed. Matt Verleger was the official ERM tester of the new ASEE all-in-one web site, Monolith (any problems with Monolith should be reported to Matt Ohland or, as was stated later, Bevlee Watford, PIC IV chair at deuce@vt.edu)

Sessions Overview

Originally requested: 21 technical sessions (20 podium, one poster), five workshops, two special sessions, four business meetings and three social events.

Not approved: One workshop.

Later Cancelled: One workshop (due to low registration), and the poster session (due to unanticipated availability of podium session slots).

Co-sponsored: Two additional technical sessions and one town hall meeting.

Total ERM sponsored and co-sponsored sessions at 2011 ASEE meeting: 35

Abstracts, Papers and Reviews

Abstracts originally submitted: 229.

Transferred to other divisions: 10 abstracts.

Reviewed: 219 abstracts, by 157 volunteer reviewers. Each person reviewed a maximum of five abstracts from ERM. Each abstract received three independent reviews.

Accepted: 100 abstracts for podium sessions, 40 abstracts for poster session (65% acceptance rate overall), 2 abstracts for the special sessions.

Abstract subsequently withdrawn: 12 instances (8 from podium and 4 from poster session).

No paper subsequently uploaded: 23 instances (12 from podium and 11 from poster session).

Abstract transferred to other divisions: 1 instance (at author's request).

Draft papers submitted: 106.

Reviewed: 106 drafts, by 151 volunteer reviewers. Each person reviewed a maximum of two papers from ERM. All abstracts received at least three independent reviews; roughly 12% of abstracts (15) received two reviews from ERM volunteers plus an additional review from the Program Chair.

Paper transferred to other divisions: 2 instances.

Accepted/accepted with changes: 102 abstracts (98% acceptance rate), plus 2 abstracts for the special sessions.

Paper subsequently withdrawn: 2 instances.

No revised paper subsequently uploaded: 3 instances.

Total number of completed papers, scheduled for presentation in ERM sessions: 97, plus 2 special sessions.

KC asked that authors who decide not to submit a full paper for review to withdraw their paper instead of merely not submitting it. The latter practice can make developing a presentation schedule challenging. Also, authors should try to have as complete a paper as possible to submit. Authors with papers which have placeholders for data and/or analysis should not be surprised if reviewers reject their paper(s).

See addendum to the minutes for full report.

5. PIC IV Representative – Bev Watford

Bev reported that conference attendance is up while ASEE membership is down. There was further discussion of the functionality of Monolith. One positive development is that the number of officers having access to a division's listserv has increased; the program and PIC chairs join the division chair in being able to send out mail. No officers-elect have access, though, which is an issue that will be investigated.

Bev asked that a division send on only ONE best paper nominee to the relevant PIC chair even though the bylaws say that up to 10% of a division's papers may be nominated. The up to 10% is for the division's award. Only one of those papers should be selected for further consideration, and that paper would ideally be the best paper for the division. The ERM best paper ("The Use of Inquiry-Based Activities to Repair Student Misconceptions Related to Heat, Energy and Temperature" by Michael J. Prince and Margot Vigeant) is also the PIC IV best paper. Elliot Douglas took this opportunity to thank the best paper reviewers. The PIC chairs have adopted ERM's rubric for selecting and grading best paper nominees. Their rubric will be available 7/1/11.

With respect to selecting workshops, Bev promises that a more transparent process will be in place for the next conference. In general, the new ASEE Executive Director, Norman Fortenberry, wants to increase the transparency of all processed for which transparency is appropriate. She urged ERM members to introduce themselves to Norman if they are not already acquainted with him. Norman really wants feedback from the membership, and promises fantastic customer service.

ASEE has a fiscal deficit; the deficit is smaller than last year's but since it must be addressed, there will be little to no freebies for the membership. For example, panel members must be registered with the conference before they can present. There are special funds

available, though: up to \$500 (which must be matched by the division) are available for marketing, workshops, and distinguished lecturers.

The 5 best papers at the PIC level will be presented in a distinguished lecture format next year. Aside from Larry: we need to think about how we can institutionalize ERM's distinguished lecture program to keep it going; it's a very popular program. ERM's distinguished lecture routinely draws overflow audiences.

Bev also solicited feedback about instituting a work-in-progress paper, similar to those presented at FIE (note: this year, almost half of the papers accepted by FIE are WIPs.) Archie Holmes suggested that each division should decide this issue for themselves instead of having a society-wide policy. She also reminded ERM membership about the ABET workshop, new officer training, and the accomplishments of the new ASEE diversity committee she chairs (see the Last Word in the summer issue of PRISM). The committee has a website, a strategic plan which will go into effect next year, and a plan to partner with the ASEE membership in general and divisions in particular.

Finally, she and Stephanie Davis (PIC I) are soliciting nominations for assistant chairs for their PICs. PIC I and IV have a disproportionate number of divisions assigned to them, and assistant chairs would help provide PIC support to the divisions during the conference.

6. 2011 ERM Distinguished Lecturer – Trevor Harding

Trevor organized this year's distinguished lecturer (David Williamson Shaffer – from UW-Madison). This series, as previously mentioned, is very popular and Trevor anticipates that this year's lecture will continue this tradition.

7. 2011 Breakfast of Champions – Matt Ohland and Matt Verleger

Matt Ohland and Matt Verleger hosted the Breakfast of Champions this year and reported that it went well. Representatives from all US engineering education programs spoke at the breakfast (Purdue, Virginia Tech, Clemson, and Utah State).

8. Vice-Chair for FIE 2011 (Rapid City, SD, Oct. 12-15, 2011) Programs – Jim Morgan

The FIE program is almost done (Susan's note: the preliminary program has been published as of this past weekend). There are 9 tracks times 4 time periods Thursday and Friday, and 8 tracks times 4 time periods on Saturday. There are 270 full papers, 155 WIPs, 3 panels, 6 special sessions, 10 workshops, and 11 mini-workshops.

9. Vice-Chair for ASEE 2012 (San Antonio, TX, June 17-20, 2012) Programs – Richard Layton

No report.

10. Vice-Chair for FIE 2012 (Seattle, WA, Oct. 2012) Programs – Archie Holmes and Reid Bailey

Planning for Seattle is coming along well.

11. Vice-Chair for ASEE 2013 (Atlanta, GA, June 23-26, 2010) Programs – TBD

No report.

12. Vice-Chair for FIE 2013 (Oklahoma City, OK, October 2013) Programs – Teri Reed-Rhoads

Teri asked that the dates for FIE 2012 in the agenda be checked.

13. Vice-Chair for Publications – Dan Budny

The FIE 2011 program will be published shortly online; please check it. Dan also updated the ERM website; please review it and contact him for any additions and corrections.

Committee reports

14. Apprentice Faculty Grant (AFG) Committee (to be presented at Brouhaha) – Julie Martin

Julie introduced the 5 apprentice faculty grant winners. She appreciated the help of Michael Landry and Alice Pawley in reviewing applications. The applicants were very competitive.

The winners for 2011 are:

Sharnnia Artis- The Ohio State University

Cheryl Cass – Clemson University

Adam Carberry – Arizona State University

Erin Crede – Virginia Tech

Geoffrey Herman- University of Illinois- Urbana Champaign

See addendum to the minutes for full report.

15. Brochure / Newsletter Editor – Glen Livesay (brochure and bookmark available at NETI)

Bookmarks and ERM Brochures sent to NETI this year, so that the participants have an idea what's going on in this 'ERM' thing.

The ERM fellow listing (on the brochure) has been noted to not match the ASEE listing, so this is something we should work on prior to the FIE. The ASEE listing is only current ERM folks who are Fellows, but we want to avoid excluding people who were active with ERM up to the point at which they may have ceased being active in ASEE (e.g. retirement, etc.).

Thanks to Richard Layton for passing out bookmarks and brochures at the meeting, and also to Trevor Harding and Rich Felder for similar duties at the Distinguished Lecture and NETI, respectively.

16. Distinguished Service Award Committee (to be presented at FIE 2011) – Matt Ohland

This award is given at FIE, so the recipient's name is not yet available. Cindy Finelli is the 2010 recipient.

17. Benjamin Dasher Award Committee (to be presented at FIE 2011) – Susan Donohue

- Jeffrey L. Newcomer, Western Washington University, “Inconsistencies in Students’ Approaches to Solving Problems in Engineering Statics.”
- Honorable mention: Brook Sattler, Deborah Kilgore, and Jennifer Turns, University of Washington, “I Have Never Spent Time to Think About What I Have Gained From My Projects’: Linking Portfolio Development and Life-Long Learning.”
- Honorable mention: Jacquelyn Kelly, Stephen Krause, and Dale Baker, Arizona State University, “A Pre-Post Topic Assessment Tool for Uncovering Misconceptions and Assessing Their Repair and Conceptual Change.”

Susan mentioned that this upcoming conference will complete her three-year appointment, and asked for volunteers to shadow her at Rapid City if they are interested in volunteering for the position.

(Note: this award is based on the quality of both the paper and the conference presentation.)

18. Helen Plants Award Committee (to be presented at FIE 2011) – Monica Cardella / Matthew Verleger

12 special sessions last year, generally very good sessions with high attendance. Winner/recipient has not yet been determined.

This year (2011): 12 special sessions again. Matthew Verleger will be the ERM representative on the committee for FIE 2011; Monica will return for FIE 2012.

19. Best ERM Paper Award for the 2011 ASEE Conference – Elliot Douglas

- Selection of award recipient: “The Use of Inquiry-Based Activities to Repair Student Misconceptions Related to Heat, Energy and Temperature” by Michael J. Prince and Margot Vigeant.
- Selected as PIC IV Best Paper
- ERM Best Paper Rubric shared to support a larger ASEE effort

20. Nominating Committee – Richard Layton

An election was held to elect a new Chair and two new Directors. We requested nominations April 27, distributed an email ballot May 21 with a reminder May 31, and requested ballots by June 7. For the Director election, ranked-choice voting (also called “instant runoff” voting) was used.

The two nominees for Chair were Maura Borrego and Tamara Moore. The six nominees for Director were: Don Carpenter, Euan Lindsay, Ann McKenna, Matt Verleger, Aman Yadav, & Lisa Zidek.

There were 99 votes cast out of 1272 current members, electing Maura Borrego as Chair and Euan Lindsay and Ann McKenna as Directors, all with a term 2011-2013.

Congratulations to them and thanks to our other candidates.

See addendum to the minutes for ballot.

Additional reports

1. FIE Steering Committee –Beth Eschenbach, Cindy Finelli, Jennifer Karlin

There were two meetings, one open and one closed, on Sunday, 7.26, for planning. FIE 2011 was the main focus of those meetings. The New Faculty Fellows program was discussed at this time. ERM is sponsoring the fellows this year. It was proposed that perhaps the cost (~\$10,000) be shared among the three sponsoring societies. An alternative proposal (Arnold Pears) is that each society develop its own policy for sponsorship with respect to numbers and amount of support. A motion during later discussion of this topic to discuss funding level and the future of the program at FIE was made, seconded, and passed without dissent by voice vote.

2. National Effective Teaching Institute (NETI) – Rich Felder

There are 50 attendees this year. Susan Lord, immediate past chair of IEEE EdSoc, was the NETI Fellow. She gave a presentation on gender issues. It was the first time that these issues were explicitly addressed at NETI. Mike Prince took over from Jim Stice.

3. New ASEE Fellows — Mary Besterfield-Sacre, Larry Richards, Jackie Sullivan

Call for volunteers

ASEE 2013 Program Chair (need by FIE 2011), Nominating Committee (need by FIE 2011), Apprentice Faculty Grant Committee Chair, FIE Steering Committee [appointments to be announced by July 15]

Old Business

1. *Monolith testing* – Matthew Verleger

2. *Membership* – Lisa McNair and Holly Matusovich

Monolith issues were revisited with the report of Lisa McNair and Holly Matusovich re: memberships. Monolith cannot distinguish between lapsed members who rejoin and new members, which made the sending of appropriate welcome emails (Lisa, new and Holly, rejoining) difficult. Larry Richards also mentioned that a member cannot change division membership outside of the renewal process.

See addendum to the minutes for full report.

3. *Leveraging ERM surplus to invest in long-term objectives* – Doug Schmucker and Sandy Courter

- a. Funds received from PIC to leverage proposal. Matching was more than expected and there was a technical issue with supporting travel to the ASEE meeting. A new proposal will be developed.

Doug Schmucker is working on a proposal to reserve funds for long-term benefits to be presented to the PIC chairs.

See addendum to the minutes for full report.

4. *Town Hall regarding inter-divisional cooperation* – Shane Brown
Shane Brown is soliciting best practices for town halls. He would like to have collaboration among the 14 divisions of PIC IV. He noted that the PIC assignments are up for realignment.

See addendum to the minutes for full report.

5. *A Celebration of the Engineering Education Research Community* – Cindy Finelli
Cindy Finelli noted that the Monday reception for JEE went well.
6. Proposal from John Heywood, Trevor Harding, Russell Korte, and Bill Grimson for a special session at FIE 2011, “Philosophy and its Bearing on Engineering Education.”

Location and dates

The workshop is scheduled for Tuesday and Wednesday, October 11 – 12, 2011. The venue is the Frontiers in Education (FIE) Conference to be held in Rapid City, South Dakota.

Participants Announcements and Invitations

Invitations will be extended to two or three eminent philosophers that have strong interests and work in the areas of engineering and education.

Additional invitations will be sent to 20 to 30 engineering educators and philosophers to participate in the workshop.

NSF support was received for workshop. Grants from IEEE EdSoc and ERM grants will support what NSF cannot, such as support non-US citizens to achieve global representation. Russell Korte will provide further updates.

See addendum to the minutes for full report.

7. *Fixing the Bylaws* (to remove the “Vice-Chair for Teacher Development”) and getting our presence communicated consistently on different websites.
Maura will work on the bylaws fix project as chair-elect. A student rate was set for FIE 2011.
8. *FIE Student Rate* – still expensive at \$350, but less than ASEE member early rate (\$500)
9. *Support of New Faculty Fellows* – Krishna Madhavan
 - a. Process taken over and criteria checking complete; final packets solicited.
Submission by August 1, selection by August 30.

New business

- ERM nomination of NETI for Gordon Prize. If NETI is selected as the winner, ERM would receive the institutional money and would likely use it for an endowment.

- PK Imbrie noted Kamyar's passing and proposed that a perpetual award be established in his name. This proposal was received well, and PK will lead the effort to design and implement the award.

The meeting was adjourned at 2 pm.

Respectfully submitted,

Daria Kotys-Schwartz



FIE 2010 Final Report of the General Chair: Larry G Richards

March 8, 2011

FIE 2010 was a great success!

We had 633 registered attendees; twenty percent of those were from outside the United States. Thirty countries were represented – including the United States. The greatest number of non-US participants came from Spain, followed by Australia, Brazil, United Kingdom and Canada. Between 1/3 and 1/2 of this year's participants attended FIE for the first time.

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Conference Affiliates

Corporate affiliates have played an increasingly important part in supporting FIE conferences in recent years. We appreciate their support and the part they play in making FIE conferences in general, and FIE 2010 in particular, outstanding events. Our Conference Affiliates for FIE 2010 were

[Micron](#) Sponsor Thursday Focus on New Attendees Breakfast Buffet

[Hewlett-Packard](#) Sponsor [Frederick Emmons Terman and Harriet B. Rigas Awards](#); Thursday Luncheon

[CLEERhub.org](#) Sponsor FIE 40th Anniversary Reception

[NAE Center for the Advancement of Scholarship on Engineering Education \(CASEE\)](#) Sponsor of the [New Faculty Fellow Program](#)

[John Wiley & Sons](#) Co-sponsor Premier Award for Excellence in Engineering and Friday Luncheon

[Microsoft Research](#) Co-sponsor Premier Award for Excellence in Engineering and Friday Luncheon

[Autodesk](#) Co-sponsor Premier Award for Excellence in Engineering and Friday Luncheon

[TechSmith](#) Co-sponsor Premier Award for Excellence in Engineering and Friday Luncheon

[National Collegiate Inventors and Innovators Alliance \(NCIIA\)](#) Sponsor Refreshment breaks on Friday, and Saturday Plenary Luncheon

[Rochester Institute of Technology, B. Thomas Golisano College of Computing and Information Sciences, Department of Software Engineering](#) Sponsor of Conference tote bags

Exhibits

Bob Hofinger has perfected the exhibits process. All our available space at FIE 2010 was occupied. I spoke to all the exhibitors and they were extremely pleased with the conference and their visibility at it. This year's exhibitors were

[John Wiley & Sons, Inc.](#)

[McGraw-Hill](#)

[Microchip Technology](#)

[Digilent Inc.](#)

[Ascent – Center for Technical Knowledge](#)

[BlackBerry Academic](#)

[EMA Design Automation](#)

[Emerald Group Publishing Limited](#)

[Academic Evaluation, Feedback and Intervention System \(AEFIS\)](#)

[Xilinx Inc.](#)

[Agilent Technologies](#)

[SenSIP Industry Consortium](#)

[National Instruments Corp.](#)

[American Association for the Advancement of Science](#)

[National Collegiate Inventors and Innovators Alliance](#)

[Purdue University School of Engineering Education](#)

[FIE 2011](#)

New Faculty Fellows

The New Faculty Fellow Program has been an FIE tradition since 1997. Each year, FIE invites new engineering and computer science faculty to submit applications for possible selection as New Faculty Fellows. A review panel of engineering and computer science faculty completes a rigorous peer review of each applicant's conference paper, nomination letters and professional résumé. The fellowship provides a \$1,000 grant for conference travel expenses. Six New Faculty Fellows were selected in 2010:

- [Aidsa Santiago Roman](#), University of Puerto Rico at Mayagüez, [Session F2G](#)
- [Senay Purzer](#), Purdue University, [Session F3H](#)
- [Nicholas Mousoulides](#), Cyprus University of Technology, [Session F1F](#)
- [Kai-Pan Mark](#), City University of Hong Kong, [Session T2E](#)
- [Joachim Walther](#), University of Georgia, [Session S2F](#)
- [Mikko Vesisenaho](#), University of Eastern Finland, [Session F4J](#)

The NFF's were sponsored by NAE CASEE and CleerHUB:

Workshops

Preconference workshops were held Wednesday afternoon and evening. Workshops provide concentrated professional development on a range of topics of contemporary interest. At FIE 2010, we planned five tracks with three workshops each. Although we scheduled 15 workshops; four were canceled due to low enrollments. The 11 workshops presented at FIE 2010 were

[W1A Fundamentals of Educational Research](#)

[W2A Challenges to Using Mixed Methods Research in Engineering Education](#)

[W3A Understanding Qualitative Research](#)

[W1C Google App Inventor for Android: Building mobile applications as a first computing experience](#)

[W1D Less Teaching, More Learning: A Toolkit for Classroom Transformation](#)

[W1E Writing Noyce Proposals to Meet National Science Foundation Expectations](#)

[W2D WCDE Design Case Study Workshop](#)

[W3B Designing Signals and System Laboratories using Java-DSP](#)

[W3C HigherEd 2.0: Engineering Education Using Web 2.0 Technologies](#)

[W3D Engineering of Everyday Things - Guided Inquiry Labs](#)

[W3E Teaching Entrepreneurial Behavior](#)

The educational research track (W1A, W2A, and W3A) was especially well attended.

Since we had many more workshop proposals than we could accommodate, we selected some of these proposals and created mini-workshops and special sessions during the conference. These appear to have worked well.

FIE 2010 Hotel and Ambiance

The Marriott Crystal Gateway Hotel was an ideal location for FIE 2010. It was readily accessible by all modes of travel, and its proximity to the Metro provided access to the greater Washington metropolitan area. Many attendees commented that they liked the layout of the hotel and the convenience of space for informal interactions and spontaneous small group formation. Meeting rooms were excellent, and the exhibit space was exceptional. The hotel staff was very responsive, and service was excellent. The meals were great.

Special Thanks

There is a tremendous amount of work involved in producing a conference like this. The Planning Committee organized an outstanding technical program. The program was assembled by program chairs representing the three societies: Maura Borrego of ERM, Jennifer Polack - Wahl of the IEEE Educational Society, and J. Fernando Naveda of the IEEE Computer Society. Lisa D. McNair served as Chair for workshops, panels and special sessions. Our International Chairs were Melany M. Ciampi and Edmundo Tovar

Caro. Bob Hofinger served as Exhibits Chair, Susan Lord as Awards Chair, and Ingrid St Omar as the Chair of the New Faculty Fellows Program. Reid Bailey was Local Arrangements Chair, and Ed Jones is our Conference Historian and Official FIE Photographer. Susan Donahue headed the Ben Dasher Award Committee and Shane Brown and Monica Cardella managed selection of the Helen Plants Award.

Three people were essential to the success of FIE 2010: Kevin Curry, Assistant to the General Chair, Dan Budny, Publications Chair, and Dan Moore, Steering Committee Chair. Their efforts made the whole thing work; they brought all the pieces together. They provide continuity from year to year and have the institutional memory to make it possible for the rest of us to do our jobs. They do much more work than is apparent from the outside, and we could not manage this conference without them.

FIE 2010 started with Mary Heberling as Assistant to the General Chair. She laid out the path we followed, helped select the conference hotel, and took care of the critical details during the early phases of the conference planning. We hope she is enjoying her retirement. Mary was an essential part of FIE for many years.

Finally I want to acknowledge essential role of the FIE Steering Committee in managing this conference and insuring its continued success. Dan Moore was the Chair of the FIE Steering Committee during the planning phase, and Arnold Pears was the Chair during the year of the conference.

All of these folks deserve our thanks for their contributions to the success of FIE 2010.

Educational Research and Methods Division, American Society for Engineering Education
2011 Vice-Chair for Programs Report
Kay C. Dee

2011 ASEE Annual Meeting
Vancouver, B.C., June 26 - 29 2011

1. This year, the Monolith paper management system was introduced. I sincerely thank all of the ERM members who were patient and resilient as we beta-tested and stretched the boundaries of the system.
2. Please note that ERM deadlines for workshop and special session proposals are *earlier* than the ASEE deadlines you may see on the website - the website lists the deadline for Program Chairs to send approved proposals to the PIC chairs. The early ERM deadline gives us time to review and select proposals for submission.
3. Special thanks to Elliot Douglas (best paper review coordinator), Trevor Harding (Distinguished Lecturer coordinator), Matt Ohland and Matthew Verleger (Breakfast of Champions coordinators), and Richard Layton (Brouhaha instigator).

4. *Sessions Overview*

Originally requested: 21 technical sessions (20 podium, one poster), five workshops, two special sessions, four business meetings and three social events.

Not approved: One workshop.

Later Cancelled: One workshop (due to low registration), and the poster session (due to unanticipated availability of podium session slots).

Co-sponsored: Two additional technical sessions and one town hall meeting.

Total ERM sponsored and co-sponsored sessions at 2011 ASEE meeting: 35

5. *Abstracts, Papers and Reviews*

Abstracts originally submitted: 229.

Transferred to other divisions: 10 abstracts.

Reviewed: 219 abstracts, by 157 volunteer reviewers. Each person reviewed a maximum of five abstracts from ERM. Each abstract received three independent reviews.

Accepted: 100 abstracts for podium sessions, 40 abstracts for poster session (65% acceptance rate overall), 2 abstracts for the special sessions.

Abstract subsequently withdrawn: 12 instances (8 from podium and 4 from poster session).

No paper subsequently uploaded: 23 instances (12 from podium and 11 from poster session).

Abstract transferred to other divisions: 1 instance (at author's request).

Draft papers submitted: 106.

Reviewed: 106 drafts, by 151 volunteer reviewers. Each person reviewed a maximum of two papers from ERM. All abstracts received at least three independent reviews; roughly 12% of abstracts (15) received two reviews from ERM volunteers plus an additional review from the Program Chair.

Paper transferred to other divisions: 2 instances.

Accepted/accepted with changes: 102 abstracts (98% acceptance rate), plus 2 abstracts for the special sessions.

Paper subsequently withdrawn: 2 instances.

No revised paper subsequently uploaded: 3 instances.

Total number of completed papers, scheduled for presentation in ERM sessions: 97, plus 2 special sessions.

6. *Program Listing*

Workshops

Principles of Quantitative Research Design for Engineering Education Researchers (U222A)

Tools for Developing and Assessing Students' Models of Complex Systems (U222B)

Improving Students' Oral Presentation Skills Using an Executive-Based Rubric (U422B)

Special Sessions

Moving Toward the Intended, Explicit, and Authentic: Addressing Critical Misalignments in Engineering Learning within Secondary and University Education (W222A)

Discovering Implications of the Academic Pathways Study for YOUR Campus (W422A)

Technical Sessions

K-12 Students and Teachers (M122B)

Active and Inquiry-Based Learning (M422A)

Assessment Instruments (M422B)

Assessing Student Learning (M522A)

Understanding Our Students (M522B)

Professional Identity (M622A)

Persistence and Retention I (M622B)

Open-Ended Problems and Student Learning (T122A)

Persistence and Retention II: Curricular Issues (T122B)

They're Not "Soft" Skills! (T222A)

Digital Technologies and Learning (T222B)

Research on Engineering Design Education (T522A)

Knowing Ourselves: Research on Engineering Education Researchers (T522B)

Learning Outside the Classroom (T522C)

Learning From Experts (W122A)

Potpourri I (W122B)

Fostering Student Learning (W222B)

Modeling and Problem-Solving (W422B)

Potpourri II (W522A)

Understanding Students and Faculty (W522B)

Distinguished Lecture

Measuring Innovation with Epistemic Games - Professor David Williamson Shaffer (T322)

Co-Sponsored Sessions

Educational Methods and Tools to Encourage Conceptual Learning I (primary division: Chemical Engineering; M412)

Town Hall Meeting: Open Forum on Fostering Interdivisional Exchange and Cooperation (M645)

Engineering Education Research in K-12 (primary division: K-12 & Pre-College Engineering; T544A)

Meetings and Social Events

FIE Steering Committee: Open Session (U322)

FIE 2011 Planning Meeting (U422A)

FIE Steering Committee: Executive Session (U522)

Breakfast of Champions (M122A)

A Celebration of the Engineering Education Research Community (M722A)

University of Wisconsin and University of Washington Colleagues, Alumni, Family & Friends Reception (M722B)

ERM Business Meeting and Luncheon (T422)

ERM Brouhaha (T722) - ticketed event - located at The Steamworks Brewing Company.

7. Best Paper Nomination

Congratulations to the authors of the ERM division best paper, which is also the PIC IV best paper: "The use of inquiry-based activities to repair student misconceptions related to heat, energy, and temperature," by Michael J. Prince, Bucknell University, and Margot A. Vigeant, Bucknell University.

8. Call for Papers, ASEE 2012

The 2012 ERM call for papers will include the ERM deadlines for submitting workshop and special session proposals to the 2012 ERM Vice Chair for Programs (Richard Layton, layton@rose-hulman.edu), as well as the ASEE abstract submission deadline. Watch for the call for papers on the ASEE website and in the ASEE *Prism*, in August or early September.

ERM Apprentice Faculty Grant Report June 2011

Submitted by: Julie Martin, AFG Chairperson

This report summarizes the results of the 2011 Apprentice Faculty Grant program.

This year, the new criteria introduced in 2010 were implemented.

- Individuals who are currently pursuing or plan to pursue a career in engineering education and who have demonstrated potential for substantial contributions to the field through engineering education research or scholarship.
- Any engineering education researcher who is at an “apprentice” stage of their pathway into the engineering education research community, and wishes to become an active member of the ERM Division. This might include graduate students, post doctoral researchers, junior faculty, staff members, or senior-ranking faculty who are transitioning into engineering education research.

This year the AFG program received 40 applications from candidates at 27 institutions. Five outstanding applicants were chosen by the committee:

- **Sharnnia Artis- The Ohio State University**
- **Cheryl Cass – Clemson University**
- **Adam Carberry – Arizona State University**
- **Erin Crede – Virginia Tech**
- **Geoffrey Herman- University of Illinois- Urbana Champaign**

Candidates were evaluated a team of ERM reviewers on (a) potential for future contributions to engineering education research, (b) need for mentoring/apprenticeship and (c) possible future involvement with the ERM Division. Many thanks to ERM members who reviewed the applications. **Particular thanks goes to Alice Pawley**, who stepped in to organize the reviewing of applications when the AFG Chairperson had a family emergency, and **Micah Lande**, who developed materials for Brouhaha.

- | | | |
|---------------------|------------------------|--------------------|
| • Shane Brown | • Daria Kotys-Schwartz | • Marie Paretti |
| • Reid Bailey | • Micah Lande | • Alice Pawley |
| • Monica Cox | • Jenni Light | • Senay Purzer |
| • Elliot Douglas | • Holly Matusovich | • Donna Riley |
| • Julie Ellis | • Noemi Mendoza | • Johannes Strobel |
| • Demetra Evangelou | • Lisa McNair | • Matthew Verleger |
| • PK Imbrie | • Marisa Orr | • Joachim Walther |
| • Aditya Johri | • Euridice Oware | |
| • Shawn Jordan | | |

Appreciation is also extended to those who are currently serving as mentors to the awardees: Shane Brown, Monica Cox, Elliot Douglas, Julie Martin and Jo Walther.

The AFG class of 2011 will be officially recognized at the ERM Brouhaha and with a certificate and book. Each applicant was asked to choose a book that they felt would advance their engineering education research.

ERM Ballot 2011

Nominating committee: Adam Carberry, Trevor Harding, and Richard Layton (chair).



May 20, 2011

Please note this is a two-page ballot.

Please return completed ballots to Richard Layton, layton@rose-hulman.edu, no later than June 7, 2011.





Chair

Please vote for one candidate for Chair by placing an "X" in the leftmost column to indicate your choice.

Vote	Candidate	Bio
	<p>Maura Borrego</p> 	<p>Maura Borrego is an Associate Professor and former Director of the Graduate Program in the Department of Engineering Education at Virginia Tech, currently serving as AAAS Science & Technology Policy Fellowship at the National Science Foundation. Dr. Borrego's engineering education research awards include CAREER and two outstanding publication awards from the American Educational Research Association for her journal articles. She is also an editorial board member for Journal of Engineering Education. In ASEE's ERM Division, she has served as a Director (2006-2008), ASEE best paper award chair (2008-2009), nominating committee chair (2007) and Vice Chair for FIE Programs (for the 2010 Frontiers in Education conference).</p>
	<p>Tamara Moore</p> 	<p>Tamara J. Moore is the Co-Director for the STEM Education Center and assistant professor of mathematics/engineering education at the University of Minnesota. Dr. Moore's current research is centered on the integration of STEM (Science, Technology, Engineering, and Mathematics) concepts in K-12 and higher education mathematics and engineering classrooms. STEM Integration in the classroom leads to students making connections among STEM disciplines and achieving deep understanding. Her research agenda focuses on defining STEM Integration and investigating its power for student learning through creating and testing innovative, interdisciplinary curricular approaches that engage students in developing models of real world problems and their solutions. She also works with educators to shift their expectations and instructional practice to facilitate effective STEM Integration. She currently is the principal investigator on an NSF-funded CAREER grant in which she is studying the implementation of engineering standards in K-12 STEM courses, as well as an NSF CCLI Phase 3 grant to develop and study modeling activities for undergraduate engineering students. Dr. Moore was Secretary/Treasurer for the Educational Research and Methods Division of ASEE from 2008-2010.</p>

Director

We have six candidates and two positions to fill. Please rank your preferences for Director, with “1” being your top choice, “2” for second choice, etc. You may rank as many or as few as you wish.

Rank	Candidate	Biographical sketch
	<p>Don Carpenter</p> 	<p>Donald D. Carpenter, Ph.D., P.E. is an Associate Professor of Civil Engineering at Lawrence Technological University in Southfield, MI. He serves as Director of Assessment after recently serving as Founding Director for the Center for Teaching and Learning. He has conducted funded pedagogical research and development projects, published numerous papers, and facilitated faculty development workshops. In 2000, he helped establish the E3 Team (Exploring Ethical decision-making in Engineering) whose collaboration has contributed significant research on academic integrity and ethical decision-making among engineering undergraduates. He is an active member of the ERM Division receiving both the 2001 Apprentice Faculty Grant and the 2002 New Faculty Fellow Award.</p>
	<p>Euan Lindsay</p> 	<p>Dr Euan Lindsay is an Associate Professor in Mechatronic Engineering at Curtin University, in Perth, Western Australia. His key work addresses Remote and Virtual laboratory classes, showing that there are significant differences not only in students' learning outcomes but also in their perceptions of these outcomes, when they are exposed to different access modes. Dr Lindsay was the 2010 President of the Australasian Association for Engineering Education, and co-edits the Australasian Journal of Engineering Education. He is the General chair of the AAEE 2011 conference (which you should all attend). In 2005 he was named as one of the 30 Most Inspirational Young Engineers in Australia.</p>
	<p>Ann McKenna</p> 	<p>Ann McKenna is an Associate Professor in the Department of Engineering in the College of Technology and Innovation at Arizona State University (ASU). Prior to joining ASU she served as a program officer at the National Science Foundation in the Division of Undergraduate Education and was on the faculty in the Department of Mechanical Engineering and Segal Design Institute at Northwestern University. Dr. McKenna received her B.S. and M.S. degrees in Mechanical Engineering from Drexel University and Ph.D. from the University of California at Berkeley. Dr. McKenna also serves as an Associate Editor for the Journal of Engineering Education.</p>
	<p>Matt Verleger</p> 	<p>Matthew Verleger is an Assistant Professor in the Utah State University Department of Engineering and Technology Education. Prior to joining their faculty, he was a post-doctoral researcher in Purdue University's School of Engineering Education. He received his Ph.D. in Engineering Education in 2009 from Purdue. Throughout his career, he has been active in ASEE's ERM and SCC (Student Constituent Committee) divisions. He currently serves as an At-Large Director for ERM (working on improving the Monolith user experience) and is on the advisory boards for the SCC and the Graduate Engineering Education Consortium for Students (GEECS).</p>
	<p>Aman Yadav</p> 	<p>Aman Yadav is an Assistant Professor of Educational Psychology at Purdue University. In addition to his PhD in Educational Psychology and Educational Technology, Dr. Yadav has a Bachelors and a Masters of Science in Electrical Engineering. His research focuses on the use of problem-based learning and case-based instruction in the STEM disciplines. Dr. Yadav undertakes both quantitative and qualitative research projects and has a strong familiarity with both types of analyses. He has presented and published his research in a number of engineering education outlets, such as JEE, IJEE, ASEE, and FIE. He also teaches research methods courses at Purdue.</p>
	<p>Lisa Zidek</p> 	<p>Lisa A. Zidek is an Associate Professor in Bioengineering and the Academic Program Director at Florida Gulf Coast University. She received her Ph.D. in Industrial Engineering Health Care Management from the University of Wisconsin She has served as the Vice President of Student Development for the Institute of Industrial Engineers. She is an ABET Program Evaluator for Industrial Engineering, Systems Engineering, Industrial Engineering Technology and General Engineering programs. Her research interests are in engineering education, with particular emphasis on engineering entrepreneurship and service learning. She was selected to participate in the 2009-2010 Florida Campus Compact Engaged Scholarship Fellows program.</p>

Membership Report, June 28, 2011

After working with the membership “system” for over a year, we have concluded that it needs improvement in order to be efficient for tracking lapsed members. If done on a month basis, it is not difficult or too time-consuming to copy and paste emails into an outgoing “welcome” or “please rejoin” email. However, the ASEE system for updating a lapsed membership is frustrating and people usually just rejoin instead of updating their old membership. At that point the data indicating length of membership starts anew, so we can’t tell how long someone has been associated with ASEE.

Also, the rosters do not come regularly and it is not fully clear when each list is updated. The list below shows the number of people who joined each month during the period April 2010-April 2011.

ERM Rosters Date of joining:

April 2011: 30

March 2011: 49

Feb 2011: 19

Jan 2011: 29

Dec 2010: 15

Nov 2010: 15

Oct 2010: 40

Sep 2010: 15

Aug 2010: 11

July 2010: 10

June 2010: 8

May 2010: 12

April 2010: 8

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AMERICAN SOCIETY FOR ENGINEERING EDUCATION

Division Data Extract — Membership Department Report — June 2011

Division Membership Counts

(Division membership first reported June 2001.)

		2001		2002		2003		2004		2005		2006		2007		2008		2009		2010	2011	
		Jun	Oct	Jun	Oct	Jun	Oct	Jun	Oct	Jun	Oct	Jun	Oct	Jun	Oct	Jun	Oct	Jun	Oct	Jun	Jun	
PIC 1	Aero	349	367	393	397	407	409	415	411	420	407	392	408	432	431	434	430	437	430	422	389	
	Arch	243	230	253	248	250	248	267	259	260	254	273	290	319	321	344	346	360	364	363	303	
	Bioag	335	337	347	339	346	304	264	226	217	201	187	179	181	179	177	178	178	169	157	132	
	Chem	792	779	813	801	815	771	706	685	689	651	644	614	615	600	604	609	607	601	590	551	
	Civil	610	598	620	612	620	617	630	617	637	632	645	654	661	658	679	671	680	682	670	621	
	Const	136	126	134	129	144	143	147	140	145	149	153	166	169	162	174	184	183	173	165	159	
	Econ	135	128	133	128	127	130	141	142	156	152	150	152	157	154	153	153	154	147	141	113	
	Elec	934	921	952	940	1012	1004	1070	1038	1085	1063	1080	1068	1068	1054	1069	1073	1050	1007	1001	920	
	Ind	266	255	271	272	288	277	288	272	287	287	284	279	276	259	268	264	268	264	262	240	
	Mechl	986	964	979	964	985	970	1009	994	1053	1033	1034	1044	1054	1042	1047	1008	999	990	1000	931	
	Mfg	638	587	537	505	465	435	432	412	418	403	402	399	390	385	375	356	350	345	318	313	
	Mgmt	360	362	384	379	385	371	401	380	376	372	398	388	373	362	366	352	343	324	323	285	
	PIC 2	Biomed	413	414	445	443	479	478	519	502	565	567	569	560	578	596	607	591	579	569	578	519
		Deed	743	722	740	722	748	727	749	730	769	761	778	791	830	836	880	864	868	852	842	761
Envir		427	421	427	419	440	428	439	420	422	413	404	389	408	407	413	404	413	401	397	356	
ETD		818	798	807	786	806	788	795	781	771	746	753	735	744	733	731	711	687	664	672	593	
Mater		718	719	781	759	769	738	777	759	841	841	872	872	910	914	964	972	991	962	939	849	
Multi						75	109	194	207	309	364	524	651	815	885	1009	1086	1185	1201	1263	1137	
Nucl		107	103	98	99	100	100	104	103	108	106	100	92	105	109	121	124	121	117	118	107	
Ocean		228	217	217	201	227	211	218	211	228	219	214	227	244	242	249	244	249	249	248	219	
Soft								13	37	60	65	70	65	77	77	76	81	79	80	80	65	
Syst						18	27	55	62	79	78	84	91	107	105	102	104	111	119	130	183	
PIC 3	ECC	766	766	782	774	820	812	830	820	873	875	940	975	1095	1159	1305	1358	1499	1496	1562	1364	
	EDG	293	288	292	279	280	284	290	283	278	273	266	257	273	279	257	253	255	247	244	213	
	EPP	124	120	130	131	142	138	136	133	147	144	172	177	197	207	218	215	212	209	213	185	
	Fresh	611	584	578	577	593	579	621	592	607	592	605	599	630	639	652	618	605	580	533		
	Info	753	744	804	788	828	783	820	767	815	806	825	817	835	811	809	810	824	797	766	634	
	Inst	298	280	294	281	269	259	258	255	251	239	242	236	234	221	215	211	207	199	195	182	
	Libed	204	208	220	221	219	223	233	231	251	250	251	243	251	246	249	238	235	236	235	230	
	Math	245	233	235	237	251	237	240	242	262	252	271	265	284	272	274	268	273	256	260	239	
	Mechs	513	488	470	449	446	431	419	423	457	451	432	430	425	419	429	422	415	423	420	392	
	Phys	231	226	235	224	235	226	237	225	259	253	271	254	249	253	251	251	254	260	252	228	
	Tek Lit												49	74	104	117	143	154	158	209	250	
	TYCD	436	424	406	397	413	407	417	400	409	412	453	442	473	474	484	480	459	448	445	433	
	PIC 4	Comp	803	771	785	769	762	724	743	723	726	711	699	695	688	656	649	654	643	652	596	532
		DELOS	1154	1116	1156	1148	1209	1199	1249	1211	1287	1270	1347	1340	1358	1341	1418	1228	930	791	666	523
ELD		186	182	208	221	221	216	218	215	227	230	241	237	251	242	254	251	249	247	240	237	
Entre		219	236	326	352	468	495	570	558	633	574	449	411	371	362	376	368	365	354	336	314	
ERM		970	961	993	1000	1023	1025	1106	1093	1137	1105	1156	1154	1226	1228	1281	1287	1310	1312	1325	1289	
Ethics					20	137	164	243	252	337	352	411	479	676	827	1029	1106	1218	1244	1309	1180	
Grad		408	393	400	386	398	380	393	386	418	420	416	403	406	391	390	392	391	367	356	316	
Intl		198	204	199	204	207	208	229	219	234	234	260	269	278	279	286	283	296	300	288	259	
K12					28	179	259	339	388	416	474	516	577	645	676	683	699	728	736	748	724	
Mino		333	327	362	365	369	372	387	392	421	420	446	433	478	471	497	490	482	483	487	445	
NEE		476	439	387	367	350	339	352	332	326	301	296	275	270	263	288	286	288	293	277	257	
Student																		123	135	159	232	
Women	561	553	598	606	642	628	687	675	741	737	775	789	843	862	879	880	907	899	872	807		
PIC 5	CIP	1710	1673	1697	1658	1677	1639	1663	1618	1718	1687	1739	1748	1863	1865	1957	1953	1951	1930	1946	1327	
	Coop	238	230	215	206	205	197	195	184	191	179	196	199	193	183	194	192	223	214	208	195	
	CPD	238	242	232	225	224	217	222	211	216	216	223	217	221	211	240	237	228	209	204	185	
TOTAL	PIC 1	5649	5526	5683	5586	5717	5549	5629	5434	5743	5604	5642	5641	5695	5607	5690	5624	5609	5496	5412	4957	
TOTAL	PIC 2	3454	3394	3515	3429	3662	3606	3863	3812	4152	4160	4368	4473	4818	4904	5153	5176	5285	5213	5267	4789	
TOTAL	PIC 3	4609	4489	4579	4486	4623	4509	4642	4513	4609	4547	4777	4769	5050	5097	5286	5312	5409	5385	5422	4922	
TOTAL	PIC 4	5308	5182	5414	5466	5965	6009	6516	6444	6903	6828	7012	7062	7490	7598	8030	8024	7930	7813	7659	7115	
TOTAL	PIC 5	2186	2145	2144	2089	2106	2053	2080	2013	2125	2082	2158	2164	2277	2259	2391	2382	2402	2353	2358	1707	
TOTAL	DIVS	21206	20736	21335	21056	22073	21726	22730	22216	23532	23221	23957	24109	25330	25465	26550	26518	26635	26260	26118	23490	
	DIVS / MEM	1.92	1.88	1.89	1.87	1.94	1.89	1.96	1.92	1.96	1.93	1.96	1.96	2.03	2.03	2.02	2.02	2.02	2.04	2.06	1.92	

AMERICAN SOCIETY FOR ENGINEERING EDUCATION

Division Data Extract — Membership Department Report — June 2011

Division Membership as Percent of Total Membership

(Division membership first reported June 2001.)

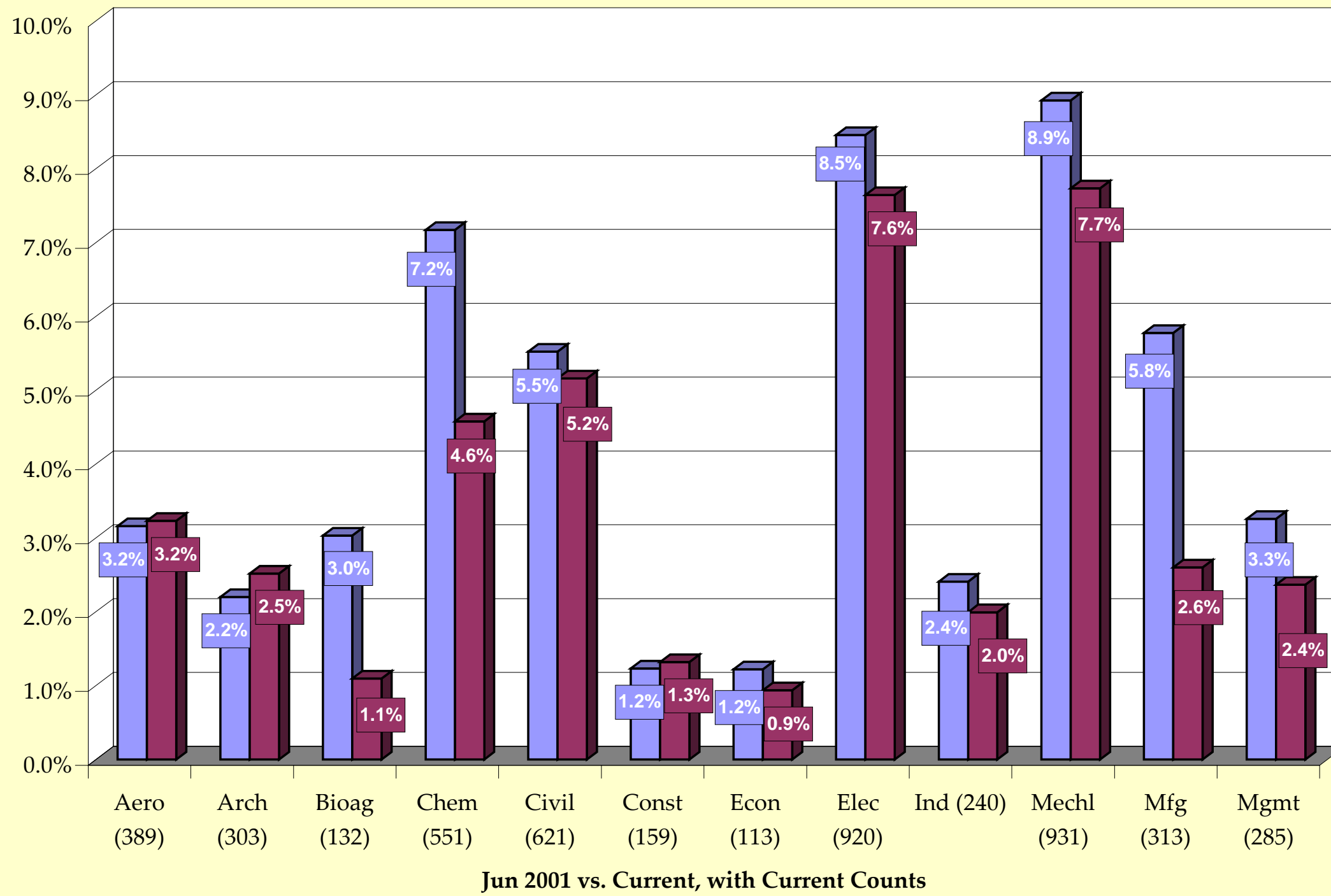
	2001		2002		2003		2004		2005		2006		2007		2008		2009		2010	2011	
	Jun	Oct	Jun	Oct	Jun	Oct	Jun	Oct	Jun	Oct	Jun	Oct	Jun	Oct	Jun	Oct	Jun	Oct	Jun	Jun	
PIC 1																					
Aero (389)	3.2%	3.3%	3.5%	3.5%	3.6%	3.6%	3.6%	3.5%	3.5%	3.4%	3.3%	3.4%	3.6%	3.6%	3.6%	3.6%	3.6%	3.6%	3.5%	3.2%	
Arch (303)	2.2%	2.1%	2.2%	2.2%	2.2%	2.2%	2.3%	2.2%	2.2%	2.1%	2.3%	2.4%	2.7%	2.7%	2.9%	2.9%	3.0%	3.0%	3.0%	2.5%	
Bioag (132)	3.0%	3.1%	3.1%	3.0%	3.0%	2.6%	2.3%	1.9%	1.8%	1.7%	1.6%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.4%	1.3%	1.1%	
Chem (551)	7.2%	7.1%	7.2%	7.1%	7.1%	6.7%	6.1%	5.9%	5.7%	5.4%	5.4%	5.1%	5.1%	5.0%	5.0%	5.1%	5.0%	5.0%	4.9%	4.6%	
Civil (621)	5.5%	5.4%	5.5%	5.4%	5.4%	5.4%	5.4%	5.3%	5.3%	5.3%	5.4%	5.4%	5.5%	5.5%	5.6%	5.6%	5.7%	5.7%	5.6%	5.2%	
Const (159)	1.2%	1.1%	1.2%	1.1%	1.3%	1.2%	1.3%	1.2%	1.2%	1.2%	1.3%	1.4%	1.4%	1.3%	1.4%	1.5%	1.5%	1.4%	1.4%	1.3%	
Econ (113)	1.2%	1.2%	1.2%	1.1%	1.1%	1.1%	1.2%	1.2%	1.3%	1.3%	1.2%	1.3%	1.3%	1.3%	1.3%	1.3%	1.3%	1.2%	1.2%	0.9%	
Elec (920)	8.5%	8.4%	8.5%	8.3%	8.9%	8.8%	9.2%	8.9%	9.0%	8.8%	9.0%	8.9%	8.9%	8.8%	8.9%	8.9%	8.7%	8.4%	8.3%	7.6%	
Ind (240)	2.4%	2.3%	2.4%	2.4%	2.5%	2.4%	2.5%	2.3%	2.4%	2.4%	2.4%	2.3%	2.3%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.0%	
Mechl (931)	8.9%	8.8%	8.7%	8.6%	8.6%	8.5%	8.7%	8.6%	8.7%	8.6%	8.6%	8.7%	8.8%	8.7%	8.7%	8.4%	8.3%	8.2%	8.3%	7.7%	
Mfg (313)	5.8%	5.3%	4.8%	4.5%	4.1%	3.8%	3.7%	3.6%	3.5%	3.3%	3.3%	3.3%	3.2%	3.2%	3.1%	3.0%	2.9%	2.9%	2.6%	2.6%	
Mgmt (285)	3.3%	3.3%	3.4%	3.4%	3.4%	3.2%	3.5%	3.3%	3.1%	3.1%	3.3%	3.2%	3.1%	3.0%	3.0%	2.9%	2.9%	2.7%	2.7%	2.4%	
PIC 2																					
Biomed (519)	3.7%	3.8%	4.0%	3.9%	4.2%	4.2%	4.5%	4.3%	4.7%	4.7%	4.7%	4.7%	4.8%	5.0%	5.0%	4.9%	4.8%	4.7%	4.8%	4.3%	
Deed (761)	6.7%	6.6%	6.6%	6.4%	6.6%	6.3%	6.5%	6.3%	6.4%	6.3%	6.5%	6.6%	6.9%	6.9%	7.3%	7.2%	7.1%	7.0%	7.0%	6.3%	
Envir (356)	3.9%	3.8%	3.8%	3.7%	3.9%	3.7%	3.8%	3.6%	3.5%	3.4%	3.4%	3.2%	3.4%	3.4%	3.4%	3.4%	3.3%	3.3%	3.3%	3.0%	
ETD (593)	7.4%	7.2%	7.2%	7.0%	7.1%	6.9%	6.9%	6.7%	6.4%	6.2%	6.3%	6.1%	6.2%	6.1%	6.1%	5.9%	5.7%	5.5%	5.6%	4.9%	
Mater (849)	6.5%	6.5%	6.9%	6.7%	6.7%	6.4%	6.7%	6.5%	7.0%	7.0%	7.2%	7.2%	7.6%	7.6%	8.0%	8.1%	8.2%	8.0%	7.8%	7.1%	
Multi (1137)					0.7%	1.0%	1.7%	1.8%	2.6%	3.0%	4.4%	5.4%	6.8%	7.4%	8.4%	9.0%	9.8%	10.0%	10.5%	9.4%	
Nucl (107)	1.0%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.8%	0.8%	0.9%	0.9%	1.0%	1.0%	1.0%	1.0%	1.0%	0.9%	
Ocean (219)	2.1%	2.0%	1.9%	1.8%	2.0%	1.8%	1.9%	1.8%	1.9%	1.8%	1.8%	1.9%	2.0%	2.0%	2.1%	2.0%	2.1%	2.1%	2.1%	1.8%	
Soft (65)							0.1%	0.3%	0.5%	0.5%	0.6%	0.5%	0.6%	0.6%	0.6%	0.6%	0.7%	0.7%	0.7%	0.5%	
Syst (183)					0.2%	0.2%	0.5%	0.5%	0.7%	0.6%	0.7%	0.8%	0.9%	0.9%	0.8%	0.9%	0.9%	1.0%	1.1%	1.5%	
PIC 3																					
ECC (1364)	6.9%	7.0%	6.9%	6.9%	7.2%	7.1%	7.2%	7.1%	7.3%	7.3%	7.8%	8.1%	9.1%	9.6%	10.8%	11.3%	12.5%	12.4%	13.0%	11.3%	
EDG (213)	2.7%	2.6%	2.6%	2.5%	2.5%	2.5%	2.5%	2.4%	2.3%	2.3%	2.2%	2.1%	2.3%	2.3%	2.1%	2.1%	2.1%	2.1%	2.0%	1.8%	
EPP (185)	1.1%	1.1%	1.2%	1.2%	1.2%	1.2%	1.2%	1.1%	1.2%	1.2%	1.4%	1.5%	1.6%	1.7%	1.8%	1.8%	1.8%	1.7%	1.8%	1.5%	
Fresh (533)	5.5%	5.3%	5.1%	5.1%	5.2%	5.0%	5.4%	5.1%	5.0%	4.9%	5.0%	5.0%	5.2%	5.3%	5.4%	5.4%	5.1%	5.0%	4.8%	4.4%	
Info (634)	6.8%	6.8%	7.1%	7.0%	7.3%	6.8%	7.1%	6.6%	6.7%	6.9%	6.8%	6.9%	6.7%	6.7%	6.7%	6.8%	6.6%	6.4%	6.4%	5.3%	
Inst (182)	2.7%	2.5%	2.6%	2.5%	2.4%	2.3%	2.2%	2.2%	2.1%	2.0%	2.0%	2.0%	1.9%	1.8%	1.8%	1.8%	1.7%	1.7%	1.6%	1.5%	
Libed (230)	1.8%	1.9%	2.0%	2.0%	1.9%	1.9%	2.0%	2.0%	2.1%	2.1%	2.1%	2.0%	2.1%	2.0%	2.1%	2.0%	2.0%	2.0%	2.0%	1.9%	
Math (239)	2.2%	2.1%	2.1%	2.1%	2.2%	2.1%	2.1%	2.1%	2.2%	2.1%	2.3%	2.2%	2.4%	2.3%	2.3%	2.2%	2.3%	2.1%	2.2%	2.0%	
Mechs (392)	4.6%	4.4%	4.2%	4.0%	3.9%	3.8%	3.6%	3.6%	3.8%	3.7%	3.6%	3.6%	3.5%	3.5%	3.6%	3.5%	3.4%	3.5%	3.5%	3.3%	
Phys (228)	2.1%	2.1%	2.1%	2.0%	2.1%	2.0%	2.0%	1.9%	2.2%	2.1%	2.3%	2.1%	2.1%	2.1%	2.1%	2.1%	2.1%	2.2%	2.1%	1.9%	
Tek Lit (289)											0.4%	0.6%	0.9%	1.0%	1.2%	1.3%	1.3%	1.7%	2.1%	2.4%	
TYCD (433)	3.9%	3.9%	3.6%	3.5%	3.6%	3.5%	3.6%	3.4%	3.4%	3.4%	3.8%	3.7%	3.9%	3.9%	4.0%	4.0%	3.8%	3.7%	3.7%	3.6%	
PIC 4																					
Comp (532)	7.3%	7.0%	7.0%	6.8%	6.7%	6.3%	6.4%	6.2%	6.0%	5.9%	5.8%	5.8%	5.7%	5.5%	5.4%	5.4%	5.3%	5.4%	5.0%	4.4%	
DELOS (523)	10.4%	10.1%	10.3%	10.2%	10.6%	10.5%	10.8%	10.4%	10.7%	10.6%	11.2%	11.1%	11.3%	11.1%	11.8%	10.2%	7.7%	6.6%	5.5%	4.3%	
ELD (237)	1.7%	1.7%	1.8%	2.0%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	2.0%	2.0%	2.1%	2.0%	2.1%	2.1%	2.1%	2.1%	2.0%	2.0%	
Entre (314)	2.0%	2.1%	2.9%	3.1%	4.1%	4.3%	4.9%	4.8%	5.3%	4.8%	3.7%	3.4%	3.1%	3.0%	3.1%	3.1%	3.0%	2.9%	2.8%	2.6%	
ERM (1289)	8.8%	8.7%	8.8%	8.9%	9.0%	8.9%	9.5%	9.4%	9.4%	9.2%	9.6%	9.6%	10.2%	10.2%	10.6%	10.7%	10.9%	10.9%	11.0%	10.7%	
Ethics (1180)					0.2%	1.2%	1.4%	2.1%	2.2%	2.8%	2.9%	3.4%	4.0%	5.6%	6.9%	8.6%	9.2%	10.1%	10.3%	9.8%	
Grad (316)	3.7%	3.6%	3.6%	3.4%	3.5%	3.3%	3.4%	3.3%	3.5%	3.5%	3.5%	3.3%	3.4%	3.2%	3.2%	3.3%	3.2%	3.0%	3.0%	2.6%	
Intl (259)	1.8%	1.9%	1.8%	1.8%	1.8%	1.8%	2.0%	1.9%	1.9%	1.9%	2.2%	2.2%	2.3%	2.3%	2.4%	2.4%	2.5%	2.5%	2.4%	2.2%	
K12 (724)					0.2%	1.6%	2.3%	2.9%	3.3%	3.5%	3.9%	4.3%	4.8%	5.4%	5.6%	5.7%	5.8%	6.0%	6.1%	6.0%	
Mino (445)	3.0%	3.0%	3.2%	3.2%	3.2%	3.2%	3.3%	3.4%	3.5%	3.5%	3.7%	3.6%	4.0%	3.9%	4.1%	4.1%	4.0%	4.0%	4.0%	3.7%	
NEE (257)	4.3%	4.0%	3.4%	3.3%	3.1%	3.0%	3.0%	2.9%	2.7%	2.5%	2.5%	2.3%	2.2%	2.2%	2.4%	2.4%	2.4%	2.4%	2.3%	2.1%	
Student (232)															0.8%	1.0%	1.1%	1.3%	1.9%	1.9%	
Women (807)	5.1%	5.0%	5.3%	5.4%	5.6%	5.5%	5.9%	5.8%	6.2%	6.1%	6.4%	6.6%	7.0%	7.2%	7.3%	7.3%	7.5%	7.5%	7.2%	6.7%	
PIC 5																					
CIP (1327)	15.5%	15.2%	15.1%	14.7%	14.7%	14.3%	14.3%	13.9%	14.3%	14.0%	14.4%	14.5%	15.5%	15.5%	16.3%	16.2%	16.2%	16.0%	16.2%	11.0%	
Coop (195)	2.2%	2.1%	1.9%	1.8%	1.8%	1.7%	1.7%	1.6%	1.6%	1.5%	1.6%	1.7%	1.6%	1.5%	1.6%	1.6%	1.9%	1.8%	1.7%	1.6%	
CPD (185)	2.2%	2.2%	2.1%	2.0%	2.0%	1.9%	1.9%	1.8%	1.8%	1.8%	1.9%	1.8%	1.8%	1.8%	2.0%	2.0%	1.9%	1.7%	1.7%	1.5%	

Division Membership Ranked: June 2001 vs. June 2011

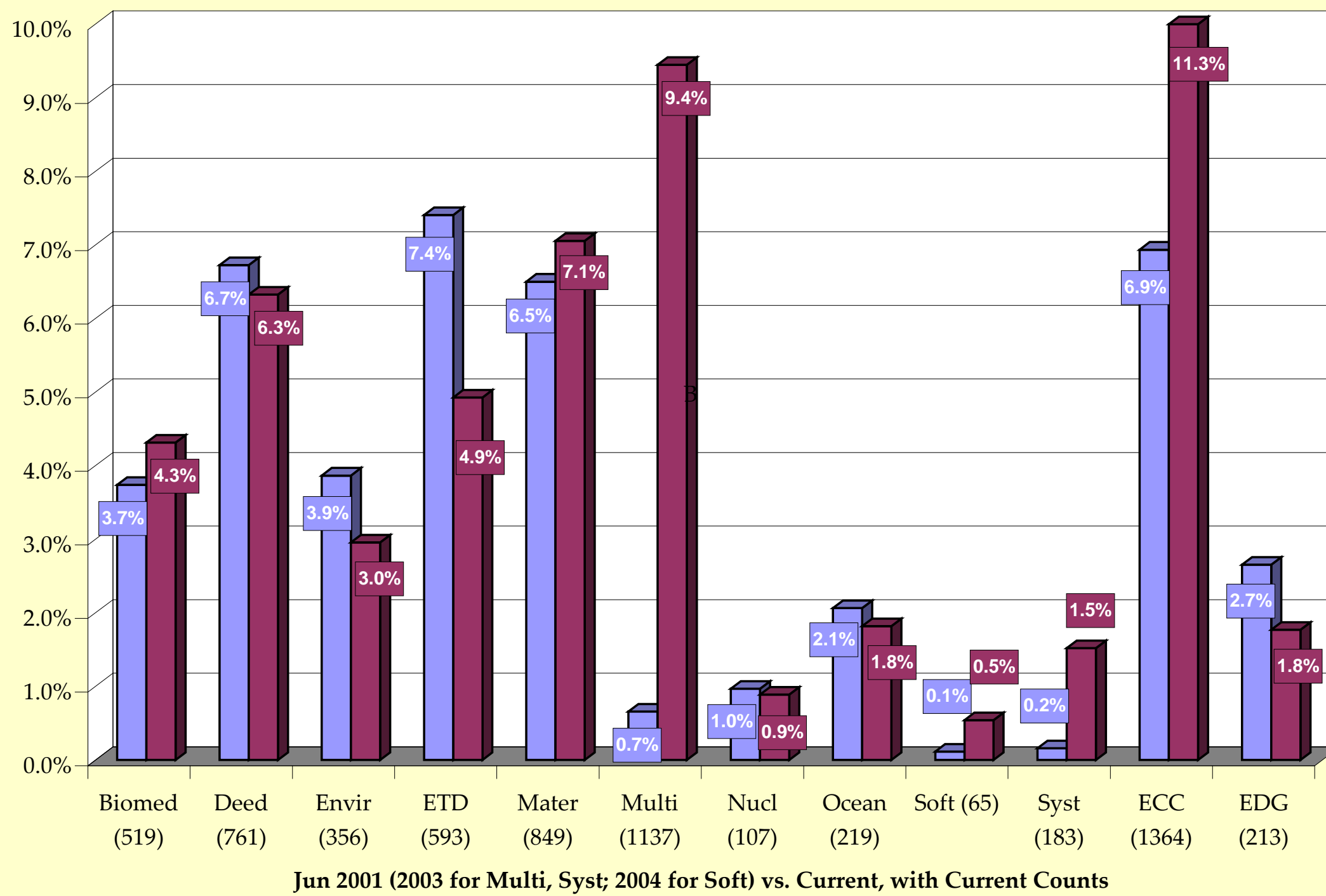
(Division membership first reported June 2001.)

	2001 Jun		2011 Jun	
	Size	Rank	Size	Rank
Aero	349	24	389	23
Arch	243	31	303	28
Bioag	335	25	132	47
Biomed	413	21	519	19
Chem	792	8	551	15
CIP	1710	1	1327	2
Civil	610	15	621	13
Comp	803	7	532	17
Const	136	40	159	46
Coop	238	32	195	41
CPD	238	33	185	42
Deed	743	11	761	10
DELOS	1154	2	523	18
ECC	766	9	1364	1
Econ	135	41	113	48
EDG	293	28	213	40
ELD	186	39	237	35
Elec	934	5	920	7
Entre	219	36	314	26
Envir	427	20	356	24
EPP	124	42	185	43
ERM	970	4	1289	3
ETD	818	6	593	14
Ethics	n/a		1180	4
Fresh	611	14	533	16
Grad	408	22	316	25
Ind	266	29	240	33
Info	753	10	634	12
Inst	298	27	182	45
Intl	198	38	259	31
K12	n/a		724	11
Libed	204	37	230	37
Mater	718	12	849	8
Math	245	30	239	34
Mechl	986	3	931	6
Mechs	513	17	392	22
Mfg	638	13	313	27
Mgmt	360	23	285	30
Mino	333	26	445	20
Multi	n/a		1137	5
NEE	476	18	257	32
Nucl	107	43	107	49
Ocean	228	35	219	39
Phys	231	34	228	38
Soft	n/a		65	50
Student	n/a		232	36
Syst	n/a		183	44
Tek Lit	n/a		289	29
TYCD	436	19	433	21
Women	561	16	807	9

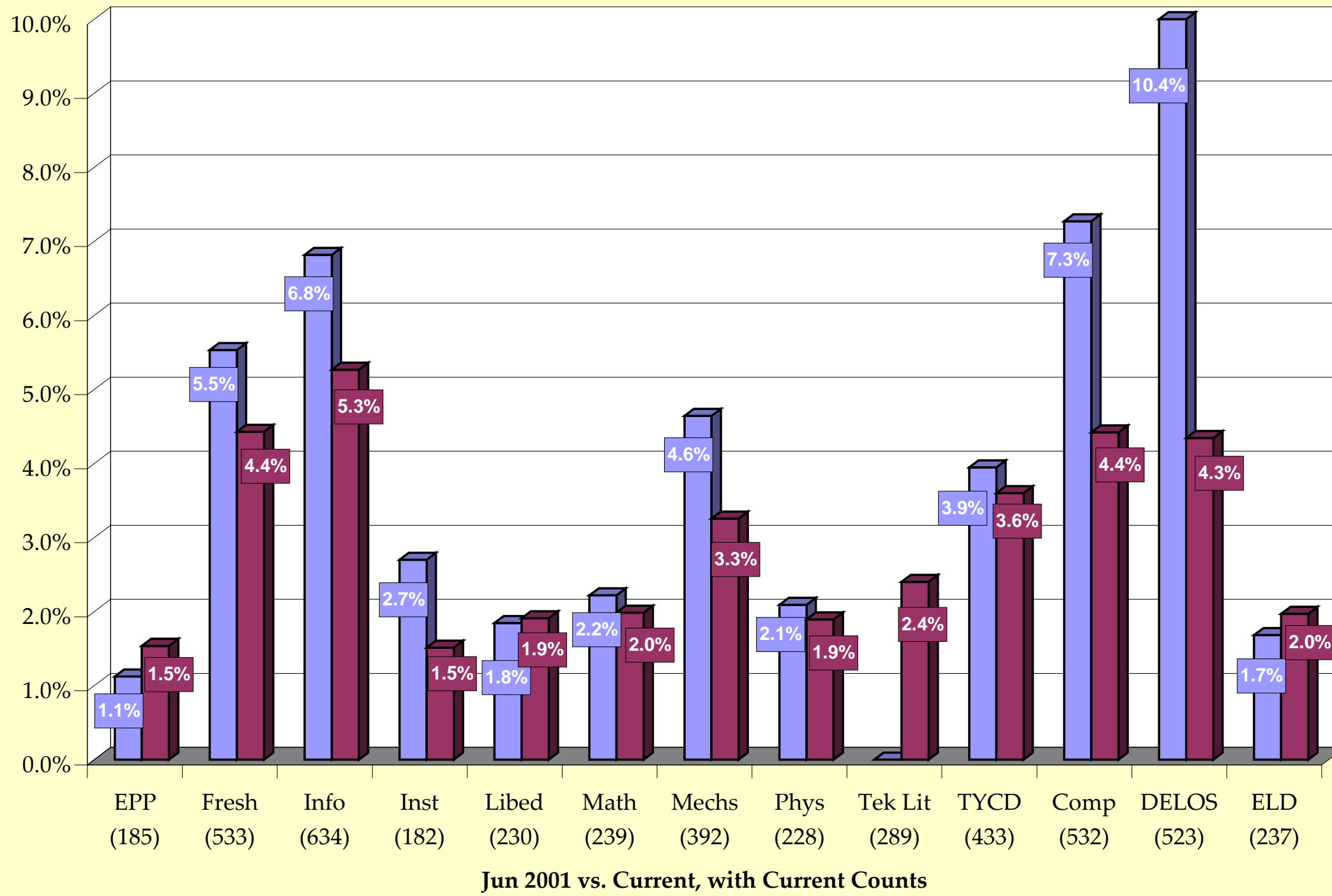
Division Membership as Percentage of Total Membership



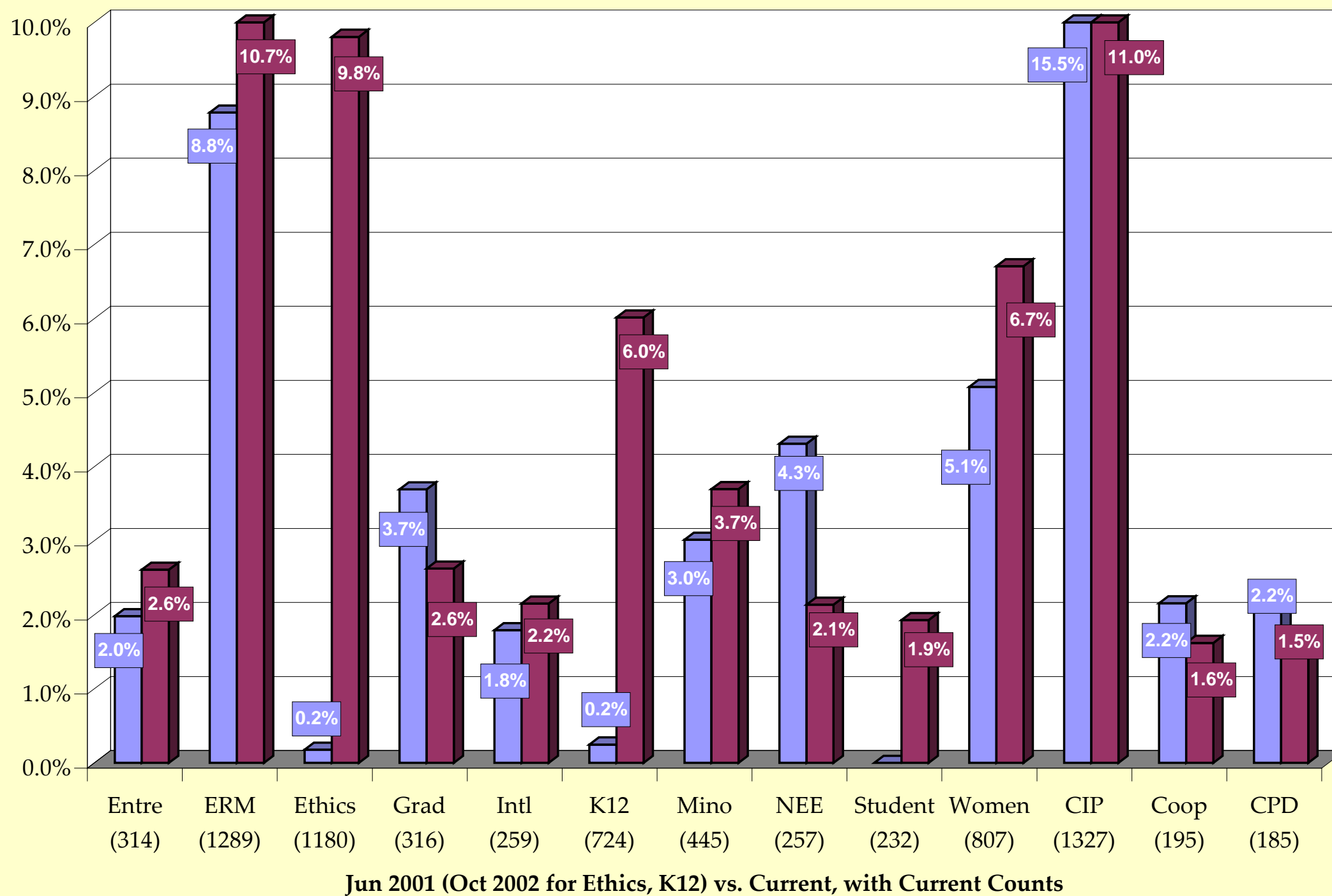
Division Membership as Percentage of Total Membership

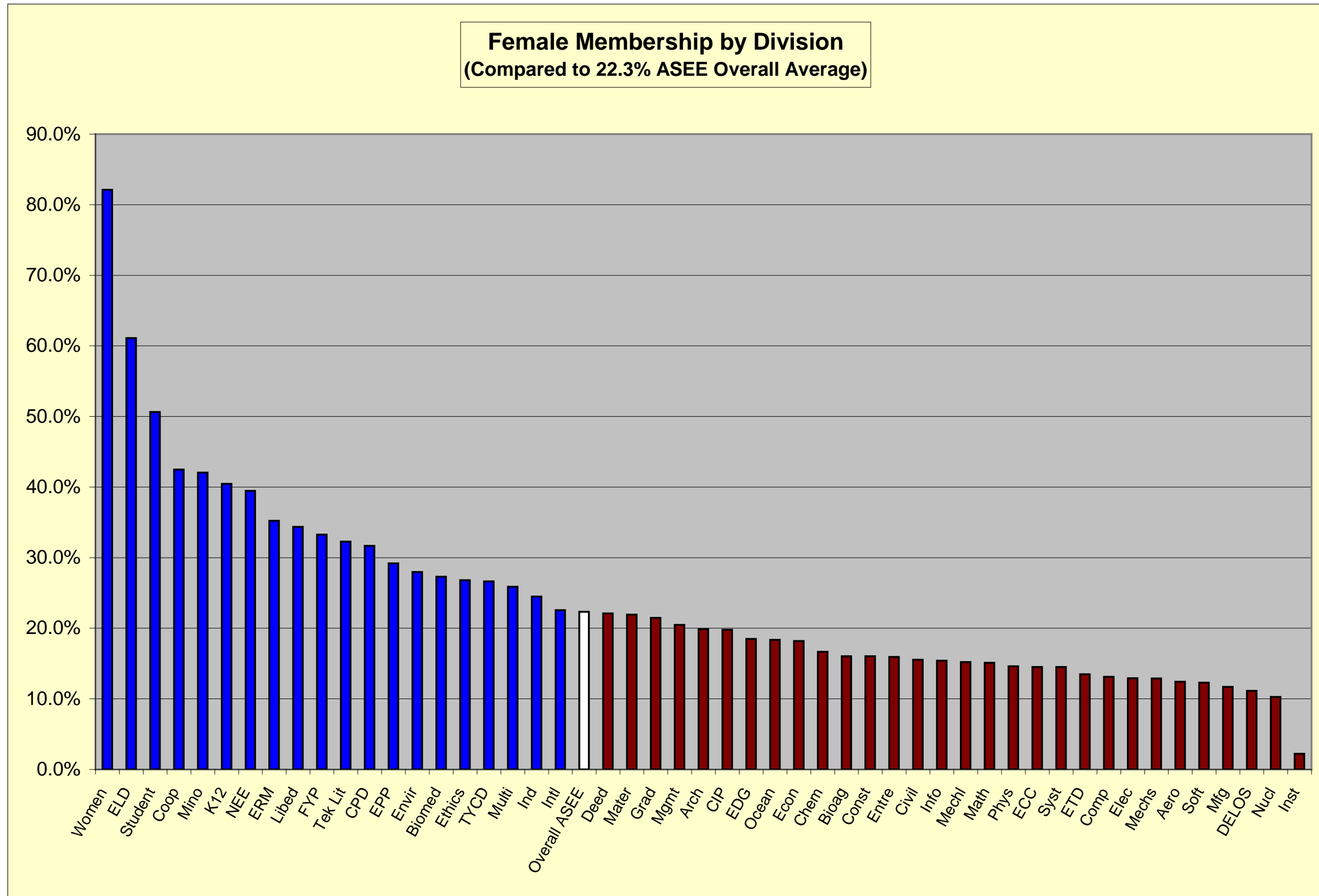


Division Membership as Percentage of Total Membership



Division Membership as Percentage of Total Membership





**A Proposal for:
ASEE Professional Interest Councils Special Projects Fund**

Division: Educational Research Methods, PIC IV
Author of Proposal: Schmucker, Douglas, PhD, PE (Director, ERM)
Contact Information: Zahl-Ford, Inc
8411 S. Walker Ave
Oklahoma City, OK 73139
doug_schmucker@yahoo.com
405-488-1296

Title: New Friends and Colleagues

Description: An informal survey has indicated that one of the barriers to active engagement of new members with the engineering education research community includes the “insiders” perception. The perception states that since newcomers are not on the inside circle of researchers then they are not granted entry to publish or present. The ERM division has long had success in engaging others broadly across disciplines. With the success of new Departments of Engineering Education, there is a greater need to develop new friends and colleagues and engage those outside of what is the new circle of movers and shakers.

The proposed project specifically seeks out individuals who are outside of the new norm, e.g., faculty and students at teaching-focused institutions where travel and research support is highly limited. Via competitive selection in this proposed project each of four awardees will be partnered with an established ASEE-ERM member. The ASEE-ERM division will appoint an ad hoc committee to review and process the applications. Notice of the competition will be through normal ASEE marketing channels.

In addition, a partial travel stipend of \$250 each will be provided to the awardees to attend the ASEE Annual Conference or FIE Conference. The awardees and their ERM partner will also receive a free ticket to an ERM social event at the conference (anticipated value \$50, e.g., ERM Brouhaha).

Budget:	ASEE PIC SPF	\$500
	ASEE ERM	\$900
	Total:	\$1400

Subject: Notes & DRAFT Recommendations to Board from the "Town Hall" Meeting

Hi Everyone,

First of all, I wanted to thank everyone for participating in the recent Town Hall meeting, or for contributing to the earlier conversations that made this meeting possible. (We are sending this note to both groups—my apologies for any cross-posts!) As we decided at the end of the Town Hall meeting, I am circulating this note, which contains:

- DRAFT recommendations for the ASEE Board
- Additional ideas/notes from our meeting

At the end of the meeting, we agreed to circulate our draft recommendations to ourselves and the PIC chairs, integrate all feedback received, and then forward our recommendations to all ASEE Division chairs for their review and possible endorsement. After this, we will officially submit our recommendations to the ASEE Board and Executive Director via the PIC chairs.

The one area where we did not reach a clear set of recommendations was on the issue of PIC realignment. However, it appeared that the issue revolved mainly around those in PIC III and PIC IV. We will follow up with the folks in these two PICs, but if anyone else would like to be included in this conversation please let us know.

There were a number of other good ideas about working across the divisions that came up during the meeting, and we hope to follow up on these ideas at a later date. In the meantime, we look forward to your thoughts and suggestions on the draft recommendations below.

Best wishes

- Atsushi Akera

On Behalf of the LEES (formerly LED) Committee on Interdivisional Cooperation

Recommendations to the ASEE Board on Fostering Interdivisional Cooperation & Coordination

*****DRAFT*****

During the 2011 ASEE annual meeting in Vancouver, fourteen (14) ASEE Divisions co-sponsored a "Town Hall" meeting in order to explore and discuss ways to foster greater interdivisional exchange and cooperation. This discussion built on some ideas compiled during an earlier, organized conversation that took place between 27 July and 8 August 2010 online. Approximately forty ASEE members were in attendance at the Town Hall meeting. Discussions centered on the following areas, and we offer the following recommendations to the Board:

Organizational Modifications that Could Enhance Interdivisional Conversations &

Collaboration

While the disciplinary organization of ASEE is of course essential, we believe that our organization could benefit from enhancing the conversations that cut across the divisions around shared topics, interests, and interdisciplinary areas of study. We believe the following changes may enhance ASEE's capacity to foster such conversations:

- **Move to a chair plus chair-elect structure for the PIC Chairs, and assign interdivisional cooperation and coordination to be one of the main duties of the PIC Chair-elect.** Specifically, encourage the PIC chair -elect to:
 - o Help divisional program chairs to set up joint sessions, coordinate schedules (including their business meetings times), and organize shared networking opportunities
 - o Proactively identify and facilitate emerging conversations that cut across the divisions

An added benefit of this arrangement would be that the PIC Chair-elect could help relieve some of the PIC Chairs' work load during the annual meeting. With this arrangement, the PIC Chair-elect would also become more familiar with the divisions within her or his PIC before stepping up as chair, thereby enhancing the perspectives that are conveyed to the Board.

- **Establish, as well, a program committee at the Society level focused specifically on interdisciplinary and interdivisional topics.** This could be comprised of the PIC Chair-elects as described above, or be a separately constituted committee comprised of either the immediate past PIC Chairs or else one (1) past program committee chair from each PIC. Among the possible duties of this committee would be to:
 - o Identify emerging themes and interdisciplinary topics of interest to more than one division
 - o Issue appropriate requests for proposals to which divisional program chairs (and/or individual members) may submit paper and session proposals.
 - o Invite proposals for distinguished lectures that are co-sponsored by multiple divisions (ideally with some matching funds provided by the Society to encourage such joint lectures).

Making it so these interdivisional slots come out of a separate allocation (so they do not do come out of a particular division's allotted number of sessions) would remove existing disincentives for co-sponsored sessions.

- **Divide (or extend) the New Program Chair Orientation Session into two phases,** one focused around their basic responsibilities and Monolith training (as we currently do); and another more "social" session during which incoming program chairs and past program chairs across the divisions can discuss their

ideas, experiences and shared interests.

Enhancements to Monolith and Conference Scheduling

We also recommend that the following enhancements be considered for Monolith. (We understand that some of these changes may take some time to implement.)

- **Add a feature so that program chairs (and the PIC chair elects) can easily extend an invitation to other program chairs** for joint sessions, featured speakers, joint networking opportunities, and the like. At the very least, make it so the email addresses of other program chairs are easily accessible from the Program Chair's dashboard.
- **Move to a two-phase scheduling process** so that program chairs can first schedule joint sessions and sessions of interest to other divisions. All remaining sessions can then be scheduled around these allotted time slots. (Each program chair will maintain full autonomy over their scheduling decisions.)
- **Implement a controlled-list-keyword search capability** so that individual members and program committee chairs can locate papers as well sessions that relate to topics such as "communications", "assessment", or "capstone" that are either broader than, or narrower than an existing division. (This keyword list could be generated, for instance, by asking each division to submit 3-5 keywords, including keywords as they relate to "current topics" of interest such as "sustainability", "integration," or "Grand Challenges") Possibly also make it possible for program chairs to post "special-interest" lists on a webpage that is visible to the entire ASEE membership.

In addition, we recommend that the Board consider the feasibility and desirability of the following:

- **Make it possible to coordinate the review of papers across multiple divisions.** This might include a feature that allows program chairs from one division to ask another program chair to recommend and/or assign a reviewer for interdisciplinary papers; and making it possible to view abstracts across divisions.

PIC Realignment

We are in general agreement that there should be some realignment (regrouping) of the PICs so that they are once again organized around shared interests. This would improve communication to the Board. In particular, we recommend that,

- **The Board authorize the ASEE staff to work along with the PIC chairs** in soliciting requests for PIC realignment. This might include requests by several divisions to be placed within a single PIC, which may require some additional adjustments in order to maintain consistency in the overall size of each PIC (both in terms of the number of divisions as well as number of members).

Other Ideas and Notes from the Town Hall Meeting

(This is for our reference, and will not be forwarded to the Board)

Key Ideas

Some of the other key ideas that emerged from the Town Hall meeting, especially through the first group that continued to discuss “best practices” were as follows:

- **Encourage every division to develop a “program chair’s manual” or “survival guide.”** Include within such a manual the “best practices” for interdivisional exchange and cooperation.
- **Gradually change the “customary” time of our business meetings** to eliminate the most disappointing schedule conflicts. This should occur through direct conversation among the division chairs.

Best Practices

The following, meanwhile, is a synthesis of the “best practices” mentioned during the first part of the meeting:

JOINT SESSIONS / SHARED TOPICS

- **Cultivate enduring relationships across the divisions, through face-to-face** and one-on-one conversations among the officers, especially in areas where there are clear shared interests and synergy. Minorities in Engineering has done so historically with groups such as K-12 and Graduate; Mechanics, Mechanical Engineering, and Civil Engineering has also worked together to create co-sponsored sessions on a regular basis.
- **Be proactive at the divisional level about exploring themes (such as integration, assessment, sustainability, etc...) that may be of interest to multiple divisions,** and put out joint calls for papers & session proposals around those specific themes.
- **Have the program chairs encourage their members to submit co-authored papers and co-sponsored session proposals.**
- **Encourage program chairs to contact other program chairs when they have several ‘high quality’ papers but are unable to fill a compete session** to see if they can be combined with relevant papers from other divisions.
- **Co-sponsor a distinguished lecture** in order to draw a wider audience, including the variant where two distinguished speakers are asked to speak during a joint session, thus exposing members of each division to the leading ideas of another division.

- **Encourage program chairs and chair-elects to visit another division's business meeting.**

SOCIAL NETWORKING ACROSS THE DIVISIONS

- **Organizing joint business meetings among closely-affiliated divisions.** Also explore “different pairings” over time to build more robust connections across the divisions.
- **Encourage individuals to be active in more than one division,** and convey information across divisions by attending the respective business meetings.
- **Organize inter-divisional networking events** including shared banquets, dinners, and outings.

PIC Realignment & Reorganization

The conversations within the fourth group, which focused on PIC realignment and reorganization are summarized below:

- As consistent with our recommendations to the Board above, ASEE headquarters, in collaboration with the PIC chairs, should find a way to collect requests for PIC realignment around shared interests.
- While recognizing that there are reasons to have a PIC focused around industrial interests, it seemed awkward to have a PIC containing only three divisions; would any of the other ASEE divisions consider moving to PIC V in order to rebalance the size of this PIC (and hence PIC chair workloads)?
- The group would also like the ASEE Board to review whether the ASEE divisions have sufficient representation on the Board under the current PIC structure.

In addition, the suggestion was made during the earlier online conversation that,

- We begin to think about the PIC chair as something that we do in rotation (not necessarily via an actual change in the bylaws, but more in terms of a tacit agreement among the divisions to put candidates forward in a particular order), so that concerns, if any, of all of the divisions can be brought forward in turn.

Other Ideas

We also list below some other ideas that were mentioned during the Town Hall meeting that were not placed in the recommendations to the Board, but may merit further discussion:

- Requiring/encouraging a certain percentage of sessions to be co-sponsored and cross-listed.
- Finding some way to highlight all co-sponsored sessions in the printed program

- Would it be possible to have all papers start at the same time across the divisions?
- Allow rejected papers that are high quality but don't fit within a particular division to be flagged for possible interest to other divisions; have a society-wide program committee review any remaining abstracts to see if some can be combined into a meaningful session.
- Allow authors to designate primary and secondary divisions that they would like to review their proposal

Feedback to ASEE

We also compile below additional feedback to the organization that were collected during the meeting.

- The two-step peer-review process for abstracts and full papers may be more than necessary. Consider allowing divisions to employ a more streamlined process, such as allowing the program chair to screen abstracts. (Full papers would all still be peer reviewed.)
- We really need a better approach to scheduling across divisions. While eliminating all conflicts would be impossible, some kind of 'whiteboard' that would allow us to see what's getting scheduled on a dynamic basis might provide us with an improved tool for coordinating our schedules.

Proposal for a WORKSHOP ON THE PHILOSOPHICAL FOUNDATIONS OF ENGINEERING AND ENGINEERING EDUCATION

Statement of the Goals and Objectives of the Workshop

Philosophy is one of the historic means we have for trying to understand the universe and our place in it. While this quest for understanding might seem quite distant from the practical concern of engineering or education, there are direct links between the abstract questions we raise in our pursuit of understanding and the decisions we make about the content and methods to educate engineering students. Today, there are hotly debated questions about what students should learn and how they should learn it. Some of these questions have deep philosophical roots and might be better understood if the philosophical dimensions of engineering knowledge and practice were better understood. In the context of engineering, this workshop will address questions about the beliefs, values, and assumptions concerning the nature of knowledge and education.

We have three overall goals for this workshop—realizing that we can only begin a formal process to address the complex issues of philosophy, engineering, and education:

- To begin an ongoing process of thoughtful reflection and dialogue about the philosophical issues that form the foundations engineering and engineering education.
- To begin to make sense of the current state of philosophical work regarding engineering and engineering education.
- To begin the development of an ongoing community of philosophers, engineers, and engineering educators that will foster continuing conversation, as well as offer important trajectories for further study.

Philosophy has a role to play in policy making, such as the production of reports like “*The Engineer of 2020*” (National Academy of Engineering, 1995), and in Administration, such as the accreditation of programs by ABET (2010). Philosophy is about the rational analysis and justification of beliefs, values, opinions and attitudes that influence the knowledge and practice of a field or profession. Engaging philosophy as a process of rationalizing our knowledge and practice provides a superb and well-tested process and framework by which we can evaluate and clarify our assumptions, beliefs, and values (Rescher, 2010). In this way philosophy can challenge us to seriously question what we believe, what we value, and subsequently how we act. The beliefs and values that we hold are not simply technologically derived nor are they just inherited from previous generations. Philosophical thinking and dialogue can foster the collective self-reflection and critical thinking needed for re-evaluating our stance on the way engineering interacts with and meets the needs of society. Philosophy helps us clarify our thinking and weed out the inconsistencies and contradictions in our views of the contribution of engineering to society.

The value of philosophy in the formulation of the curriculum is important in the screening of aims and objectives for the education of students. Philosophy has several roles within the curriculum. For example, the curriculum could have as one of its goals the development of what Newman called a philosophical habit of mind or what some today would call reflective practice or what Sullivan (2005) and Sheppard, Macatangay, Colby and Sullivan (2009) called “The Third Apprenticeship.” In that cause it might also achieve another highly regarded goal of education (i.e., critical thinking) through the use of its method aimed at developing philosophical inquiry skills in students and faculty (Korte & Smith, 2008). Finally, because engineering can be perceived as inherently philosophical the understanding of engineering may be advanced (Grimson, 2007).

At a less grandiose level we all bring a personal philosophy to our work as engineers and our teaching as faculty. Our beliefs and practice regarding our work and teaching will be in response to a personal philosophy whether we are conscious of it or not. While philosophy, like other subjects, offers a variety of views and solutions, what the engineering and education community cannot do is ignore or underestimate the importance of clarifying and understanding these issues. The diverse views among engineering educators regarding the aims and outcomes of engineering education are difficult to reconcile without addressing the philosophical roots various perspectives. The purpose of this workshop is to take a step toward understanding what needs to be done to rectify this state of weakness in the rigorous appraisal of developing a philosophy of engineering and engineering education. Specifically, the objectives of this workshop are:

- To address and clarify the definition(s) of engineering and engineers.
- To clarify the aims and objectives of engineering education.
- To develop greater coherence in our understanding and practice of engineering and engineering education.
- To address and clarify our understanding of the ontology and epistemology of engineering and engineering education.
- To organize a community of scholars focused on the relationship of philosophy to engineering and engineering education.

Furthermore, we claim that engineering problems are inherently different from science problems and that the knowledge needs of engineering give engineering its own philosophical foundation. We accept that sometimes engineers function as scientists and that sometimes scientists act as engineers. We assume that while the philosophy of science can contribute to our understanding of the teaching of applied science subjects in the engineering curriculum it does not apply to engineering *per se*. We argue that engineering is inherently philosophical, and that if engineering students, and engineering professionals are shown how to use philosophical reasoning in the exploration of their professional identities and practices this effort will enhance their performance as students and engineers.

Statement of the Need for this Workshop

Over the past few years there has been a growing interest in and attention paid to the relationship between philosophy and engineering. However, much of this effort has been disconnected with little visibility beyond the group of interested scholars attending the gatherings.

Since 2006 several largely independent groups have been promoting various dimensions of the discussion of the relationship between engineering and philosophy. Our concern is with two of them: (1) The workshops in philosophy and engineering and (2) the Frontiers in Education Conference (FIE). The workshops originated in 2006 when a group of engineers and philosophers met at MIT under the leadership of Taft Broome of Howard University¹ and out of that meeting grew a workshop on Philosophy and Engineering that met at Delft University in the Netherlands in October 2007 (WPE 2007). Just prior to that meeting at the 2007 Frontiers in Education Conference (FIE) three members of the Education, Research and Methods Division (ERM) of the American Society for Engineering Education (ASEE) initiated a special session titled, *Can philosophy of engineering improve the practice of engineering?* The three of them believed that it could. Prior to that and independently of the others, Bill Grimson had argued in a paper to the June 2007 annual conference of ASEE that engineering was by its very nature philosophical, and he characterized engineering using the language and activities of philosophy as seen from a

¹ Billy Koen whose major philosophical work *Discussion of the method. Conducting an Engineer's approach to Problem Solving* (Oxford, 2003) began with an ASEE published monograph was present and contributed to both workshops.

classical standpoint. He also published a paper on the matter in a treatise on *Philosophy in Engineering*.

The Delft Workshop was followed by a second workshop held at the Royal Academy of Engineering in London in November 2008 (WPE 2008), and thereafter a one and one-half day session was held at the Colorado School of Mines in May 2010 (fPET 2010). The Workshops were of two and a half days duration. They were organized around three parallel themes for paper presentations, tutorials and keynote addresses. The three areas were philosophy, ethics and reflections of practitioners. Although several of the papers were oriented toward the education of engineers there was no specific theme that focused on this issue.

The interest in the FIE special session of 2007 caused the authors to seek a further special session at the 2008 FIE and in addition to obtain approval for a paper session. Two special sessions were offered at the 2009 FIE and the one offered by Russell Korte and Karl Smith won that years Helen Plants award. They had focused on philosophy as a tool for aiding the rational analysis of engineering and engineering education. The FIE activities were built around special session(s) and in one case a paper session.

With one or two overlaps the participants in these two networks differed yet were often talking about similar matters. Both sets of activities brought a number of persons who had different academic perspectives together. Although the FIE activities were light on professional philosophers they did bring a number of engineering educators and social scientists associated with engineering education into the discussions.

The Workshops have had two significant outcomes thus far. First they brought engineers (mostly educators) together with philosophers. But the engineering educators tended not to be those who had contact with FIE, although some had had contact with ASEE. Second, the Workshops brought together the papers given at the 2007 workshop (WPE 2007) in a book (van de Poel & Goldberg, 2010), which was published by Springer. In addition, plans are moving forward with Springer to publish a second volume in the same series with selected papers from WPE 2008 and fPET 2010. The principal outcome of the FIE activities has been to demonstrate an interest in pursuing the subject of the relationship between philosophy, engineering, and education. And the publications of the FIE group are included in the conference proceedings. These activities have not however brought about the publication of books, special issues of journals, or other educational support suitable either for faculty or students. Additionally, the ongoing development of a more formal community dedicated to these issues has not emerged. We propose that such deliverables and community development would be the outcomes of bringing together of a diverse group of academics in philosophy, engineering, and education at this workshop.

Workshop Topics

This workshop will cover the topics relevant to addressing the following questions:

- What is philosophy and why is it relevant to engineering?
The question as to how aesthetics, epistemology, ethics, ontology, and metaphysics can illuminate the very nature of engineering.
- How can philosophy increase clarity and understanding of engineering?
What is the philosopher's view of engineering and what is the engineer's view of philosophy?
- What is the nature and philosophy of education?
- What are the theories and aims of engineering education?

Two additional topics will concern, (1) the organization and future plans of a community of

scholars related to this work and (2) the development of publications and educational materials that address the topics of this workshop and sustain the discussion.

Recent Meetings on This Topic

The topic of the relationship between engineering and philosophy has inspired different groups of people to meet, present papers, and publish ideas. Generally, the participants in these meetings were different groups—although they pursued similar interests. The following is a short description and chronology of these meetings.

Year	Meeting
2006	A group of engineers and philosophers met at MIT.
2007	Paper presented at ASEE Conference on the philosophical nature of engineering (Grimson). Workshop on Philosophy and Engineering at Delft University (WPE 2007). Special Session conducted at the Frontiers in Education (FIE) Conference on philosophy and engineering.
2008	Workshop on Philosophy and Engineering at the Royal Academy of Engineering in London (WPE 2008). Special Session and paper session conducted at the Frontiers in Education (FIE) Conference on philosophy and engineering.
2009	Special Sessions (2) and paper symposia conducted at the Frontiers in Education (FIE) Conference on philosophy and engineering, and developing philosophical inquiry skills in engineering students. “Reflective engineering” track at the Society of Philosophy and Technology (SPT) conference at the University of Twente.
2010	Forum on Philosophy, Engineering, and Technology at Colorado School of Mines (fPET 2010). Paper presented on Newman’s epistemology to Technical Literacy Division of ASEE (Heywood).
2011	“Reflective engineering” track at the Society of Philosophy and Technology (SPT) conference at the University of North Texas.

Organizing Committee and Key Participants

Note that we are currently expanding our recruitment of members of the organizing committee to branch out to a diverse group of interested people. The current members of the organizing committee for this workshop at FIE are:

Robin Adams, *Purdue University*

William Grimson, *Dublin Institute of Technology*

John Heywood, *The University of Dublin, Trinity College*

Russell Korte (Chair), *University of Illinois at Urbana-Champaign*

Roy McGrann, *Binghamton University*

Karl Smith, *University of Minnesota, Purdue University*

Additional support to be requested from:

Diane Michelfelder
Alan Cheville
Alice Pawley
Norman Fortenberry
Carl Mitcham
Karan Watson
Shane Brown
Domenico Grasso

Keynote Philosophers and Engineering Scholars (to be invited):

Peter Simons (confirmed)
Natasha McCarthy
Denis Phillips
Louis Bucciarelli (invited)

Location and dates

The workshop is scheduled for Tuesday and Wednesday, October 11 – 12, 2011. The venue is the Frontiers in Education (FIE) Conference to be held in Rapid City, South Dakota.

Participants Announcements and Invitations

Invitations will be extended to two or three eminent philosophers that have strong interests and work in the areas of engineering and education.

Additional invitations will be sent to 20 to 30 engineering educators and philosophers to participate in the workshop. Recruiting participants will be carefully considered to include those with strong interests and work in philosophy, engineering, or education. There are several individuals doing work specifically in the area of philosophy and engineering. For example, there is strong interest in the Ethics, Technological Literacy, and Liberal Education divisions of the American Society of Engineering Education (ASEE).

We are currently assembling a list of potential participants with these interests that can work effectively toward the goals and objectives of the workshop. We plan to recruit and support participants and speakers representing various groups typically underrepresented in science and engineering (e.g., underrepresented minorities, women, and persons with disabilities).

Agenda for the Symposium

The workshop will be organized into two sessions: first, we will address important issues around the relationship between philosophy and engineering. In the second session, we will address important issues regarding philosophy and the education of engineering students. It is likely that this workshop will be extended to fill the entire second day. A preliminary agenda for the workshop follows:

Date/Time	Activity
Pre-Workshop	Preparation Kit: (Selected literature, annotated bibliography, workshop materials sent to participants prior to workshop)
Session 1 Tuesday, Oct. 11, 2011	Topic: In what way is philosophy relevant to engineers? Working towards a philosophy of engineering.

12:30 – 12:45	General welcome. Chair ERM/ASEE. President IEEE Ed Soc.
12:45 – 1:15	Philosopher's Keynote: Guest philosopher presentation to examine how philosophy can illuminate the very nature of engineering.
1:15 – 1:30	Questions, answers, comments
1:30 – 2:00	Engineer's Keynote: An experienced engineer (preferably from industry who has considered in depth the problem of formulating a philosophy of engineering) will present his or her view of the challenges and boundaries of developing a philosophy of engineering.
2:00 – 2:15	Questions, answers, comments
2:15 – 2:30	Break
2:30 – 3:45	Breakout groups to address the issues relating to developing a philosophy of engineering.
3:45 – 4:15	Review of group work.
4:15 – 4:30	Break
4:30 – 5:30	Breakout groups to formulate parameters of a philosophy of engineering.
5:30 – 6:00	Review of group work.
6:00	Dinner
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Session 2	Topic: In what ways is philosophy relevant to engineering education?
Wednesday, Oct. 12, 2011	Working towards a philosophy of engineering education.
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7:00am – 8:00	Breakfast
8:00 – 8:15	Review of previous day's work.
8:15 – 9:00	Philosopher's Keynote: Guest philosopher presentation to examine how philosophy can illuminate the very nature of education (in engineering).
9:00 – 9:15	Questions, answers, comments
9:15 – 10:00	Group work: Break into small groups to analyze the philosophical underpinnings of engineering and education as presently taught in participants' colleges.
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10:00 – 10:15	Review of group work.
10:15 – 10:30	Break
10:30 – 11:30	Group work: Develop aims for engineering education curricula.
11:30 – 11:45	Review of group work.
11:45 – 1:00	Recap workshop and lunch Set agenda for continuing the work and future deliverables.
Post-Workshop	Produce a report of the discussions, issues, and directions developed by participants in the workshop. Set an agenda for continuing the work (next steps).

Dissemination of Results and Impact

Workshop website

- A website with blog capabilities will be set up prior to the workshop to serve as a resource to the participants and other interested parties. This site will be updated after the workshop and linked to a wiki sight for continuing the discussion and work begun in the workshop.

Workshop Packets

- Prior to the workshop, we will produce a pre-workshop packet of selected articles and information to set the stage for the workshop. This will be disseminated to participants and other interested parties via the workshop website.
- After the workshop, we will produce a post-workshop packet that will build on the pre-workshop packet of information. This post packet will include key ideas and other relevant

content from the workshop. This material will be available to a wide audience via the workshop website.

Community of Practice

- We intend to organize a “community of practice” for the purpose of continuing and spreading this work as the community grows and evolves. Part of the effort will be forging stronger connections with existing communities that have similar interests.
- Ongoing communication and collaboration fostered by the organizers of workshop with the participants, as well as interested newcomers to the community.
- There is current interest in this topic embedded in a few divisions of ASEE that will be connected to this community. Having established groups in ASEE will help build and sustain this effort. Possible divisions with related interests are: Education and Research Methods, Engineering and Public Policy, Engineering Ethics, Liberal Education, Multidisciplinary Engineering, Technological Literacy.
- Webinars on specific topics of interest to the community (and others) will be developed as needed.

Papers and conference presentations

- A report will be produced and disseminated of the discussions and issues debated and discussed in the workshop.
- We will also solicit a set of papers from participants and organizers for a possible special issue of a journal (e.g., *Journal of Engineering Education*).
- Results of the workshop will also be submitted for presentation in the next ASEE conference and be forwarded to university engineering programs nationally.

Budget

Note that two organizations have already committed a total of \$13,000 to this workshop. This money is primarily for the support of international participants and keynote speakers, which are not included in the NSF budget.

Data Management Plan

The data and outcomes of this workshop will be carefully collected, organized, and made available to all the participants, as well as the broader community of engineering scholars, practitioners, educators; and philosophers. The content of this workshop will be formulated into papers for publication and presentation, information posted on the website, and packets of information made available to participants and the broader community. We expect to continue the collaborations beyond the workshop through the use of the website and other collaboration application on the web. This virtual connectedness will link members of this community and foster continued development and sharing of ideas.

As described in the chronology of previous work in this area, there are complementary organizations working on the intersections of philosophy and engineering. These organizations will be included (members of some already contribute to this effort) and the information we develop will be available to them.

Evaluation Plan

An outside evaluator will be engaged to assess the development of the content of the workshop as it unfolds. The evaluator will also provide immediate feedback on process (formative

assessment), as well as content. Evaluation will be conducted by observation during the workshop, a pre and post survey of participants, and a final evaluation report after the conclusion of the workshop.

Future Potential of this Workshop

Based on the previous work in this area since 2006 and the growing level of interest in addressing the philosophical foundations of engineering and engineering education, one can envision the possibilities of continued growth in this area and expansion of community interest. This is also a relatively under-researched area of study that has enormous potential to inform a broader audience of engineering research, education, and practice. The now well-known questions challenging the traditional foci of engineering research, education, and practice are struggling with issues that inherently touch on philosophical questions. This workshop will help move this work forward.

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