CONFERENCE AT A GLANCE

Wednesday, October 23

11:00 am – 6:00 pm
Registration
Second Floor Prefunction Area

1:30 pm – 6:00 pm
Exhibit Setup
Great Hall D & E

1:30 pm – 4:30 pm
Pre-conference Workshops Session A

5:30 pm – 8:30 pm
Pre-conference Workshops Session B

Thursday, October 24

7:00 am – 5:00 pm
Registration
Second Floor Prefunction Area

7:00 am – 8:00 am
Focus on First-Time Attendees Breakfast Buffet
Great Hall C

8:00 am – 9:30 am
Plenary Session
Katherine Banks, Vice Chancellor and Dean of Engineering,
Texas A&M University
Great Hall A & B

9:30 am – 5:00 pm
Exhibit Hall Open
Great Hall D & E

9:30 am – 10:00 am
Exhibit Hall Break

10:00 am – 11:30 am
Technical Sessions (T1)

11:45 am – 1:15 pm
HP Terman and Rigas Awards Lunch
Sponsored by the Hewlett-Packard Company
Great Hall C

1:30 pm – 3:00 pm
Technical Sessions (T2)

3:00 pm – 4:00 pm
Exhibit Hall Break and

4:00 pm – 5:30 pm
Technical Session (T3)

6:00 pm – 9:30 pm
Transportation to and Reception at National Cowboy & Western
Heritage Museum
Bus loading zone: between the Renaissance hotel and the
Cox Convention Center
Friday, October 25

7:00 am – 5:00 pm  Registration Open
                   Second Floor Prefunction Area

7:00 am – 8:30 am  Breakfast & Plenary Session
                   Mike McCracken, Director of Online Course Development and
                   Innovation, College of Computing, Center for 21st Century Universities
                   (C21U), Georgia Tech
                   Great Hall C

8:30 am – 10:00 am  Technical Sessions (F1)

9:00 am – 4:30 pm  Exhibit Hall Open
                   Great Hall D & E

10:00 am – 10:30 am  Exhibit Hall Break

10:30 am – Noon  Technical Sessions (F2)

Noon – 1:30 pm  Luncheon
                   Great Hall C

1:30 pm – 3:00 pm  Technical Sessions (F3)

3:00 pm – 4:00 pm  Focus on Exhibits and New Faculty Fellows
                   Great Hall D & E

4:00 pm – 5:30 pm  Technical Sessions (F4)

6:30 pm – 9:00 pm  Reception and Awards Banquet - Ticketed Event
                   Great Hall C

Saturday, October 26

7:00 am – 2:00 pm  Registration
                   Second Floor Prefunction Area

7:00 am – 8:00 am  Breakfast

8:00 am – 9:30 am  Technical Sessions (S1)

9:30 am – 10:00 am  Break - Second Floor Prefunction Area

10:00 am – 11:30 am  Technical Sessions (S2)

11:30 am – 1:00 pm  Lunch
                   Great Hall C

1:00 pm – 2:30 pm  Technical Sessions (S3)

2:30 pm – 3:00 pm  Break - Second Floor Prefunction Area

3:00 pm – 4:30 pm  Technical Sessions (S4)
WELCOME FROM THE GENERAL CO-CHAIRS

Welcome to FIE 2013!

Oklahoma has long been known as an energy producing state, so we thought it appropriate to have “Energizing the Future” of engineering and computer science education as this year’s theme. The name of our state, Oklahoma, is a Choctaw word that means “land of the red people”. Oklahoma is home to 38 federally recognized Indian tribes and our history is enmeshed with stories of American Indian relocation and settlement, the Oklahoma land run, and the civil rights movement. So it is fitting that FIE highlight diversity and inclusion for our future. The conference also focuses on programs that bridge disciplines, such as the successful collaborations between engineering, computing and meteorology that can be seen during the evening tour of the National Weather Center, located in Norman Oklahoma. The traditional FIE topical themes of educational innovations and research in engineering and computing education are still front and center. We hope you find many opportunities to interact with your fellow conference attendees, including taking advantage of the “catalyzing conversations” sessions.

We look forward to meeting you Thursday evening at the welcoming reception, which is being held at a unique venue, the National Cowboy and Western Heritage Museum. There are many local attractions for you to enjoy during your stay, including the Oklahoma City National Memorial and Museum which memorializes the 1995 terrorist bombing of Alfred P. Murrah Federal Building; the Oklahoma City Museum of Art which is home to one of the largest collections of glass sculpture by noted artist Dale Chihuly; the Myriad Botanical Gardens featuring 17 acres of walking paths, splash fountains, and gardens, that feature plants from climates ranging from rain forests to deserts; and the Boathouse District which hosts a U.S. Olympic and Paralympic training site for rowing and canoe/kayaking and river sport adventures. All of these venues are within easy walking distance of the hotel. The Bricktown district is adjacent to the conference venue and offers a variety of restaurants and night clubs for your dining and entertainment pursuits.

The University of Oklahoma (OU) College of Engineering is pleased to host FIE 2013. We are grateful for the support of the OU administration as we prepared for the conference. We further express our sincere appreciation to our conference sponsors and exhibitors for their financial support.

We are very pleased you have joined us in Oklahoma City and wish you a hearty welcome!

Randa Shehab
Jim Sluss
Deborah Trytten
WELCOME FROM THE PROGRAM CO-CHAIRS

We are so glad you have joined us at FIE 2013! We hope that you will find your experience here enjoyable and valuable as you participate in the broad range of paper, panel, and special sessions, workshops, and social activities that have been scheduled.

This year’s conference theme is *Energizing the Future*, and that is just what we hope happens for those who have chosen to join us. If you are new to the conference, you will find sessions on a wide variety of topics related to engineering and computing education. If you have been to FIE before, you will discover new opportunities, catalyzing conversations, as well as some of the tried and true favorites in the special sessions and traditional sessions. The technical program is complemented by the Conference’s networking opportunities during breakfast and lunch with a big cowboy welcome at the reception – one you won’t want to miss!

Our authors deserve the credit for the continuing quality of this conference – their innovative and compelling work and their promising works-in-progress seeking your input are once again outstanding. The reviewers who volunteered their time to provide quality, constructive feedback gain our thanks.

So, may your future be energized as you enjoy your time in Oklahoma City at FIE 2013!

IEEE/Computer Society Program Co-Chair
Mats Daniels
Uppsala University

ASEE/ERM Program Co-Chair
Teri Reed
Texas A&M University

IEEE/Education Society Program Co-Chair
Lynne Slivovsky
Cal Poly - San Luis Obispo

Workshops, Special Sessions & Panels Chair
Susan Walden
University of Oklahoma

Awards Chair
Manuel Castro
Spanish National Distance University

International Co-Chair, Asia
Ming Zhang
Peking University

International Co-Chair, Australasia
Mark Lee
Charles Stuart University

International Co-Chair, Europe
Edmundo Tovar Caro
Universidad Politecnica de Madrid

International Co-Chair, South America
Melany M. Ciampi
COPEC – Science and Education Research Council
Welcome to Oklahoma City and the 43rd annual Frontiers in Education Conference. FIE has an outstanding global reputation as a premier conference on engineering education. It is known for its collaborative author network and papers from its proceedings record are regularly cited in bibliographies.

This year the conference continues its long tradition of offering an outstanding technical program. I am confident you will find many sessions where speakers will challenge you to think differently about education and how we facilitate learning in our classrooms. The General Chair, Technical Program Chairs, paper reviewers, and session chairs all play important roles in guaranteeing that the technical program remains current and is of high quality. Please take a moment to thank these people for their professionalism and volunteer service to engineering education when you meet them during the conference.

This year, I want to focus my welcome message on the process of organizing a conference. FIE is a mid-sized conference event led by a nine member Steering Committee of appointed representatives from the three sponsoring professional societies. This Steering Committee sets mission and vision for the conference including desired size, technical program specifications, and registration fee structure. The Steering Committee regularly reviews the structure of FIE as it considers growth potential. Have you ever thought of hosting FIE in your city and wondered what the conference requires for facilities? Currently, the conference is designed to:

- use four conference days typically beginning on a Wednesday in October or November,
- host approximately 600 registered attendees,
- support a technical program of 400 paper and special session presentations,
- provide breakfast and lunch to its participants to foster collegiality and networking,
- provide a welcome reception and formal awards banquet,
- be in a conference hotel that can provide at least 300 rooms per night for FIE guests, and
- be in a conference hotel that has at least nine presentation rooms, two ballrooms, and exhibit hall space.

And, have you ever thought of hosting FIE in your city and wondered what the workload and leadership requirements are? Currently, the conference uses a structure that includes:

- one or two local General Chairs that are responsible for leading the planning team,
- three Technical Program Co-Chairs responsible for papers sessions,
- a Special Sessions Chair responsible for workshops, panels, and special sessions,
- a number of International Co-Chairs responsible for participation in FIE from other countries,
- an Awards Chair responsible for the conference awards program,
- a paid publications service provider contracted through a request-for-proposals (RFP) bid process,
- a paid logistics service provider contracted through an RFP bid process, and
- hundreds of volunteer peer reviewers and session chairs.
As General Chair, the responsibility of managing this planning team requires significant time. Much of the day-to-day work falls to other people on the planning committee, but the big decisions are ultimately the responsibility of the General Chair working in collaboration with the Steering Committee. Bids to host FIE begin by contacting the Steering Committee Chair four years before the conference date. After informal conversation with the Steering Committee Chair, a General Chair prepares a formal bid package that outlines the transportation, hotel, and tourism opportunities of their location. The Steering Committee expects that a proposed General Chair will attend every FIE conference before and through their own event if the bid package is selected. The workload for General Chairs is lighter during the first two years but ramps up significantly in the final year before the conference because of multiple logistical decisions and technical program deadlines.

The Steering Committee encourages you to think about hosting FIE.

The Steering Committee has set a goal to have FIE locations for the rest of this decade decided by June 2014. We are half way to meeting that goal! Now is the time to seriously consider volunteering as an FIE General Chair and work with us to host FIE in your city. Here is the current schedule showing set locations in **bold** as well as open years and suggested locations through the rest of the decade:

- **FIE 2014**: Madrid, Spain
- **FIE 2015**: El Paso, Texas
- **FIE 2016**: Erie, Pennsylvania
- **FIE 2017**: open (southeast U.S.)
- **FIE 2018**: open (midwest U.S.)
- **FIE 2019**: open (west coast U.S.)
- **FIE 2020**: open (northeast U.S.)

Please note that the regional suggestions are just suggestions. The committee *always* entertains bids from prospective host sites in any location regardless of the proposed year. It should be noted, however, that current FIE policy requires FIE to be in the continental U.S. or Canada for at least five years before returning to any other international venue. If you are interested in hosting FIE as a General Chair, be sure to contact me soon so that we can have a frank conversation about requirements and the bid process.

The Steering Committee works for the Societies and the member communities. We encourage you to contact any one of us to discuss the FIE conference. We can be identified by Steering Committee ribbons on our conference badges.

**ASEE Educational Research and Methods Division Representatives**

- Beth Eschenbach, Humboldt State University, Elizabeth.Eschenbach@humboldt.edu
- Archie Holmes, University of Virginia, ah7sj@virginia.edu
- James Morgan, Texas A&M University, jmorgan@civil.tamu.edu
IEEE Computer Society Representatives

- Stephen Frezza, Gannon University, FREZZA001@gannon.edu
- Arnold Pears, Uppsala University, Arnold.Pears@it.uu.se
- Currently vacant pending appointment by the Computer Society

IEEE Education Society Representatives

- Russ Meier (Chair), Milwaukee School of Engineering, meier@msoe.edu
- James Sluss, University of Oklahoma, sluss@ou.edu
- Edmundo Tovar, Universidad Politecnica de Madrid, etovar@fi.upm.es

I hope you enjoy your conference and I look forward to meeting and talking with you in Oklahoma City!

Sincerely,

Russ Meier
Steering Committee Chair
Milwaukee School of Engineering
Milwaukee, WI, USA
meier@msoe.edu
FIE 2013 PLANNING COMMITTEE

General Co-Chair
James Sluss
University of Oklahoma

General Co-Chair
Randa Shehab
University of Oklahoma

General Co-Chair
Deborah Trytten
University of Oklahoma

Assistant to the General Chairs
Kevin Curry
University of Kansas

ASEE/ERM Program Co-Chair
Teri Reed
Texas A&M University

IEEE/Computer Society Program Co-Chair
Mats Daniels
Uppsala University

IEEE/Education Society Program Co-Chair
Lynne Slivovsky
Cal Poly State University, San Luis Obispo

Workshop, Special Sessions & Panels Chair
Susan Walden
University of Oklahoma

Exhibits Chair
Robert J. Hofinger
Purdue University

Publications Chair
Chris Dyer
Conference Catalysts, LLC

New Faculty Fellows Chair
Mark Yeary
University of Oklahoma

International Co-Chair, Asia
Ming Zhang
Peking University

International Co-Chair, Australasia
Mark Lee
Charles Sturt University

International Co-Chair, Europe
Edmundo Tovar Caro
Universidad Politecnica de Madrid

International Co-Chair, South America
Melany M. Ciampi
VP COPEC- Science and Education Research Council

Conference Historian
Ed Jones
Iowa State University

Awards Chair
Manuel Castro
Spanish National Distance University

FIE STEERING COMMITTEE

ASEE Educational Research and Methods Division Representatives
• Jim Morgan, Texas A&M University (June 2011 - June 2014)
• Archie Holmes, University of Virginia (June 2012 - June 2015)
• Elizabeth A. Eschenbach, Humboldt State University (June 2013 - June 2016)

IEEE Computer Society
• Stephen Frezza, Gannon University (June 2011 - June 2014)
• Arnold Pears, Uppsala University (June 2009 - June 2015)

IEEE Education Society
• Russ Meier, Milwaukee School of Engineering
IEEE Education Society VP Conferences, Steering Committee Chair
• Edmundo Tovar Caro, Universidad Politecnica de Madrid (June 2008 - June 2014)
• James Sluss, University of Oklahoma (June 2012 - June 2015)

FUTURE FIE CONFERENCES

FIE 2014 Madrid, Spain
FIE 2015 El Paso, Texas
FIE 2016 Eire, Pennsylvania

Are you interested in hosting a future FIE conference? Leave your business card at the registration desk, and an FIE steering committee member will contact you.
CONFERENCE SPONSORS

FIE 2013 is sponsored by:

American Society for Engineering Education (ASEE)
  Educational Research Methods (ERM) Division

Institute of Electrical and Electronics Engineers (IEEE)
  IEEE Computer Society
  IEEE Education Society

FIE 2013 is hosted by:

The University of Oklahoma

The University of Oklahoma (OU) is a coeducational public research university located in Norman, Oklahoma. The university was founded in 1890 and existed for 17 years before Oklahoma became a state. OU enrolls more than 30,000 students, has more than 2,600 full-time faculty members, and has 21 colleges offering 163 majors at the baccalaureate level, 157 majors at the master's level, 81 majors at the doctoral level, 28 majors at the doctoral professional level, and 28 graduate certificates.

The school is ranked first per capita among public universities in enrollment of National Merit Scholars and among the top ten in the graduation of Rhodes Scholars. PC Magazine and the Princeton Review rated it one of the "20 Most Wired Colleges" in 2008.

The OU College of Engineering was formed in 1909 and recorded its first graduates in the spring of 1910. It is now the largest engineering program in Oklahoma, with 1,800 undergraduate students, 450 graduate students and a 115-member faculty.

OU is also well known for its athletic programs, winning seven NCAA Division I National Football Championships, playing in four BCS national championship games since the inception of the BCS system in 1998. Its baseball team has won 2 NCAA national championships, and the women's softball team won the national championship in 2000.
CORPORATE AFFILIATES AND SPONSORSHIPS

Corporate affiliates play an important role in supporting FIE conferences. This support subsidizes the cost of the award presentations and of meal functions. We appreciate these supporters and the part they play in making the 2013 FIE conference an outstanding event.

Thursday Activities

Hewlett-Packard Frederick Emmons Terman and Harriet B. Rigas Award Luncheon

Friday Activities

NextThought Morning Break in the Exhibit Hall

FIE 2013 EXHIBITORS

The FIE vendor and association exhibits are a popular and rewarding tradition for both attendees and exhibitors. Exhibits will include materials, equipment, textbooks, software, and state-of-the-art tools applicable to engineering education. We thank the vendors for their financial support and contributions to making FIE 2013 a meaningful experience.

Exhibit Hall Hours

The exhibits will be open in the Great Hall D&E from 9:00 a.m. to 5:00 p.m. Thursday and from 9:00 a.m. to 4:30 p.m. Friday. As of September 5, the following companies had committed to exhibiting at FIE 2013:

<table>
<thead>
<tr>
<th>EXHIBITOR</th>
<th>WEBSITE</th>
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<tbody>
<tr>
<td>Digilent</td>
<td><a href="http://www.digilentinc.com">www.digilentinc.com</a></td>
</tr>
<tr>
<td>EMA Design Automation</td>
<td><a href="http://www.ema-eda.com">www.ema-eda.com</a></td>
</tr>
<tr>
<td>Emona Instruments</td>
<td><a href="http://www.qpsk.com/">http://www.qpsk.com/</a></td>
</tr>
<tr>
<td>JMP statistical discovery software from SAS</td>
<td><a href="http://www.jmp.com/">http://www.jmp.com/</a></td>
</tr>
<tr>
<td>Purdue Engineering Education</td>
<td>engineering.purdue.edu/ENE</td>
</tr>
<tr>
<td>Stratasys</td>
<td><a href="http://www.stratasys.com">www.stratasys.com</a></td>
</tr>
<tr>
<td>Utah State University Department of Engineering Education</td>
<td><a href="http://www.eed.usu.edu/">www.eed.usu.edu/</a></td>
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<tr>
<td>Virginia Tech Engineering Education</td>
<td><a href="http://www.enge.vt.edu/">http://www.enge.vt.edu/</a></td>
</tr>
<tr>
<td>Zyante</td>
<td><a href="http://www.zyante.com">www.zyante.com</a></td>
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Focus on Exhibits and New Faculty Fellows Poster Presentation
Attendees and participants will be encouraged to visit the exhibit area throughout the conference. In order to provide full exposure for the exhibits, a special "Focus on Exhibits" session is planned for the afternoon of Friday, October 25th, during which time there will be no technical sessions scheduled. The New Faculty Fellows will also display their posters at this time. Door prizes contributed by some of the exhibitors will be awarded during the Focus on Exhibits. You must be present to win.

EXHIBITOR SHOWCASE PRESENTATIONS

<table>
<thead>
<tr>
<th>Time</th>
<th>Exhibitor</th>
<th>Location</th>
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</thead>
<tbody>
<tr>
<td>Thursday, October 24</td>
<td>10:00 am – 11:30 am</td>
<td>Texas Instruments</td>
</tr>
<tr>
<td>Thursday, October 24</td>
<td>1:30 pm – 3 pm</td>
<td>Zyante</td>
</tr>
</tbody>
</table>

**Topic:** Animated Interactive Learning of Programming Languages  
**Speakers:** Smita Bakshi and Frank Vahid  
**Description:** Zyante develops web-based animated interactive learning material for lower division computer science and engineering. These offerings enable students to “learn by doing” as they engage with animations, interactive tools, embedded coding environments, games and self-assessment questions. Available for $35, students can also download them for later use. 4000+ students at over 40 universities are using Zyante’s current offerings: C, C++, Java, Python, MATLAB, Embedded Systems, Data Structures & Discrete Math.

Join the founders, Smita Bakshi and Frank Vahid, at the Showcase to learn more about the material and the teaching tools. We’ll provide you with a hands-on opportunity to evaluate the material and teaching tools, including the ability to view student activity data, and to rearrange and customize the material.

**Friday, October 25**

<table>
<thead>
<tr>
<th>Time</th>
<th>Topic</th>
<th>Speaker</th>
<th>Location</th>
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<tbody>
<tr>
<td>10:30 am – Noon</td>
<td>Future Directions for the Computing Accreditation Criteria – A Discussion with the Computing Community</td>
<td>Mark Stockman, University of Cincinnati</td>
<td>Meeting Room 3</td>
</tr>
<tr>
<td>1:30 pm – 3:00 pm</td>
<td>NextThought: Frontiers in Online Social Education</td>
<td>Ken Parker</td>
<td>Meeting Room 3</td>
</tr>
</tbody>
</table>

**Topic:** Future Directions for the Computing Accreditation Criteria – A Discussion with the Computing Community  
**Speaker:** Mark Stockman, University of Cincinnati  
**Description:** The computing disciplines continue to undergo rapid change, as evidenced in part by the current cycle of model curricula efforts in the various disciplines. Driven by the same challenges, the ABET Computing Accreditation Commission (CAC) in cooperation with the ACM and IEEE Computer Society are currently considering revisions to the ABET Computing Accreditation Criteria. For ABET to be responsive to its constituencies, criteria changes must be driven by the community. As a result, CAC, ACM and the IEEE-CS are engaged in a variety of activities designed to obtain input from the community at large so as to effect appropriate evolution within the criteria. In this session, we present an update regarding some of the proposed changes to the Computing Criteria and provide an opportunity for review, comment and general input by the session participants. The results of this session will be used as an important input to the criteria change process.

**Topic:** NextThought: Frontiers in Online Social Education  
**Speaker:** Ken Parker  
**Description:** NextThought is creating the future of online education today. Their unique software melds social media with content and course management to create active learning experiences that engage students. This session will provide a product demonstration by a faculty member using NextThought in the classroom and give attendees an opportunity to interact with the next big thing in higher education.
PLENARY SESSIONS

Thursday, October 24, 8:00 – 9:30 am
Great Hall A & B

Speaker: Katherine Banks, Vice Chancellor and Dean of Engineering, Texas A&M University

Introduction by Kyle Harper, Senior Vice Provost and Director of the Institute for the American Constitutional Heritage, the University of Oklahoma

Dr. M. Katherine Banks is vice chancellor for engineering for The Texas A&M University System and dean of the Dwight Look College of Engineering at Texas A&M University.

As vice chancellor, Banks oversees coordination and collaboration among the engineering, academic and research programs at universities throughout the A&M System, as well as three state agencies: the Texas A&M Engineering Experiment Station (TEES), the Texas A&M Engineering Extension Service (TEEX) and the Texas A&M Transportation Institute (TTI). Banks also is TEES director, overseeing research administration of more than 4,400 projects and $142.5 million in sponsored research awards. As dean of the Look College and holder of the Harold J. Haynes Dean's Chair in Engineering, Banks leads one of the largest engineering schools in the country, with more than 11,000 students and nearly 400 faculty.

Banks was previously the Bowen Engineering Head for the School of Civil Engineering at Purdue University and the Jack and Kay Hockema Professor at Purdue. She received her B.S.E. from the University of Florida, M.S.E. from the University of North Carolina, and Ph.D. in civil and environmental engineering from Duke University. For her research, Banks has received funding from the National Science Foundation, the U.S. Environmental Protection Agency, the U.S. Department of Defense, the U.S. Department of Energy and NASA, as well as industry and state government. She served as director of the EPA Hazardous Substance Research Center, associate director of the NASA Center for Advanced Life Support, and co-director of the 21st Century Center for Phytoremediation Research, all headquartered at Purdue.

Banks is a Fellow of the American Society of Civil Engineers (ASCE) and is a licensed professional civil engineer in Indiana and Kansas. She has received numerous awards including the ASCE Petersen Outstanding Woman of the Year Award, ASCE Rudolph Hering Medal, Purdue Faculty Scholar Award, Sloan Foundation Mentoring Fellowship and the American Association of University Women Fellowship. She is the author or co-author of more than 150 journal articles, proceedings papers and book chapters. Banks has served as editor-in-chief for the ASCE Journal of Environmental Engineering and associate editor of the International Journal of Phytoremediation.

Friday, October 25, 7:30 – 8:30 am
Great Hall C, immediately following breakfast

Boogies, Boojums and Snarks: There are MOOC's Under Your Bed and in Your Closet.

Speaker: Mike McCracken, Director of Online Course Development and Innovation, College of Computing, Center for 21st Century Universities (C21U), Georgia Tech

W. Michael McCracken is a Principal Research Scientist in the College of Computing at Georgia Tech. He is the Director of Online Course Development and Innovation for the Center for 21st Century Universities at Georgia Tech. In his position at C21U he is responsible for the overall development of the portfolio of Massive Open OnLine Courses (MOOCs) for Georgia Tech. Last year, Georgia Tech fielded 16 MOOCs and will field a minimum of 10 new MOOCs, repeat 11 of them, and extend 3 of them to full semester offerings. He is also a participant in the development of the newly announced OnLine Masters in Computer Science being developed jointly with Udacity. McCracken also teaches and conducts research in computer science and software engineering. Additionally, McCracken is on the editorial board of the Journal of Computer Science Education.
FIE 2013 WORKSHOPS

Wednesday, 1:30 – 8:30 pm (Pre-Registration is required.)

On Wednesday afternoon and evening, FIE features workshops—highly interactive sessions selected for their timeliness and value. Workshops offer a concentrated professional development experience. The wide range of workshop topics offers opportunities for everyone from new faculty members to the most experienced educators to expand their skills and knowledge.

Conference attendees must register separately for workshops. There is a $50 registration fee for each workshop. Complete abstracts for the workshops can be found in the Wednesday schedule of the program book.

GROUP MEETINGS

Wednesday, October 23

5:00 – 6:30 pm  FIE Steering Committee Meeting  Meeting Room 14

Thursday, October 24

10 am – Noon  IEEE EDUCON Steering Committee  Meeting Room 1

4:00 – 5:30 pm  ASEE ERM Division Business Meeting  Meeting Room 1

Friday, October 25

10 am – Noon  IEEE Education Society Board of Governors meeting  Meeting Room 1

4:00 – 5:30 pm  ASEE ERM Division Business Meeting  Meeting Room 1

This is an open meeting for all members of the community to participate in the strategic planning for ERM. We will build on the conversation begun at the ASEE meeting in June. Input from that previous meeting will be used to craft a set of goals to guide ERM activities going forward.

Saturday, October 26

8:00 – 9:30 am  FIE Steering Committee Meeting Executive Session  Meeting Room 1

1:00 – 3:00 pm  FIE 2014 Planning Committee Meeting  Meeting Room 1

NEW FACULTY FELLOW PROGRAM

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 from assistant, associate, and full professorship levels 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.

The purpose of the program is to promote the involvement of new faculty in the Frontiers in Education Conference so they will be exposed to the "latest and greatest" in engineering educational practices and will have the opportunity to exchange information with leaders in education innovations. This year, FIE 2013 will provide registration and travel grants for the awardee to attend the conference.
Focus on New Faculty Fellows
Each fellow will present a conference paper during FIE 2013. Join them in their session and share your thoughts and ideas about the future of engineering education. Also, during the Focus on Exhibits session Friday at 3 p.m., the Fellows will display posters describing their interests and activities and previewing the full papers that they will present as part of the FIE 2013 technical sessions.

2013 New Faculty Fellow:

Joseph Ranalli
Pennsylvania State University - Hazleton
Session T3G

Assessing the Impact of Video Game Based Design Projects in a First Year Engineering Design Course
Joseph Ranalli (Pennsylvania State University - Hazleton Campus); Jacqueline Ritzko (Pennsylvania State University - Hazleton Campus)

CONFERENCE AMENITIES

Breakfast
7:00 a.m.–8:00 a.m. Thursday   Great Hall C
7:00 a.m.–8:00 a.m. Friday     Great Hall C
7:00 a.m.–8:00 a.m. Saturday   Great Hall C

Refreshment Breaks *
Morning and afternoon breaks Thursday and Friday  Exhibit Hall – Great Hall D & E
Morning and afternoon breaks Saturday               Second Floor Prefunction East

Lunches

Frederick Emmons Terman and Harriet B. Rigas Awards Luncheon – Great Hall C
Sponsored by the Hewlett-Packard Company
11:45 a.m. – 1:15 p.m. Thursday
The Frederick Emmons Terman Award is presented annually to an outstanding young electrical engineering educator by the Electrical and Computer Engineering Division of the American Society for Engineering Education. The Harriet B. Rigas Award is presented annually to an outstanding woman engineering educator in recognition of her contributions to the profession.

Luncheon – Great Hall C
Noon – 1:30 p.m. Friday

Luncheon – Great Hall C
11:30 a.m. – 1:00 p.m. Saturday

Reception
6:00 p.m.–9:30 p.m. Thursday
Join your colleagues as we board busses and take the short ride to the National Cowboy and Western Heritage Museum for a reception. We will have drinks, a western-themed dinner, and plenty of time to explore the exhibits. Be sure to bring the drink tickets you received when you checked in at registration. Buses will begin boarding at 6:00 pm between the Renaissance Hotel and the Cox Convention Center on Sheridan Avenue.
New Faculty Fellows ● Exhibit Hall – Great Hall D & E
3:00 p.m.–4:00 p.m. Friday
A special session focusing on the New Faculty Fellows will be held on Friday. This session will provide an opportunity to meet this year’s New Faculty Fellows, a group of new CSET educators who were selected based on an application and a full paper being presented at this year’s conference. There will also be an opportunity to view their poster presentations at this time.

Focus on Exhibits ● Exhibit Hall – Great Hall D & E
3:00 p.m.–4:00 p.m. Friday
Visit the FIE exhibits and check out the latest textbooks, computer software, lab equipment, and other innovations while enjoying refreshments provided by our sponsor.

Awards Banquet ● Great Hall C
6:30 p.m.–9:00 p.m. Friday
This year's awards banquet features fine food, drink, and camaraderie along with presentation of special awards from FIE, the IEEE Education Society, and the IEEE Computer Society. There is a separate charge for the banquet.

The National Weather Center Tour
6:00 p.m.–9:30 p.m. Friday
Visit the National Weather Center and the Lawrence G. Rawl Engineering Practice Facility on the University of Oklahoma campus. The bus boards at 6:00 pm between the Renaissance Hotel and the Cox Convention Center on Sheridan Avenue. There is a separate charge for the tour.

FIE Registration Conference Desk ● Second Floor Prefunction East
Registration will be open during these times:

<table>
<thead>
<tr>
<th>Day</th>
<th>Time</th>
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<tr>
<td>Wednesday</td>
<td>11:00 a.m. – 6:00 p.m.</td>
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<td>Thursday</td>
<td>7:00 a.m. – 5:00 p.m.</td>
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<td>Friday</td>
<td>7:00 a.m. – 5:00 p.m.</td>
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<td>Saturday</td>
<td>7:00 a.m. – 2:00 p.m.</td>
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Hospitality Table ● Near Conference Registration
If you are looking for a certain kind of a restaurant, shop, golf course, or health club, stop by the hospitality table close to the registration area. Maps and brochures of area attractions will be available.

FIE Message Center ● Near Conference Registration
The conference will maintain a message board by the registration area. Messages received for conferees will be posted there. In an emergency, we will make every effort to locate you.

Catalyzing Collaborative Conversations
Conference Registration and rooms assigned Please stop by the registration desk to reserve a room for collaborative conversations with your colleagues. Pick a time, get a room, name a topic, and we will announce it by the Message Center and via Twitter #fie2013.

Social Media. Twitter hashtag #fie2013
Are you in the TwitterSphere? Tweet your comments on the conference, thoughts on the speakers, a shout-out for work that inspires you, time and topic for a Collaborative Conversation - use #fie2013 to share your insights with your colleagues and the conference committee.
2013 FIE CONFERENCE AWARDS PRESENTATIONS

Thursday, October 24 ................................................ Terman/Rigas Awards Luncheon
Noon - 1:30 p.m.
   ASEE ECE Division Hewlett-Packard Frederick Emmons Terman Award
   IEEE Education Society Hewlett-Packard/Harriet B. Rigas Award

Friday, October 25 .......................................................... Awards Banquet
6:00 p.m. - 8:30 p.m.

Frontiers in Education (FIE) Conference Awards
   FIE 2012 Benjamin J. Dasher Best Paper Award
   FIE 2012 Helen Plants Award
   FIE Ronald J. Schmitz Award

IEEE Education Society
   William E. Sayle Award for Achievement in Education
   IEEE Transactions on Education Best Paper Award
   Chapter Achievement Award
   Distinguished Chapter Leadership Award
   Distinguished Member Award
   Edwin C. Jones, Jr. Meritorious Service Award
   Mac Van Valkenburg Early Career Teaching Award
   Student Leadership Award
AWARD SELECTION COMMITTEE CHAIRS

Frontiers in Education Conference
Benjamin J. Dasher Best Paper Award ................................................. Jenefer Husman
Helen Plants Award ........................................................................... Cordelia Brown
Ronald J. Schmitz Award ................................................................. Arnold Pears

ASEE Electrical and Computer Engineering Division
Hewlett-Packard Frederick Emmons Terman Award .......................

IEEE Education Society
IEEE William E. Sayle Award for Achievement in Education .......... Lyle D. Feisel
IEEE Transactions on Education Best Paper Award .................... Jeff Froyd
Chapter Achievement Award ......................................................... Trond Clausen
Distinguished Chapter Leadership Award ..................................... Edmundo Tovar
Distinguished Member Award ......................................................... Ted Batchman
Edwin C. Jones, Jr. Meritorious Service Award ......................... Edwin C Jones Jr
Hewlett-Packard/Harriet B. Rigas Award ..................................... Joanne Bechta Dugan
Mac Van Valkenburg Early Career Teaching Award ................. S. Hossein Mousavinezhad
Student Leadership Award ............................................................. Emmanuel A. Gonzalez
Mung Chiang is the Arthur LeGrand Doty Professor of Electrical Engineering at Princeton University, and an affiliated faculty in the Program in Applied and Computational Mathematics and in Computer Science. His research on networking received the Alan T. Waterman Award (2013), the IEEE Kiyo Tomiyasu Award (2012), a U.S. Presidential Early Career Award for Scientists and Engineers (2008), several young investigator awards from National Science Foundation, Office of Naval Research, and Princeton, and a few paper awards including the IEEE SECON (2013) and INFOCOM Best Paper Awards (2012). A Technology Review TR35 Award recipient (2007), his inventions have resulted in a few commercial adoptions, and he serves on several networking companies’ advisory board. Supported in part by many industry research awards, he founded the Princeton EDGE Lab in 2009, which has led to multiple technology transfers as well as startup companies. He was elected an IEEE Fellow in 2012.

In 2011, Chiang created an undergraduate course: “Networks: Friends, Money, and Bytes,” which lead to an open online offering with 90,000 students during 2012-2013. The corresponding textbook, “Networked Life: 20 Questions and Answers,” adopted the “just-in-time” approach and received the PROSE Award in Engineering and Technology (2012) from the Association of American Publishers. The second textbook “Networks Illustrated: 8 Principles without Calculus” was at the top of bestsellers in Networking on Kindle upon its release, and became a series of “micro-ebooks.” In 2013 they became the first Integrated and Individualized Book-App (IIB) that adapted to individual readers. He chaired the Princeton University Committee on Classroom Design, and founded the non-profit online education platform “3 Nights and Done” (3ND).

Chiang also initiated a Network Optimization workshop series and the Smart Data-Pricing (SDP) industry forums, and co-chaired the US NITRD Workshop on Complex Engineered Networks. He has served as an associate editor of a few IEEE journals, an IEEE Communications Society Distinguished Lecturer, and Chairman of the founding steering committee of the new IEEE Transactions on Network Science and Engineering.

'03 Wayne Wolf
'04 Keshab K. Parhi
'05 Ali H. Sayed
'06 Vijay K. Madisetti
'07 Russel Jacob (Jake) Baker
'08 Keith M. Chugg
'09 David Tse
'10 Bhaskar Krishnamachari
'11 Tony Givargis
'12 Ali Niknejad
About the Terman Award

The Frederick Emmons Terman Award is presented annually to an outstanding young electrical engineering educator by the Electrical and Computer Engineering Division of the American Society for Engineering Education. The Terman Award, established in 1969 by the Hewlett-Packard Company, consists of $5,000, an engraved gold-plated medal, a bronze replica of the medal mounted on a walnut plaque, and a parchment certificate.

The recipient must be an electrical engineering educator who is less than 45 years old on June 1 of the year in which the award is presented and must be the principal author of an electrical engineering textbook published before June 1 of the year of his/her 40th birthday. The book must have been judged by his/her peers to be an outstanding original contribution to the field of electrical engineering. The recipient must also have displayed outstanding achievements in teaching, research, guidance of students, and other related activities.

About Frederick Emmons Terman

Frederick Emmons Terman received his A.B. degree in chemistry in 1920, the degree of engineer in electrical engineering in 1922 from Stanford University, and his Sc.D. degree in electrical engineering in 1924 from Massachusetts Institute of Technology. From 1925-1965, he served as instructor, then professor of electrical engineering, executive head of the Electrical Engineering Department, dean of the School of Engineering, provost, vice president, and finally, as acting president of Stanford University.

Among the many honors bestowed upon him were: the IEEE Medal of Honor; the first IEEE Education Medal; the ASEE’s Lamme Medal; the 1970 Herbert Hoover Medal for Distinguished Service to Stanford University; an honorary doctor’s degree by Harvard; a decoration by the British government; the Presidential Medal for merit as a result of his war work; and the 1976 National Medal of Science from President Ford at a White House ceremony.

Dr. Terman was a professor at Stanford University when William Hewlett and Dave Packard were engineering students there. It was under Dr. Terman’s guidance in graduate work on radio engineering that Mr. Hewlett built the first tunable and automatically stabilized Weinbridge oscillator. Partially through Dr. Terman’s urging, Hewlett and Packard set up their partnership in an old garage with $538 and the oscillator as their principal assets.

Dr. Terman died in December 1982. It is in appreciation of his accomplishments and guidance that Hewlett-Packard is proud to sponsor the Frederick Emmons Terman Award.
IEEE Education Society Hewlett-Packard
Harriet B. Rigas Award

For increasing the participation of underrepresented members in the computing research community by promoting research experiences for undergraduates

Nancy M. Amato is Unocal Professor and Interim Department Head of the Department of Computer Science and Engineering at Texas A&M University where she co-directs the Parasol Lab. She received undergraduate degrees in Mathematical Sciences and Economics from Stanford University in 1986, and M.S. and Ph.D. degrees in Computer Science from UC Berkeley and the University of Illinois at Urbana-Champaign in 1988 and 1995, respectively. She was an AT&T Bell Laboratories PhD Scholar, received a CAREER Award from the National Science Foundation, is a Distinguished Speaker for the ACM Distinguished Speakers Program, was a Distinguished Lecturer for the IEEE Robotics and Automation Society, and is an IEEE Fellow.

She has served as an Associate Editor for the IEEE Transactions on Robotics and Automation and of the IEEE Transactions on Parallel and Distributed Computing. She was co-Chair of the National Center for Women in Information Technology (NCWIT) Academic Alliance (2009-2011), is a member of the Computing Research Association's Committees on the Status of Women in Computing Research (CRA-W) and Education (CRA-E), and of the ACM, IEEE, and CRA sponsored Coalition to Diversity Computing (CDC). She has directed or co-directed the CRA-W/CDC Distributed Research Experiences for Undergraduates (DREU, formally known as the DMP) for more than 10 years. DREU is a national program that matches undergraduate women and students from underrepresented groups, including ethnic minorities and persons with disabilities, with a faculty mentor for a summer research experience at the faculty member's home institution. She received a University-level teaching award from the Texas A&M Association of Former Students and the Betty M. Unterberger Award for Outstanding Service to Honors Education at Texas A&M.

Her main areas of research focus are motion planning and robotics, computational biology and geometry, and parallel and distributed computing. She has graduated 13 PhD students, with most of them going on to careers in academia (7) and government or industry research labs (4), 15 master's students, and has worked with more than 100 Texas A&M undergraduate researchers and non-Texas A&M student interns, with the majority being students from groups underrepresented in computing.

She currently supervises 13 PhD students, 4 masters students, and more than 10 undergraduate and high school researchers.
About the Rigas Award

The Harriet B. Rigas Award is presented annually to recognize outstanding faculty women who have made significant contributions to electrical/computer engineering education. The award consists of an honorarium, plaque, certificate, and Frontiers in Education Conference registration.

The recipient must be a tenured or tenure track woman faculty member in an ABET-accredited engineering program in the United States, with teaching and/or research specialization in electrical/computer engineering.

About Harriett B. Rigas

Dr. Harriett B. Rigas (1934-1989), an IEEE Fellow, was an electrical engineer with an international reputation for her hybrid computer and computer simulation research. At Washington State University between 1966 and 1984, she was eventually both full professor and chair of Electrical and Computing Engineering School. Later she chaired larger departments at the Navy's Postgraduate School in Monterey and, at the time of her death, Michigan State University.

Her achievements in engineering research, administration, and service were widely recognized. In 1975-76, Harriett was a Program Director at the National Science Foundation and, over the years, a member of numerous panels and advisory committees at both the NSF and the national Academy of Sciences.

Professor Rigas' success was achieved within a profession and within university administrative structures where there were very few women. Her character and courage were both evident in her strong advocacy of advancement for women. She was involved both locally and nationally in the Society of Women Engineers.
Frontiers in Education Conference
Benjamin J. Dasher Best Paper Award

Applying Philosophical Inquiry: Bringing Future Engineering Education Researchers into the Philosophy of Engineering Education by Robin Adams, Alice Pawley and Brent Jesiek
FIE 2012, T2B

Robin S. Adams is an Associate Professor in the School of Engineering Education at Purdue University. She was also a Senior Design Engineer in the semiconductor packaging industry, an Assistant Director for Research at the Center for Engineering Learning and Teaching, and the lead for the Institute for Scholarship on Engineering Education with the Center for the Advancement of Engineering Education. She received her PhD in Education, Leadership and Policy Studies and her MS in Materials Science and Engineering from the University of Washington, and a BS in Mechanical Engineering from California Polytechnic State University, San Luis Obispo. Her research seeks to empirically develop “languages for learning” in areas central to the practice of engineering – cross-disciplinarity and design – and to the practice of engineering education. A language of learning describes what it means to know, be able to do, or be as a professional and how this changes over time and through experience. It provides tools for learners to reflect upon and self-assess their own progress, teachers to design and assess learning experiences, and leaders to take action in shaping engineering education programs and policies. She conducts research in: (1) Cross-disciplinary ways of thinking, acting and being, (2) Engineering design learning trajectories and education for innovation, and (3) engineering education transformation. Dr. Adams is a recipient of a National Science Foundation CAREER award, teaching and leadership awards, best paper awards (Journal of Engineering Education, Design Studies), and publishes broadly. Her research group, XRoads, involves collaborators from a variety of disciplines to conduct research at the “crossroads” where different perspectives can connect, collide, and catalyze new ways of thinking. She also participates in many professional organizations including the American Society of Engineering Education (ASEE), American Educational Research Association (AERA), International Society of the Learning Sciences (ISLS), Design Research Society (DRS), Association for the Study of Higher Education (ASHE), and Association for Integrative Studies (AIS).

Alice L. Pawley earned her B. Eng (Chemical – Distinction) degree from McGill University in 2000, and a M.S. degree (2003) and Ph.D. degree (2007) in Industrial Engineering with a minor in women’s studies from the University of Wisconsin-Madison.

As a graduate student at UW-Madison, she worked with the Engineering Learning Center, the Wisconsin Engineering Education Laboratory, and the Center for the Integration of Research Teaching and Learning. She has served as an Assistant Professor in the School of Engineering Education and as an affiliate faculty member with the Women’s Studies Program and the Division of Environmental and Ecological Engineering at Purdue University in West Lafayette, IN from 2007 to 2012. In 2013, she was promoted to Associate Professor at Purdue. She serves on numerous advisory boards for federally funded projects across the nation, and reviews papers for the Journal of Engineering Education, the International
Prof. Pawley is a member of the American Society for Engineering Education (ASEE), the National Women’s Studies Association (NWSA), the International Network for Engineering Studies (INES), the Society of Women Engineers (SWE), and the National Organization of Gay and Lesbian Scientists and Technical Professionals (NOGLSTP); she serves as faculty advisor to the Purdue chapters of ASEE and NOGLSTP. She received a NSF CAREER award in 2010 and a Presidential Early Career Award in Science and Engineering (PECASE) from President Obama in 2012.

Brent K. Jesiek earned his B.S. in Electrical Engineering (computer engineering option) from Michigan Technological University in 1998, and a M.S. degree (2003) and Ph.D. degree (2006) in Science and Technology Studies from Virginia Polytechnic Institute and State University. He is currently an Assistant Professor in the Schools of Engineering Education and Electrical and Computer Engineering at Purdue University, and is an Associate Director of Purdue’s Global Engineering Program. Dr. Jesiek draws expertise from engineering, computing, the social sciences, and humanities to investigate the geographic, disciplinary, and historical dimensions of engineering education and professional practice. He has a strong track record of grant-funded research, and in 2012 received an NSF CAREER award to study boundary-spanning roles and competencies among early career engineers. He leads the Global Engineering Education Collaboratory (GEEC), which serves as a hub for his research. An award-winning teacher, Dr. Jesiek regularly serves as instructor for courses in Purdue’s First-Year Engineering program and Engineering Education graduate program. His professional memberships include IEEE, International Network for Engineering Studies (INES), and American Society for Engineering Education (ASEE).
About the Dasher Award

The Benjamin Dasher Best Paper Award is given to the best paper presented at the annual Frontiers in Education Conference, as demonstrated by technical originality, technical importance and accuracy, quality of oral presentation, and quality of the written paper appearing in the Conference Proceedings. Papers are nominated for the award by reviewers.

A committee with representation from each of the organizing societies (ERM, IEEE Ed. Soc., IEEE Comp. Soc.) is formed to review nominated papers. During the FIE meeting, the committee attends presentations of the nominated papers. The committee then makes a final recommendation to the FIE Planning Committee for the Ben Dasher Award winner based on the overall quality of both the paper and the presentation.

About Benjamin J. Dasher

Benjamin J. Dasher was born December 27, 1912 in Macon, Ga. He earned his bachelor’s and master’s degrees in electrical engineering in 1935 and 1945, respectively, and graduated with a doctorate in electrical engineering in 1952 from the Massachusetts Institute of Technology. At MIT, Dr. Dasher worked on the electronics of instrumentation of electromechanical transducers and analog-to-digital converters. He was the author of “Dasher’s method” for synthesis of resistance-capacitance two-port networks, which is found in standard textbook treatments.

While at Georgia Tech, Dr. Dasher served as a graduate assistant in 1936, then as an instructor in 1940, and became an assistant professor in 1945. While earning his PhD at MIT, he was an instructor from 1948-51. Before finishing with his PhD, he became an associate professor at Georgia Tech in 1951, was promoted to professor in 1952, and became director of the School of Electrical Engineering in 1954, where he served in that capacity until 1969. In 1968, Dr. Dasher was appointed associate dean in the College of Engineering. At Georgia Tech, Dr. Dasher served as director of network synthesis projects and transistor oscillator projects. His fields of interest included advanced network theory, electronic theory, electronic circuits, electrical engineering education, machine translation, speech analysis, and pattern recognition. He was credited for bringing undergraduate engineering education to the forefront at Georgia Tech and for increasing interactions between undergraduates and industry.

Dr. Dasher was a member of Phi Kappa Phi, ASEE, Sigma Xi, and the American Association of University Professors; he was a Fellow of both the IEEE and the Institute of Radio Engineers. He served as a regional director for IEEE and as the chair for the Atlanta section of IEEE; he was on numerous committees for IRE, AIEE, and IEEE. He served as President of the IEEE Education Group in 1970-71.

Ben Dasher organized the first Frontiers in Education Conference; it was held in Atlanta in 1971, and attracted 100 participants. There were 34 papers in six technical sessions.

Dr. Dasher died of congestive heart failure on December 13, 1971 in Houston, Texas.
Frontiers in Education Conference Helen Plants Award Best Nontraditional Session at FIE 2012

Special Session: Connecting with Community: Empathy, Experience, and Engineering with Elders, FIE 2012, Session S1A

Lynn Andrea Stein is a founding faculty member of the Franklin W. Olin College of Engineering, where she is Professor of Computer and Cognitive Science and Associate Dean for External Engagement and Initiatives. Stein's research, at Olin and over a decade on the faculty of MIT, spans the fields of artificial intelligence, programming languages, and human-computer interaction. She is a co-author of the foundational documents of the semantic web and the "mother" of a humanoid robot and an intelligent room. Stein is also active in the engineering and computer science education communities, a member of curricular advisory boards, and a frequent speaker at educational conferences on work including pioneering curricular applications of inexpensive robotics, an innovative curriculum for introductory computer science, and curricular change processes with academia. In 2009, Stein was named the founding director of Olin's Initiative for Innovation in Engineering Education.

Caitrin Lynch is a cultural anthropologist with cross-cultural expertise in labor, gender, and aging. An Associate Professor of Anthropology at Olin College of Engineering, she is also a Visiting Research Associate in the Department of Anthropology at Brandeis University. She is the author of two books, *Juki Girls, Good Girls: Gender and Cultural Politics in Sri Lanka's Global Garment Industry* (Cornell, 2007) and *Retirement on the Line: Age, Work, and Value in an American Factory* (Cornell, 2012). She is editor, with Jason Danely, of a collection of essays on aging and the life course: *Transitions and Transformations: Cultural Perspectives on Aging and the Life Course* (Berghahn, 2013). Lynch also is the producer of a documentary film “My Name is Julius” (directed by Titi Yu); see www.juliusfilm.com. Lynch strives to expose engineering students to critical analysis and identification of the burgeoning needs and opportunities in our aging world. One outlet for these efforts is in her interdisciplinary service-learning course (co-taught with faculty in engineering and design and created with Lynn Andrea Stein) “Engineering For Humanity: Helping Elders Age in Place through Partnerships for Healthy Living” (http://e4h.olin.edu/).
Helen Plants Award Past Recipients, Continued

'95 Burks Oakley II and Mark Yoder
'96 Alisha A. Waller, Edward R. Doering, and Mark A. Yoder
'97 Karl A. Smith, James D. Jones and Elizabeth Eschenbach
'98 Alice Agogino
'99 Melinda Piket-May and Julie L. Chang
'03 William C. Oakes
'04 Susan M. Lord, Elizabeth A. Eschenbach, Alisha A. Waller, Eileen M. Cashman, and Monica J. Bruning
'05 Ruth A. Streveler
'06 Ruth A. Streveler, Karl A. Smith, and Ronald L. Miller
'08 Maura Borrego, Lynita Newswander, and Lisa McNair
'09 Lisa C. Benson, Sherrill B. Biggers, William F. Moss, Matthew Ohland, Marisa K. Orr, and Scott D. Schiff
'10 Russell Korte and Karl A. Smith
'11 Mark Somerville, Dave Goldberg, Sherra E. Kerns, and Russell Korte
'12 Şenay Purzer and Jonathan C. Hilpert

About the Plants Award

The Helen Plants Award is given for the best special (non-traditional) session at the FIE conference, as demonstrated by originality, session content and presentation including the use of written materials and visual aids, and participation of session attendees.

About Helen Margaret Lester Plants

Helen Margaret Lester was born in Desloge, Missouri, in March 1925, the only child of Rollo Bertell and Margaret Stephens Lester.

She entered the University of Missouri as a journalism major, but soon switched to Civil Engineering. She received her BSCE in 1945. She joined West Virginia University in 1947 as a graduate student and Instructor in Mechanics, and received her MS in Civil Engineering in 1953. She was a Professor of Theoretical and Applied Mechanics and of Curriculum and Instruction in the Division of Education at WVU. She became Professor Emeritus, Mechanical and Aerospace Engineering in 1983. From 1985 to 1990 she served as Chair of Civil Engineering Technology at Indiana University-Purdue University - Fort Wayne.

Her husband Ken Plants had been a "bureaucrat" with the US Bureau of Mines in Morgantown - a chemical engineer with great expertise in cost estimation. Some of their "courting" evenings were spent manually checking the design calculations on the Star City, WV Bridge, designed by the Dean and State Bridge Engineer. While in Morgantown, Helen was active in Trinity Episcopal Church where she served as a Vestryman and Bishop's Man. For many years she was a Girl Scout leader. Helen died in Tulsa, Oklahoma in September 1999.

From the beginning of her academic career, she was a gifted teacher and a role model for the few women students at West Virginia University at that time. Later, she became an advocate of programmed and individualized instruction. She and Wally Venable wrote series of papers on these topics and several texts: Introduction to Statics, a Programmed Text, (1975), A Programmed Introduction to Dynamics (1967), and Mechanics of Materials, A Programmed Textbook (1974). She established the first doctoral program in Engineering Education at West Virginia University.

In 1975, the University of Missouri at Columbia recognized her with the Missouri Honor Award for Distinguished Service in Engineering. She became an ASEE Fellow in 1983 as a member of the first class of Fellows. She also received Distinguished Service Award, Western Electric Fund Award, and was an ASEE Vice-President (1974 – 1976).
Jennifer Karlin  
South Dakota School of Mines and Technology

**Past Recipients**

'84 Carol Schmitz  
'85 Lawrence P. Grayson  
'86 John C. Lindenlaub  
'87 George Burnett  
'88 James R. Rowland  
'89 Lyle D. Feisel  
'90 Edwin C. Jones, Jr.  
'92 Karl A. Smith  
'92 Victor K. Schultz  
'93 Bruce A. Einstein  
'94 David V. Kerns, Jr.  
'95 David R. Voltmer  
'96 William E. Sayle II  
'97 Richard S. Culver  
'98 Dan Budny  
'99 Robert J. Herrick  
'00 Larry J. Shuman  
'01 David L. Soldan  
'02 Goranka Bjedov  
'03 Larry G. Richards  
'04 James A. Roberts  
'05 Robert J. Hofinger  
'06 Jane Chu Prey  
'07 Joseph L. A. Hughes  
'08 Ted E. Batchman  
'09 Russ Meier  
'10 Dan Moore  
'11 Susan M. Lord  
'12 Arnold Pears

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**Frontiers in Education Conference**  
**Ronald J. Schmitz Award**

*For outstanding contributions to the conference series through her steering committee activities and especially her organization, coordination and management of the 2011 FIE conference in Rapid City, South Dakota*

Dr. Jennifer Karlin received her undergraduate degree from Washington University in St. Louis and her Ph.D. in industrial and operations engineering from the University of Michigan, specializing in engineering management. As far as her committee could determine, she was the first person in the Industrial and Operational Engineering department to successfully defend a solely qualitative methodology dissertation. While a graduate student at the University of Michigan, she taught a senior elective and worked for the Center for Research on Learning and Teaching. Dr. Karlin is now an associate professor of industrial engineering at the South Dakota School of Mines and Technology. She teaches courses in engineering management, quality, strategic, and operational excellence in both the industrial engineering and engineering management undergraduate and technology management graduate programs. She is also the Coordinator of Faculty Development for the university.

These days, the majority of Dr. Karlin’s research is in learning organizations, holistic learner development, and impact of engineering education on economic development. In 2006, Jennifer received a National Science Foundation CAREER award to continue her study of organizational and student learning, determining the relative organizational health of colleges and departments of engineering and correlating this to changes in student intellectual development. Her work has been funded by the National Science Foundation, the United States Air Force (through a congressional earmark), and the Material Handling Industry of America (MHIA)

Dr. Karlin has been active in FIE serving as conference general co-chair for the 2011 conference and an ERM representative on the FIE steering committee. She has also served as an ERM Board Member. She received the ASEE ERM Division Distinguished Service award in 2011.
Frontiers in Education Conference Ronald J. Schmitz Award (continued)

About the Schmitz Award

The Ronald Schmitz Award is given to recognize outstanding and continued service to engineering education through contributions to the Frontiers in Education Conference.

About Ronald J. Schmitz

Ronald J. Schmitz was born near Ionia, Iowa on April 25, 1934. He attended a one-room country school through the eighth grade and then, as was not uncommon at the time, decided to forgo high school and work on his father’s farm. At age 18, he joined the United States Navy. He served as an Electricians Mate, spending much of his enlistment at sea and made a round-the-world cruise aboard the USS Saipan.

In the Navy, Ron found an interest in and an aptitude for technology and recognized the need for further education. He completed a GED program in the Navy and, when he was discharged, enrolled in electrical engineering at Iowa State University. He received all his degrees there, finishing his doctorate in 1967.

In the fall of 1967, he accepted appointment as Assistant Professor in the Department of Electrical Engineering at the South Dakota School of Mines and Technology in Rapid City. He was involved in various research activities and directed both masters and doctoral students, but his strongest interest was always in teaching. Ron was a consummate teacher, patient with students who were having difficulty but intolerant of sloth. He received the School of Mines Teaching Award in 1975 and the Western Electric Fund Award for Excellence in Teaching in 1981.

Dr. Schmitz was very active in the IEEE, especially the Education Society, and served as Secretary Treasurer of the Society. He was also active in ERM and attended, and contributed to, many Frontiers in Education Conferences. He served as general chair of FIE 1981 in Rapid City.

Ron was an avid hunter and fisherman, a devoted husband and father and a faithful friend. He served his church as Lector and Lay Minister and was active as a Boy Scout leader.

IEEE Education Society William E. Sayle II Award for Achievement in Education

Presented by name

For innovative approaches to engineering education and inspiring young people to pursue a career in engineering

Dr. Karen Panetta is a Fellow of the IEEE. Dr. Panetta received the B.S. in Computer Engineering from Boston University, and the M.S. and Ph.D. in Electrical Engineering from Northeastern University. She is the 2013 Vice-President of Communications and Public Relations for IEEE-USA. She is the Editor-in-Chief of the award winning IEEE Women in Engineering Magazine and Editor of the IEEE Boston “Reflector” Newspaper. She served as the 2011 Chair of the IEEE Boston Section. During 2009-2007, she served as the Chair for the IEEE Women in Engineering, overseeing the world’s largest professional organization supporting women in engineering and science.

She is the Associate Dean for Graduate Education and a Professor of Electrical and Computer Engineering at Tufts University. She is the Director of the Simulation Research Laboratory. Her research focuses on developing efficient algorithms for simulation, modeling, and image processing for security and biomedical applications.

Before joining the faculty at Tufts, Dr. Panetta was employed as a computer engineer at Digital Equipment Corporation. Her research in Simulation and Modeling has won her research team five awards from NASA for “Outstanding Contributions to NASA Research” and “Excellence in Research”. She is a NASA Langley Research Scientist “JOVE” Fellow, is a recipient of the NSF Career Award, and won the 2003 Madeline and Henry Fischer Best Engineering Teacher Award. Dr. Panetta was also awarded a Mass High Tech All-Star by Mass High Tech Magazine. She is the recipient of the 2006 Boston University Outstanding Alumni Award and was a recipient of the “Be The Change” award from the Massachusetts Conference for Women. She is the 2009 Norm Augustine Award recipient from the National Academies of Engineering and Science, American Association of Engineering Societies. In 2010, the IEEE recognized Dr. Panetta by awarding her the IEEE Educational Activities Board, Major Educational Innovation Award. In 2011, she was awarded the “Women of Vision” award from the Anita Borg Institute and the IEEE Education Society Harriet B. Rigas Award for Outstanding Engineering Educator. In 2011, U.S. President Obama presented Karen with the NSF Presidential Award for Excellence in Science, Mathematics and Engineering Mentoring. In 2013, she was awarded the E-Week New England Leadership award and the IEEE Award for Ethical Practices.

Dr. Panetta serves on the Boston University Engineering Alumni Board and is a board member for the Center for Balance by Design. She is also a member of the ACM, AAAS, AWIS, SWE, SPHE, Tau Beta Pi, ASEE and the Society for Computer Simulation. She is the faculty advisor to both the Tufts SWE and IEEE student chapters.

Believing that real world experience is critical for engineering education, Dr. Panetta maintains consulting positions in industry and brings her experience back to the classroom. She is a Design Consultant for Tycoelectronics, M/A-Com Inc. and consults for school systems and Science Museums across the United States to inspire engineering and technology education.
Dr. Panetta is dedicated to promoting women in engineering and created the nationally acclaimed “Nerd Girls” program, where undergraduate engineers use their engineering skills to solve real world problems and serve as role models for younger students. By showing youth how engineering helps society and can improve the quality of life for humans and wildlife, Karen Panetta has connected young students with the motivation for pursuing engineering careers.

The IEEE.tv video, “Nerd Girls”, which demonstrates Karen’s most successful mentoring and recruiting philosophy, shows that female engineers are smart, well-rounded, talented girls. The video has won an APEX GRAND award and an Aegis Award for Best Educational Outreach video. The IEEE.tv video, “Ship the Chip” documented Karen personally mentoring 100 female students from a diversity of ethnic and socio-economic backgrounds. The participants included both physically challenged girls and girls with learning disabilities, all exploring the excitement of engineering as a team.

**About the Sayle Award and William E. Sayle II**

The William E. Sayle II Award is presented to recognize a member of the IEEE Education Society who has made significant contributions over a period of years in a field of interest of the IEEE Education Society. The award consists of a plaque, a certificate, and paid registration to the Frontiers in Education Conference.

Dr. William (Bill) E. Sayle received his BSEE and MSEE degrees from the University of Texas at Austin and his Ph.D. from the University of Washington. He joined the faculty in electrical engineering at Georgia Institute of Technology in 1970, just as Georgia Tech was beginning the transition from an undergraduate institution to a research university. He was the ECE associate chair for undergraduate affairs from 1988-2003 and, following retirement in 2003, served as director of undergraduate programs at Georgia Tech-Lorraine in France until 2007. Bill was a tireless advocate for students, putting in countless late night and weekend hours in addressing student issues, assigning teaching assistants, and meeting with prospective students and parents.

Throughout his career, Bill touched the lives of many people in the worldwide academic community. He was a leader and a pioneer in many areas. In the 1970s, he was a founding member of the IEEE Power Electronics Society, where he served in many leadership roles over the years. He was a champion of diversity and in recruiting underrepresented minorities and women to engineering and science, long before it became a national issue. He visited many high schools on behalf of the Southeastern Consortium for Minorities in Engineering, a role where he made many friends for Georgia Tech among high school administrators and students in the southern part of Georgia.

In his 30-year career at Georgia Tech, Bill received the ECE outstanding teacher award twice, as well as the Georgia Tech outstanding teacher award and outstanding service award. Bill lent his voice and efforts to Georgia Tech faculty governance throughout his career, serving as an elected member of Institute-level committees, the Academic Senate, and the Executive Board.

Bill was a long-time member and active volunteer in the IEEE Education Society and the Electrical and Computer Engineering Division of ASEE. He was a Fellow of both IEEE and ASEE. He was the recipient of the Education Society's 2001 Meritorious Service Award and 2004 Achievement Award and of the ECE Division's 2001 Meritorious Service Award and 2006 ECE Distinguished Educator Award. Bill was the General Chair of the 1995 Frontiers in Education (FIE) Conference, which is still remembered for its all-vegetarian menu, and received the 1996 Ronald J. Schmitz Award for outstanding service to FIE.

Much of Bill's professional career was devoted to engineering accreditation, serving at various times as member and chair of the IEEE Committee on Engineering Accreditation Activities and the IEEE Accreditation Policy Council. He participated in more than 20 visits as a program evaluator, in addition to serving as a team chair and member of the Engineering Accreditation Commission of ABET for more than five years. Bill received the IEEE Educational Activities Board Meritorious Achievement Award in Accreditation Activities in 2004.

Dr. Sayle passed away on February 2, 2008.
IEEE Transactions on Education Best Paper Award

Factors That Influence Dissemination in Engineering Education,
Benjamin T. Hazen, Yun Wu and Chetan S. Sankar,

Benjamin T. Hazen received the B.S. degree in Business Administration from Colorado Christian University, in 2004. He received the M.A. degree in Organizational Leadership from Gonzaga University, in 2006, the M.B.A. degree from California State University, Dominguez Hills, in 2007, and the Ph.D. degree in Management from Auburn University, in 2012.

He is a United States Air Force maintenance officer and has served on active duty continuously since 1999. From 1999 to 2002, he served as a Satellite and Wideband Communications Journeyman at Tinker Air Force Base, Oklahoma. He then managed the Engineering Laboratory in the Department of Astronautics at the United States Air Force Academy, Colorado, from 2002 to 2006. From 2006 to 2009, he served in a variety of aircraft maintenance positions at Travis Air Force Base, California. From 2009 to 2012, he participated in an advanced degree program and worked as a Doctoral Candidate in the Department of Aviation and Supply Chain Management at Auburn University. Currently, he serves as the Maintenance Operations Officer for the 916th Maintenance Squadron at Seymour Johnson Air Force Base, North Carolina. His primary research interest is in the area of innovation diffusion.

Yun Wu received the B.S. degree in Management Information Systems from Beijing University of Post and Telecommunications, China, in 2005. She received the M.S. degree in Management Engineering from Politecnico di Milano, Italy, in 2007.

She is currently a Doctoral student in the Department of Aviation and Supply Chain Management at Auburn University. Her research interests include IT innovation diffusion, cloud computing, healthcare information systems and pedagogy dissemination.

Chetan S. Sankar (M '81-SM '88) received the B.S. degree in Mechanical Engineering from Regional Engineering College, Trichy, India, in 1971, and the M.B.A. degree from Indian Institute of Management Calcutta, India, in 1973. He received the Ph.D. degree in Decision Sciences from the Wharton School, University of Pennsylvania, in 1981.

From 1973 to 1974, he worked as an inventory control manager at Balmer Lawrie & Co., Ltd. He was a Research Fellow at the Indian Institute of Management, Calcutta, from 1974 to 1977. He served as an Assistant Professor at Temple University, from 1981 to 1985. He then worked as a project manager at AT&T Bell Laboratories, from 1985 to 1989. In 1989, he joined the faculty at Auburn University, where he is currently the College of Business Advisory Council Professor of Information Systems, and the Director of the Geospatial Research and Applications Center at Auburn University. He has received more than three million dollars from grants sponsored by the National Science Foundation and Economic Development Administration to develop exceptional instructional...
materials that bring real-world issues into classrooms and to help communities recover from disasters effectively. He serves as the Editor-in-Chief of the Decision Sciences Journal of Innovative Education and the Managing Editor of the Journal of STEM Education: Innovations and Research. His research interests include improving instructional and pedagogy methodologies and innovative uses of information technologies to benefit the public.

Dr. Sankar has won awards for research and teaching excellence from the Society for Information Management, NEEDS, Decision Sciences Institute, American Society for Engineering Education, American Society for Mechanical Engineering, International Network for Engineering Education & Research, and the Project Management Institute.
IEEE Education Society
Chapter Achievement Award

For exemplary technical activities, membership services, societal activities to its members, and for outstanding leadership by Chapter officers

Dr Deepak Garg is currently faculty in Computer Science and Engineering Department of Thapar University, Patiala. He holds a PhD in Efficient Algorithm Design for Pattern Discovery. He has more than 100 publications to his credit. He is the Chair of Steering Committee of IEEE International Advanced Computing (IACC) Series of Annual Conference. He is also the chair of Steering Committee of IEEE International Conference in MOOC, Innovation and Technology in Education.

He is currently the Chair of IEEE Computer Society, India Council and the Chair of IEEE Education Society, India Council. He is the Chair of ACM SIGACT North India Chapter. He is teaching UG and PG courses and guiding PhD students in different areas of algorithms. He has executed few projects with funding from Indian Govt. His workshops on Advanced Algorithms and data structures are very popular. Currently his research areas are advanced algorithms, Theoretical Computer Science and Bioinformatics.

Prof. Raghu Raman currently heads the Center for Research in Advanced Technologies for Education (CREATE) at Amrita University, India. As Principal Investigator for multiple research projects totaling over $2.3m, Raghu's main research focus is in the area of computational intelligence for Intelligent and Adaptive Learning Systems, Virtual Interactive learning environments, and Diffusion of ICT Innovations.

Prior to joining Amrita, Raghu worked at NEC Research Labs, USA on the Intelligent Video surveillance technology using neural networks that was ultimately spun out into a new venture. Formerly, Raghu was the Executive Director of Product Development at IBM, where he provided product leadership and direction for engineering groups with full responsibility for operations and budget control of an annual budget of over $8m. Raghu holds an MBA from Haas School of Business, UC Berkeley and is the recipient of President's gold medal. He serves on the board of directors for Amrita Technology Business Incubator; as Member, Standing Committee, National Mission on Education through ICT (NME ICT) and is the past chair of IEEE Education Society Chapter, IEEE India Council.

Mr. Prashant R. Nair is the Vice-Chairman - Information Technology at Amrita School of Engineering, Amrita University, Coimbatore in South India. Since 2000, he has been on the faculty of Amrita University, where he also teaches at the Business School and Centre of Excellence in Cyber Security. Since 2008, he has been holding the administrative responsibility of Vice-Chairman for Accreditation & Quality Assurance for Amrita University. He has taught at academic programs in USA and Europe at University of California, San Diego and Sofia University, Bulgaria as an Erasmus Mundus fellow. His research interests include Application of ICT tools for Supply Chain Management & Education, Cyber Security and Internet Technology. He completed his B.E from Bharathiar University and MBA from Amrita School of Business, Coimbatore, which is ranked among the top 25 B-schools in India.
He has served on the program committee of over 60 international conferences including the IEEE International Conference on Technology Enhanced Education (ICTEE) 2012, IADIS WWW/Internet conference, and editorial board of 3 international journals including Computer Society of India (CSI) Transactions on ICT, a Springer Journal. He is presently holding several leadership roles in professional bodies like Student Activity Chair (SAC) of IEEE Computer Society, India Council; Executive Committee member of IEEE Madras Section and Member of National Student Committee of CSI. He is the Associate Site Director for ACM International Collegiate Programming Contest (ICPC), which is considered as the world championship of programming. Various Awards won include ASDF Award for Best Academic Administrator (2012) and CSI Academic Excellence award (2011).

**Dr. Om Vikas** possesses B Tech(EE), M Tech(EE), Ph.D.(CSE) all from IIT, Kanpur. Formerly Director/VC, ABVIIITM (Indian Institute of Information Technology & Management) Gwalior, Senior Director in the Department of Electronics & Information Technology (DE&IT, Govt of India), and Counselor (Science & Technology) in Indian Embassy, Tokyo, Japan. In DE&IT, he headed Technology Development for Indian Languages Mission and Computer Manpower Development Division. He served in TCS as System Engineer. He was visiting professor at IIT/K, adjunct professor at IIT/D & NSIT; Professor in charge CLASS project at NCERT, Director, IP Engineering College, Advisor to C-DAC, and on Academic Councils of various universities / Institutions. Currently he is Professor Emeritus at Mahamaya Technical University.

He has vast experience of designing curricula 1-to-12 school level (Vocational & Academic) for CBSE, and UG & PG curricula – Computer Applications, Knowledge Engineering, Industrial Informatics, Engineering Education, etc. He is invited as Expert Assessor of NBA/AICTE and NAAC/UGC for assessment & accreditation of technical programmes / institutions. He is member of Organizing Committee of World Summit on Accreditation WOSA -2014. Dr. Vikas received several awards for his outstanding contribution towards IT for masses.

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**Past Recipients**

- '06 Nordic Chapter
- '07 Spanish Chapter
- '08 Gulf Chapter
- '09 Santa Clara Valley Chapter and Portugal Chapter
- '10 Austria Chapter
- '11 Spain Chapter
- '12 Hong Kong Chapter
IEEE Education Society
Distinguished Chapter Leadership Award

For his efforts to make Colombia the 2nd largest chapter in our Society, sponsoring many activities, and being directly involved in the development of the chapter, providing meaningful service in Colombia

Jesus Alfonso Perez Gama was a tenured professor and university master fellow at the National University of Colombia, as well as director of the Master and Systems Engineering Undergraduate Program and University Superior Council Teacher representative. Currently Alfonso is the faculty engineering dean at the Foundation of Higher Education, San Jose and is also director of the International Research Group, San Jose EIDOS. He has conducted several research projects dealing with social and economic problems for tertiary education, using mathematical and computational models and artificial intelligence, which were sponsored by Colciencias, CYTED-D (Spain - V Centenary) and the Ministry of National Education and FODESEP.

Alfonso is a graduate of the Mayor San Bartolome. He also studied Electronic Engineering at the U City University of Bogota and received a Master of Science from the University of Essex, UK and a Systems Engineering Magister from the National University and Economics Graduate Program at Universidad de los Andes, Bogota. He is IEEE Senior Life Member and a member of the New York Academy of Sciences, the International Council on Systems Engineering, the International Input Output Association, the International Institute of Software Architects, Systems Engineering Colombia Association, and the Colombia Informatics Association, which he chairs.

He has received the James Rooke Honorary Scholarship, granted by British Council; the 2012 Roberto Valenzuela IEEE Life and Achievement Award; and the City University Francisco Jose de Caldas IEEE Student Branch 50 Years with Professional Excellence recognition. Alfonso was also recognized for his A Successful Case in Superior Education: Mathematical and Computer Model for Engineering Using Propaedeutic Cycles, which was included in the Bank of Significant Experiences in Higher Education 2010 by Ministry of National Education of Colombia.
IEEE Education Society
Distinguished Member Award

For leadership and service on the Board of Governors; as chair of the Constitution and By-Laws Committee; and related professional contributions through publications, accreditation activities, and as an associate editor

Victor P. Nelson is a Professor and Assistant Chair of Electrical and Computer Engineering at Auburn University, where he has been on the faculty since 1978. His primary research interests include embedded systems and computer-aided design and testing of digital systems and application-specific integrated circuits (ASICs). He is co-author of the textbook Digital Logic Circuit Analysis and Design and IEEE tutorial book Fault-Tolerant Computing. He is past chair of the ECE Curriculum Committee and coordinator of the ECE Graduate Program, and served one year as Associate Dean for Assessment in the College of Engineering. He was a co-winner of the 2005 “Wireless Educator of the Year” award from the Global Wireless Education Consortium for his role as one of the developers of the Bachelor of Wireless Engineering program at Auburn University, which is the first of its kind in the U.S., and currently serves as the director of that program. He received the Birdsong Merit Teaching Award in 2000 and the Walker Merit Teaching Award in 2002 from the College of Engineering, and was named outstanding member of the Graduate Faculty in 2004.

He is a member of the IEEE Education Society, in which he has served as a member of the Board of Governors, chair of the Constitution and Bylaws committee, and previously as an associate editor of the IEEE Transactions on Education. He was a member of the IEEE Computer Society/ACM Task Force that developed the Computer Engineering 2004 report on model computer engineering curricula. He is active in accreditation activities, having served as an ABET program evaluator and a current member of the ABET Engineering Accreditation Commission, and previously as a member and mentor coordinator of the IEEE Committee on Engineering Accreditation Activities (CEAA). He is also a member of ASEE, and previously served as chair of the ASEE ECE Division.
IEEE Education Society Edwin C. Jones, Jr. Meritorious Service Award

For his outstanding contributions and service as the Editor in Chief of the IEEE Transactions on Education

Charles Fleddermann is a Professor of Electrical and Computer Engineering and Associate Dean of the School of Engineering at the University of New Mexico (UNM) where he has been on the faculty for over 27 years. He also has served as Dean of Graduate Studies at UNM. Prof. Fleddermann earned his Ph.D. and M.S. degrees in electrical engineering from the University of Illinois at Urbana-Champaign, and a B.S. degree, also in electrical engineering, from the University of Notre Dame.

Dr. Fleddermann is a senior member of the IEEE, and is also a member of the ASEE. He has served as the Editor in Chief of IEEE Transactions on Education (ToE); previous to that he was an Associate Editor for the journal. He serves as an electrical engineering program evaluator for the Accreditation Board for Engineering and Technology (ABET).

His research interests are in engineering education, photovoltaics, plasma processing of electronic materials, optical diagnostics of plasma systems, and engineering ethics. He has taught a variety of courses at both the undergraduate and graduate levels, including on-line courses. He has developed and taught a course on professional ethics for engineers, and has been involved in research projects in the area of ethical issues in nanotechnology. He has also taught professional development seminars on ethics for engineers in New Mexico and elsewhere in the U.S. over the past few years. He is the author of two textbooks: the 4th edition of Engineering Ethics, was released in 2011; and he co-authored Introduction to Electrical and Computer Engineering, intended to help first-year students develop knowledge and strategies for success in the profession.
About the Edwin C. Jones Award

The Edwin C. Jones Meritorious Service Award is presented to recognize a member of the IEEE Education Society who has made pioneering contributions to the administrative efforts of the IEEE Education Society over a period of years. The award consists of a plaque, a certificate, and registration to the Frontiers in Education Conference.

About Edwin C. Jones

Professor Jones served as a Society officer from 1970 through 1976; this service included two years as president. He served as Editor-in-Chief of the *IEEE Transactions on Education* from 1982-84. Since he first became involved in the Society in the late 1960s, he has held virtually every office in the Education Society. He is still actively involved with the Education Society. Professor Jones also serves the IEEE as a member of the IEEE Committee on Engineering Accreditation Activities. Dr. Jones is University Professor and Associate Chair, emeritus, Department of Electrical and Computer Engineering, Iowa State University. Prior to joining Iowa State in 1966, he was an Assistant Professor at the University of Illinois from 1962-66. He received his PhD in 1962 from the University of Illinois; the DIC in 1956 from Imperial College of Science and Technology, University of London; and the BSEE in 1955 from West Virginia University. Dr. Jones’ honors and awards include: Fellow, Institute of Electrical and Electronics Engineers; Fellow, American Society for Engineering Education; Fellow, American Association for Advancement of Science; Fellow, Accreditation Board for Engineering and Technology; IEEE Centennial Medal, 1984; ASEE Centennial Medal, 1993.
IEEE Education Society Mac Van Valkenburg
Early Career Teaching Award

For his innovative teaching approach, simultaneous emphasis on
disciplinary rigor and on the societal implications of engineering
in his classes, and his deep commitment to inspiring engineering
students to address high-value global development problems in
resource limited settings

Muhammad H. Zaman is Associate Professor of Biomedical Engineering at
Boston University. He also holds appointments in the Department of Medicine and
the Department of International Health at Boston University School of Medicine.
Prof. Zaman is also Associate Chair of Biomedical Engineering and Associate
Director of Kilachand Honors College at Boston University. Prof. Zaman got his
PhD in Physical Chemistry from the University of Chicago in 2003, where he was
a Burroughs-Wellcome Graduate Fellow in Interdisciplinary Sciences. After his
Ph.D. he was a Herman and Margaret Post-Doctoral Fellow at MIT from 2003-
2006. He was Assistant Professor of Biomedical Engineering at UT Austin from
2006-2009 and moved to BU in Fall 2009. His lab focuses on developing new
experimental and computational technologies for high value healthcare problems
in both the developing and developed world.

Prof. Zaman is actively involved in two areas of research. The first is developing
new tools and quantitative understanding of tumor formation and tumor
metastasis. The second is developing robust and affordable diagnostic
technologies for the developing world. He is working on capacity building and
engineering education in these countries as well. Technologies developed by Prof.
Zaman and his team are in various stages of implementation in multiple African
countries.

Additionally, Prof. Zaman is actively involved in bringing high quality
engineering education to developing countries. He is currently involved in setting
up the first biomedical engineering departments at various African Universities in
Kenya, Zambia, Uganda and Ethiopia. He is also a member of the technical
committee of the UN Economic Council on Africa (UNECA) and co-Director of
the UNECA biomedical innovation program in Africa. He contributes regularly on
issues in engineering and development as a regular op-ed columnist to various
newspapers and magazines including the Huffington Post and Express Tribune
(one of the leading English daily newspaper in Pakistan).

Prof. Zaman’s emphasis on excellence in teaching has been a major part of his
academic career. His contribution to engineering education has been highlighted
by the New York Times, NPR and a number of other organizations. Prof. Zaman
has won numerous awards for his research and teaching, including BU College of
Engineering Early Career Research Excellence Award, Saving Lives at Birth
Innovator Award, Tewkesbury Fellowship, American Society for Engineering
Education Outstanding Assistant Professor Award, BME outstanding teacher
award at UT Austin, College of Engineering Outstanding Teaching by an Assistant
Professor Award at UT Austin and the highest award for teaching in the entire UT
System, the UT System Regents Outstanding Teaching Award. He has been
invited by the National Academies of Engineering to participate in both frontiers
of engineering and frontiers of engineering education as well as Japan-US
Frontiers of Engineering.
IEEE Education Society
Student Leadership Society Award

For exemplary leadership in the execution of programs and continuous improvements of the IEEE Education Society Student Activities Committee (SAC) and excellent performance in the upgrading of the IEEE Technology in Engineering Education (formerly IEEE Multidisciplinary Engineering Education Magazine)

Subhamoy Mandal (St M’04, GSM’08) is currently a DAAD PhD Scholar with the Institute of Biological and Medical Imaging at TU München and Helmholtz Zentrum München. He received his MS (by research) from the Indian Institute of Technology Kharagpur, and B.E. in Biomedical Engineering from Manipal University, Karnataka, India. Subhamoy’s areas of interest are Medical Signal & Image Processing, Medical Imaging and DSP/GPU based algorithm design. His current research pertains to visual quality enhancement and development of novel methods for optoacoustic (photoacoustic) imaging.

Subhamoy is an active Member of IEEE, and is the Student Rep and AdCom member of its Engineering in Medicine and Biology (EMB) Society, and the 2010-13 Chair, IEEE Education Society Student Activity Committee (IEEE EduSocSAC). As the Chair of the EdSocSAC he was instrumental in designing and implementing the IEEE TechSym, a unique student only conference which is archived in IEEE Xplore DL. Further, he initiated the IEEE Direct to Student (D2S) and One World- One Education (1WoE), which has achieved notable initial success. Subhamoy was the Founding Chair, IEEE EMB Student Club of IIT Kharagpur, which was awarded the Best New Student Club/Chapter Award 2010 by IEEE EMBS Student and Member Activity Committee. He has been a Member of IEEE Ad-hoc Committee on Social Media Policy reporting directly to the IEEE Board of Directors, founding Chair of the IIT Kharagpur GOLD Affinity, and also actively volunteered with the IEEE Student Branches at IIT Kharagpur (Treasurer 2009-10) and MIT Manipal (2005-07).

Subhamoy has been closely associated with several corporate organizations including Philips, GE and Microsoft. During his internships with Philips and the master’s thesis, he has focused on developing low cost point of care technologies to address healthcare challenges of emerging economies. At GE Global Research his primary area of focus has been Magnetic Resonance Imaging (MRI) and its application in Brain Iron Quantification, leading to early diagnosis of Alzheimer’s and other neuro-degenerative diseases.

Subhamoy’s goal is to achieve success in innovating point-of-care healthcare solutions using expertise of biomedical engineering and domain knowledge of medical sciences by synchronized efforts in a collective venture. He aims to leverage the acumen and experiences gained through his own training to encourage growth of better educational and technical training facilities in emerging economies, including the Indian Subcontinent.
IEEE Education Society
Student Leadership Award

For exemplary leadership in the execution of programs and continuous improvements of the IEEE Education Society Student Activities Committee (SAC) and excellent performance in the upgrading of the IEEE Technology in Engineering Education (formerly IEEE Multidisciplinary Engineering Education Magazine)

Xinyou Zhao was born in Biyang Village, Henan Province, China in 1976. He received the B.S. degree in computer education from Xinyang Normal University, China, in 2000 and obtained the M.S. degree in Computer Science from Guilin University of Electronic Technology, China, in 2003. He was awarded a Ph.D. degree in Engineering at Graduate School of Information Systems, The University of Electro-Communications, Tokyo, Japan, in 2010.

From 2003 to 2007, he worked as a lecturer at Guilin University of Electronic Technology, Guilin, China. During May 2005 to April 2006, he was also a visiting scholar in Matsumoto Research Lab., GITI, Waseda University, Tokyo, Japan. Now he is working at ACARIC Co. Ltd as a system engineer, Tokyo, Japan. He is also a guest researcher in Advanced Research Center for Human Sciences, Waseda University, Tokorozawa, Japan. He has published more than 30 papers in national and international journals and conferences and numerous technical reports. His research interests include mobile learning, data mining with big data, intelligent tutoring system and multimedia technology.

This year, FIE 2013 had over 600 papers and presentations submitted for consideration. The FIE2013 Program Committee wishes to thank the following individuals for acting as abstract and paper reviewers. The program committee asked these individuals to help control the quality of the presentations at this year’s conference by reviewing the submissions for FIE2013. Their outstanding effort has helped maintain the high standard that has become the reputation of each FIE conference.

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SESSION CHAIRS

The conference committee would like to thank the people that have agreed to act as session chairs at the 2013 Frontiers in Education Conference. Session chairs play an important role in ensuring the conference runs smoothly and that the technical presentations are a valuable experience for both speakers and attendees. Session chairs also have served a critical role in helping with the Ben Dasher Award process.

The primary responsibilities of session chairs are to:

- Read the session's papers in advance and recommend papers for the Ben Dasher Best Paper committee.
- Contact the authors in the session and become familiar with the authors who are presenting.
- Introduce the session and make any FIE announcements that are needed.
- Briefly introduce each speaker and paper.
- Manage audience questions, and ensure that presentations begin and end within their time slots.

The program committee would like to thank the following individuals for their efforts to help make FIE2013 both informative and successful:

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<td>Room 16</td>
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<td>Lisa Benson</td>
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<td>T1E: Software Engineering, Computing &amp; Informatics Education I</td>
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<td>S1D: Innovative Computing Practice III</td>
<td>8:00 AM</td>
<td>Room 17</td>
<td>Daniel Krutz</td>
<td>Rochester Institute Of Technology</td>
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<td>S1E: Distance Education I</td>
<td>8:00 AM</td>
<td>Room 18</td>
<td>James Rowland</td>
<td>University of Kansas</td>
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<tr>
<td>S1F: Innovation and Entrepreneurship II</td>
<td>8:00 AM</td>
<td>Room 19</td>
<td>Anthony Joseph</td>
<td>Pace University</td>
</tr>
<tr>
<td>S1G: First and Second Year Programs III</td>
<td>8:00 AM</td>
<td>Room 20</td>
<td>Leen-Kiat Soh</td>
<td>University of Nebraska-Lincoln</td>
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<td>S1H: ECE VI</td>
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<td>Room 2</td>
<td>Abdel-Hameed Badawy</td>
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<td>Dorothy Jones-Davis</td>
<td>National Science Foundation</td>
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<td>S2C: Teaming I</td>
<td>10:00 AM</td>
<td>Room 16</td>
<td>Amy Javernick-Will</td>
<td>University of Colorado at Boulder</td>
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<td>S2D: Experiential Learning III</td>
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<td>University of Kansas</td>
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<td>S2E: Industry Partnerships</td>
<td>10:00 AM</td>
<td>Room 18</td>
<td>Xiaosong Li</td>
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<td>S2F: Ethics and Moral Reasoning</td>
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<td>Room 19</td>
<td>Melany Ciampi</td>
<td>Safety, Health and Environment Research Organization</td>
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<td>S2G: First and Second Year Programs IV</td>
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<td>Room 20</td>
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<td>São Paulo State University - UNESP</td>
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<td>S2H: pK-12 STEM IV</td>
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<td>Room 2</td>
<td>Charles Wallace</td>
<td>Michigan Technological University</td>
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<td>S2I: Interdisciplinary Programs I</td>
<td>10:00 AM</td>
<td>Room 4</td>
<td>Rose Gamble</td>
<td>University of Tulsa</td>
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<td>S3C: Student Beliefs, Motivation &amp; Persistence III</td>
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<td>University of Nebraska-Lincoln</td>
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<td>S3D: Computing Pedagogy Research</td>
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<td>Room 17</td>
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<td>S3E: Engineering in International Contexts I</td>
<td>1:00 PM</td>
<td>Room 18</td>
<td>Velvet Fitzpatrick</td>
<td>Purdue University</td>
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<td>S3F: Assessment II</td>
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<td>Je-Hyeong Bahk</td>
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<td>Asako Ohno</td>
<td>Osaka Sangyo University</td>
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<td>National Taichung University of</td>
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<td>S4I: Interdisciplinary Programs II</td>
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<td>Room 4</td>
<td>Mahesh Banavar</td>
<td>Arizona State University</td>
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</tbody>
</table>
Web-based animated interactive learning material for lower division computer science and engineering $35 enrollment, can replace textbooks, downloadable

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## SESSION GRID – WEDNESDAY, OCTOBER 23RD

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<th>Time</th>
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<tr>
<td>1:30 PM</td>
<td><strong>W1A:</strong> Pre-Conference Workshop: Computer Engineering Curriculum Guidelines (FREE workshop - costs covered by NSF grant)</td>
<td><strong>W1B:</strong> Pre-Conference Workshop: Modeling Software the Alloy Way</td>
<td><strong>W1C:</strong> Pre-Conference Workshop: Programming Board Game Strategies in CS2</td>
<td><strong>W1D:</strong> Pre-Conference Workshop: Why are continuous-time signals and systems courses so difficult? How can we make them more accessible?</td>
<td><strong>W1E:</strong> Pre-Conference Workshop: Using Problets for Problem-Solving Exercises in Introductory C++/Java/C# Courses</td>
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<td><strong>W2E:</strong> Pre-Conference Workshop: Refining a Taxonomy for Engineering Education Research (FREE workshop - costs covered by NSF grant)</td>
<td><strong>W2D:</strong> Pre-Conference Workshop: Teaching Service-Oriented Programming to CS and SE Undergraduate Students (FREE workshop - costs covered by NSF grant)</td>
<td><strong>W2C:</strong> Pre-Conference Workshop: An Online Revolution in Learning and Teaching: from e-books to MOOCs</td>
<td><strong>W2B:</strong> Pre-Conference Workshop: The Erlang Approach to Concurrent System Development</td>
<td><strong>W2A:</strong> Pre-Conference Workshop: Inspiring Inventive Genius in Middle and High School Students with Chain-Reaction STEAM Machines™</td>
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<td>7:00 am –</td>
<td>Focus on First-Time Attendees Breakfast Buffet</td>
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<td>8:00 am -</td>
<td>Plenary Session</td>
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<td>9:30 am -</td>
<td>Keynote: Katherine Banks, Vice Chancellor and Dean of Engineering, Texas A&amp;M</td>
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<td>11:45 am -</td>
<td>HP Terman and Rigas Awards Lunch</td>
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<td>T2A: Mobile and Online Learning</td>
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<td>4:00 pm –</td>
<td>T2B: Special Session: Assessing Lifelong Learning: The Role of Information</td>
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<td>5:30 pm</td>
<td>Gathering and Application Skills</td>
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<td>6:00 pm –</td>
<td>T2C: Approaches to Student-Centered Learning I</td>
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<td>T2D: Traming and Engagement</td>
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<td>T2E: Computing I</td>
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<td>T2F: ECE I</td>
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<td>T2G: First and Second Year Programs I</td>
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<td>T2J: Inclusivity and Diversity I</td>
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<td>7:00 am - 8:30 am</td>
<td>F1A: Mini-Workshop: Tools to Facilitate Development of Conceptual Understanding in the First and Second Year of Engineering</td>
<td>F1B: Panel: Building an Inclusive REU Program: A Model for Engineering Education</td>
<td>F1C: Faculty Development I</td>
<td>F1D: Teams, Communication &amp; Profession</td>
<td>F1E: Philosophy of Engineering and Engineering Education I</td>
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<td>Breakfast and Plenary Session</td>
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<td>Keynote: Mike McCracken, Director of Online Course Development and Innovation, College of Computing, Center for 21st Century Universities (C21U), Georgia Tech</td>
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<td>8:30 am - 10:00 am</td>
<td>F2A: Mini-Workshop: Why are continuous-time signals and systems courses so difficult? How can we make them more accessible?</td>
<td>F2B: Special Session: True Grit: Toward a Culture of Psychological Preparedness in Engineering Education</td>
<td>F2C: Online Learning I</td>
<td>F2D: Open Educational Resources and Practices II</td>
<td>F2E: Philosophy of Engineering and Engineering Education II</td>
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<td>Noon - 1:30 pm</td>
<td>F3A: Special Session: What is the Role of MOOCs in Engineering Education?</td>
<td>F3B: Special Session: Defining and Assessing Engineering Ethics</td>
<td>F3C: Approaches to Student-Centered Learning III</td>
<td>F3D: Student as Learner</td>
<td>F3E: Assessment Strategies</td>
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<td>Reception and Awards Banquet – Ticketed Event</td>
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Eric Durant (Milwaukee School of Engineering & Starkey Hearing Technologies, USA)  
John Impagliazzo (Hofstra University, USA)  
Susan Conry (Clarkson University, USA)  
Andrew McGregor (University of Strathclyde, United Kingdom)  
Mitchell A Thornton (Southern Methodist University, USA)  
Timothy Wilson (Embry-Riddle Aeronautical University, USA)

**WIB: Pre-Conference Workshop: Modeling Software the Alloy Way**  
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*Modeling Software the Alloy Way*  
Michael Lutz (Rochester Institute of Technology, USA)

**WIC: Pre-Conference Workshop: Programming Board Game Strategies in CS2**  
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*Programming Board Game Strategies in CS2*  
James Hetiotis (Rochester Institute of Technology, USA)  
Ivona Bezakova (Rochester Institute of Technology, USA)  
Sean Strout (Rochester Institute of Technology, USA)

**WID: Pre-Conference Workshop: Why are continuous-time signals and systems courses so difficult? How can we make them more accessible?**  
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*Why are continuous-time signals and systems courses so difficult? How can we make them more accessible?*  
Mario Simoni (Rose-Hulman Institute of Technology, USA)  
Maurice Aburdene (Bucknell University, USA)  
Farrah Fayyaz (Purdue University, USA)

**WIE: Pre-Conference Workshop: Using Problets for Problem-Solving Exercises in Introductory C++/Java/C# Courses**  
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*Using Problets for Problem-Solving Exercises in Introductory C++/Java/C# Courses*  
Amruth N. Kumar (Ramapo College of New Jersey, USA)
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Shiyu Lu (Hitachi (China) Research & Development Corporation, P.R. China)
Zhenyu Zhang (Hitachi (China) Research & Development Corporation, P.R. China)
Jun Li (Hitachi (China) Research & Development Corporation, P.R. China)


Jorge de la Torre Cantero (Universidad de La Laguna, Spain)
Jose L. Saorín (University of La Laguna, Spain)
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Liang Hong (Tennessee State University, USA)
Kai Qian (Southern Polytechnic State University, USA)
Gang Quan (Florida International University, USA)
Kuosheng Ma (Southern Polytechnic State University, USA)

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Lee Miller (University of Nebraska-Lincoln, USA)
Leen-Kiat Soh (University of Nebraska-Lincoln, USA)

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New National Science Foundation Opportunities for Improving Undergraduate Engineering Education

Amy Chan Hilton (National Science Foundation, USA)
Susan Finger (NSF, USA)
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Model Collaboration for Advancing Student-Centered Engineering Education
Peter Golding (University of Texas at El Paso, USA)  
Richard T. Schoephoerster (University of Texas at El Paso, USA)  
Roger Gonzalez (University of Texas at El Paso, USA)  
Elsa Villa (The University of Texas at El Paso, USA)  
Jessica Townsend (Franklin W. Olin College of Engineering, USA)  
Mark Somerville (Franklin W. Olin College of Engineering, USA)  
Richard Miller (Franklin W. Olin College of Engineering, USA)  
Vincent P Manno (Franklin W. Olin College of Engineering, USA)  
Daniela Natera (University of Texas at El Paso, USA)  
Scott Starks (University of Texas at El Paso, USA)  
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Joseph P. Hoffbeck (University of Portland, USA)
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Daniel J Neebel (Loras College, USA)
Alex Wong (Digilent Inc., USA)
Clark Merkel (Loras College, USA)

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Håkan Jonsson (Luleå University of Technology, Sweden)

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Allen Hoffman (Worcester Polytechnic Institute, USA)

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Donald Fehlinger, Jr. (Drexel University, USA)
Jessica Ward (Drexel University, USA)
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Pengtao Lin (Gannon University, USA)
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Nina Phanthanousy (Raytheon & Embry-Riddle Aeronautical University, USA)
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Room: 14

Hands-On Activities with Portable Electronics

Kathleen Meehan (Virginia Tech, USA)
Mario Simoni (Rose-Hulman Institute of Technology, USA)
Alex Wong (Digilent Inc., USA)

F4B: Panel: Effective Recruiting for Diversity
4:00 - 5:30 pm
Room: 15

Effective Recruiting for Diversity

Joanne Cohoon (University of Virginia, USA)
James Cohoon (University of Virginia, USA)
Seth Reichelson (Lake Brantley High School, USA)
Selwyn Lawrence (South Lakes High School, USA)

Session F4C: Student Beliefs, Motivation & Persistence II
Chair: Jia-Ling Lin
4:00 - 5:30 pm
Room: 16

Pastoral Care and Student Support: Developing a Method of Retention

Craig Watterson (Victoria University of Wellington, New Zealand)
Dale A Carnegie (Victoria University of Wellington, New Zealand)

Student Perceptions of Cheating in Online and Traditional Classes

Stephen W Turner (University of Michigan - Flint, USA)
Suleyman Uludag (University of Michigan - Flint, USA)

Perceptions and Influencers Affecting Engineering and Computer Science Student Persistence

Kaitlyn Bunker (Michigan Technological University, USA)
Laura Brown (Michigan Technological University, USA)
Leonard J. Bohmann (Michigan Technological University, USA)
Gretchen Hein (Michigan Technological University, USA)
Nilufer Onder (Michigan Technological University, USA)
Raven Rebb (Michigan Technological University, USA)

The Dynamic Image of the Engineer

John Pritchard (Iowa State University, USA)
Mani Mina (Iowa State University, USA)

Comparing the Attitudes towards Engineering of Honors Students and Engineering Students at a Liberal Arts University

Rick Olson (University of San Diego, USA)
Truc T. Ngo (University of San Diego, USA)
Susan M. Lord (University of San Diego, USA)
Session F4D: Innovative Computing Practice II
Chair: Irene Rothe
4:00 - 5:30 pm
Room: 17

Carry-on Effect in Extreme Apprenticeship
Hansi Keijonen (University of Helsinki, Finland)
Jaakko Kurhila (University of Helsinki, Finland)
Arto Vihavainen (University of Helsinki, Finland)

A Successful Graduate Cloud Computing Class with Hands-on Labs
Melody Moh (San Jose State University, USA)
Rafael Alvarez-Horine (San Jose State University, USA)

Brain-based Programming
Barbara Sabitzer (Alpen-Adria-Universität Klagenfurt, Austria)
Sandra Strutzmann (Alpen-Adria-Universität Klagenfurt, Austria)

Multiple Intelligence approach and Competencies applied to Computer Science I
Alejandro Adorjan (Universidad ORT Uruguay, Uruguay)
Inés Friss de Kereki (Universidad ORT Uruguay, Uruguay)

Session F4E: Cognitive and Affective Domains of Learning
Chair: Stephen Frezza
4:00 - 5:30 pm
Room: 18

EEG-based Comparisons of Performance on a Mental Rotation Task between Learning Styles and Gender
Elizabeth Hames (Texas Tech University, USA)
Mary Baker (Texas Tech University, USA)

Detection and Assistance to Students Who Show Frustration in Learning of Algorithms
Edécio Iepsen (Universidade Federal do Rio Grande do Sul, Brazil)
Magda Bercht (Universidade Federal do Rio Grande do Sul, Brazil)
Eliseo Reategui (Universidade Federal do Rio Grande do Sul, Brazil)

Students' Collaborative Note-Taking Activities While Using Electronic and Paper-Based Enhanced Guided Notes: Viewed from Metacognitive and Social Network Perspectives
Oenardi Lawanto (Utah State University, USA)
Harry Santoso (Utah State University, USA)

Cognitive Pathways to Engineering
Jonathan Hilpert (Georgia Southern University, USA)
Jennifer Hyppolite (Georgia Southern University, USA)

Preventing Persistent Misconceptions with First-year Engineering Students
Dazhi Yang (Boise State University, USA)
Ronald Miller (Colorado School of Mines, USA)
Creating an intrinsic-motivation-driven course design method
Geoffrey Herman (University of Illinois at Urbana-Champaign, USA)
Kathryn Trenshaw (University of Illinois at Urbana-Champaign, USA)
David E. Goldberg (University of Illinois at Urbana-Champaign, USA)
Jonathan Stolk (Olin College, USA)
Mark Somerville (Olin College, USA)

Session F4F: Pathways to Engineering Degrees
Chair: Dorothy Jones-Davis
4:00 - 5:30 pm
Room: 19

Expectations and Realities for Community College Engineering Transfers at a Large University
Mary Anderson-Rowland (Arizona State University, USA)

The Effect of Matriculation Practices and First-Year Engineering Courses on Engineering Major Selection
Catherine E. Brawner (Research Triangle Educational Consultants, USA)
Matthew W Ohland (Purdue University, USA)
Marisa K. Orr (Louisiana Tech University, USA)
Xingyu Chen (Purdue University, USA)

A Comprehensive Framework for Significantly Increasing the Number of Highly Trained Engineers: A Model Academic Success and Professional Development (ASAP) Class - Lessons Learned and Strategies Moving Forward
Armando Rodriguez (Arizona State University, USA)
Mary Anderson-Rowland (Arizona State University, USA)

Accelerating Engineering Degree Completion for Military Veterans
David L Soldan (Kansas State University, USA)
Don M. Gruenbacher (Kansas State University, USA)
Noel N Schulz (Kansas State University, USA)
Blythe Vogt (Kansas State University, USA)
Rekha Natarajan (Kansas State University, USA)
William Hageman (Kansas State University, USA)

The TIES Program: A Transfer Initiative for Engineering Students
Jill Auerbach (Georgia Institute of Technology, USA)
Douglas B Williams (Georgia Institute of Technology, USA)

Investigating How Service-Learning Alumni Construct their Engineering Selves
James Huff (Purdue University & Harding University, USA)
Carla Zoltowski (Purdue University, USA)
William Oakes (Purdue University, USA)
Brent Jesiek (Purdue University, USA)

Session F4G: Inclusivity and Diversity II
Chair: Deborah Munro
4:00 - 5:30 pm
Room: 20

Lesbian, Gay, Bisexual, and Transgender Students in Engineering: Climate and Perceptions
Kathryn Trenshaw (University of Illinois at Urbana-Champaign, USA)
Ashley Hetrick (University of Illinois at Urbana-Champaign, USA)
Ramona Oswald (University of Illinois at Urbana-Champaign, USA)
Sharra Vostral (University of Illinois at Urbana-Champaign, USA)
Michael C. Loui (University of Illinois at Urbana-Champaign, USA)
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Manuel Fernández Iglesias (Universidad de Vigo, Spain)
Carlos Rivas-Costa (University of Vigo, Spain)
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P k Imbrie (Purdue University, USA)

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Marian Kennedy (Clemson University, USA)

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Integrating Control Concepts in an Embedded Systems Design Course.................................................................1273
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Gerson Beauchamp (University of Puerto Rico at Mayaguez, Puerto Rico)
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Session F4I: pK-12 STEM II
Chair: Mindy Hart
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Howard Kimmel (New Jersey Institute of Technology, USA)
Steven Romero (New Jersey Institute of Technology, USA)
SESSIONS - Saturday, October 26th

SIA: Special Session: The CS 2013 Computer Science Curricula Guidelines Project
8:00 - 9:30 am
Room: 14

The CS 2013 Computer Science Curriculum Guidelines Project
Steve Roach (Exelis, USA)
Mehran Sahami (Stanford, USA)
Richard LeBlanc (Seattle University, USA)
Remzi Seker (University of Arkansas at Little Rock, USA)

SIB: Panel: Engineering Education in Countries of Portuguese Language
8:00 - 9:30 am
Room: 14

Engineering Education in Countries of Portuguese Language
Melany M Ciampi (Safety, Health and Environment Research Organization & President, Brazil)
Claudio R Brito (Science and Education Research Council, Brazil)
Rosa Maria Vasconcelos (Minho University, Portugal)
Luis Amaral (University of Minho, Portugal)

Session SIC: pK-12 STEM III
Chair: Andres Navarro
8:00 - 9:30 am
Room: 16

STEM Literacy and Textbook Biases in K-12
Gisele Ragusa (University of Southern California, USA)

Project Based Clean Tech Curriculum for High School
John Skardon (California State University-Monterey Bay & Open Innovation Networks, USA)

Computer Science Widening the STEM Education Spectrum
Christopher Morack (Tennessee Technological University, USA)
William Eberle (Tennessee Tech University, USA)

Broadened Perceptions of Engineering in Tenth Grade Students Through a Biowall Design Project
Weston L Aenchbacher (Drexel University, USA)
Sin Park (Drexel University, USA)
Stephanie Dunda (Science Leadership Academy, Philadelphia, PA, USA)
Timothy Best (Science Leadership Academy, Philadelphia, PA, USA)

Hands-On Electricity: An Active Learning Opportunity for High-School Physics
Mario Simoni (Rose-Hulman Institute of Technology, USA)
Glen Cook (Terre Haute North High School, USA)
Stephen Beeler (Terre Haute South High School, USA)
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Chair: Daniel Krutz
8:00 - 9:30 am
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Mikel Larrañaga (University of the Basque Country, Spain)

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Tom Reichlmayr (Rochester Institute of Technology, USA)
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Chair: James Rowland
8:00 - 9:30 am
Room: 18

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Sergio Botero Uribe (EAFIT, Colombia)
Nicolas Hock Isaza (Massachusetts Institute of Technology, USA)
Elío Sancristóbal (Spanish University for Distance Education - UNED, Spain)
Mikel Emaldi (DeustoTech - University of Deusto, Spain)
Alberto Pesquera Martín (Spanish University for Distance Education - UNED, Spain)
Kimberley DeLong (Massachusetts Institute of Technology, USA)
Philip Bailey (Massachusetts Institute of Technology, USA)
Diego López-de-Ipiña (DeustoTech - University of Deusto, Spain)
Manuel Castro (Spanish University for Distance Education - UNED, Spain)
Javier García-Zubía (DeustoTech - University of Deusto, Spain)

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Phil Laplante (Pennsylvania State University, USA)

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Enhanced Recommendations for e-Learning Authoring Tools based on a Proactive Context-aware Recommender

Daniel Gallego (Universidad Politécnica de Madrid, Spain)
Enrique Barra (Universidad Politécnica de Madrid, Spain)
Aldo Gordillo (Universidad Politécnica de Madrid, Spain)
Gabriel Huecas (Universidad Politécnica de Madrid, Spain)

Improving student outcomes in distance learning mathematics classes

Christopher Golubski (University of Texas at Austin, USA)
Cesar Navarrete (University of Texas at Austin, USA)
Elisa Azua (University of Texas at Austin, USA)

Session S1F: Innovation and Entrepreneurship II
Chair: Anthony Joseph
8:00 - 9:30 am
Room: 19

Influence of Entrepreneurial Aptitude on Technology Entrepreneurship Course Performance

Anthony Joseph (Pace University, USA)

Innovation-Directed Experiential Learning Using Service Blueprints

Jayashree Ramanathan (The Ohio State University, USA)
Rajiv Ramnath (The Ohio State University, USA)
Michael J. Herold (The Ohio State University, USA)
Benjamin J. R. Wierwille (The Ohio State University, USA)

inVenTs: Improving retention Among STEM majors through a living learning community

Catherine Amelink (Virginia Tech, USA)
Bevlee Watford (Virginia Tech, USA)
Susan Arnold-Christian (Virginia Tech, USA)
Christina Seimetz (Virginia Tech, USA)

An Innovative Classroom that Produces Innovative Students

Weixun Cao (Arixin Electronics Inc., P.R. China)
Hong Gao (Association of Neimenggu Children’s Science and Technology Education, P.R. China)
Shengri Chen (Shanghai Qibao High School, P.R. China)
Danhui Ying (Shanghai Xunyang Middle School, P.R. China)
Yingping Chen (Nanhui Primary School, P.R. China)
Zhiqiang Xu (Arixin Electronics Inc., P.R. China)

Innovation in Graduate Projects: Learning to Identify Critical Functions

Vimal Viswanathan (Georgia Institute of Technology, USA)
Peter Ngo (Georgia Institute of Technology, USA)
Cameron Turner (Colorado School of Mines, USA)
Julie Linsey (Georgia Institute of Technology, USA)
Session SIG: First and Second Year Programs III
Chair: Lee-Kiat Soh
8:00 - 9:30 am
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Elizabeth Ingraham (University of Nebraska-Lincoln, USA)
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Rebecca Ziino (Worcester Polytechnic Institute, USA)

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Micah Lande (Arizona State University, USA)

Session S1H: ECE VI
Chair: Abdel-Hameed Badawy
8:00 - 9:30 am
Room: 2

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Pallavi Mulmule (TSSM's PV PIT, University of Pune, India)
Suresh Shirbahadurkar (TSSM's PV PIT, University of Pune, India)

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Xue Zhang (Arizona State University, USA)

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James Pembridge (Embry-Riddle Aeronautical University, USA)
Matthew Verleger (Embry-Riddle Aeronautical University, USA)
Lauren Thomas (Virginia Tech, USA)
S2B: Mini-Workshop: Integrate by Design: Bringing Science, Math, and Technology Together Through the Engineering Design Process
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Yuejin Zhao (Beijing Institute of Technology, P.R. China)
Qun Hao (Beijing Institute of Technology, P.R. China)

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J. Bryan Burrows-McElwain (University of Maryland Eastern Shore, USA)

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Rogelio E. Cardona-Rivera (North Carolina State University, USA)
David L. Roberts (North Carolina State University, USA)
Ed Gehringer (North Carolina State University, USA)

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Chair: Melany Ciampi
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Carla Zoltowski (Purdue University, USA)
Patrice Buzzanell (Purdue University, USA)
William Oakes (Purdue University, USA)
Megan Kenny (Purdue University, USA)

Ethics in Engineering Education: A Literature Review
Jehan Abu Hamad (Qatar University, Qatar)
Maram Hasanain (Qatar University, Qatar)
Mahmoud Abdulwahed (Qatar University, Qatar)
Rashid Alammari (Qatar University, Qatar)

Using scaffolded, integrated, and reflexive analysis (SIRA) of cases in a cyber-enabled learning infrastructure to develop moral reasoning in engineering students
Lorraine Kasselburgh (Purdue University, USA)
Carla Zoltowski (Purdue University, USA)
Jonathan Beever (Purdue University, USA)
Justin Hess (Purdue University, USA)
Matthew Krane (Purdue University, USA)
Andrew Brightman (Purdue University, USA)

Session S2G: First and Second Year Programs IV
Chair: Aleardo Manacero
10:00 - 11:30 am
Room: 20

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Kenneth Reid (Ohio Northern University, USA)
David Reeping (Ohio Northern University, USA)
Tyler Hertenstein (Ohio Northern University, USA)
Graham Fennell (Ohio Northern University, USA)
Elizabeth Spingola (Ohio Northern University, USA)

A Survey on the Mathematical Emphasis in Brazilian Computer Science Curricula
Pedro Paulo Vezza Campos (University of São Paulo, Brazil)
Jackson Souza (University of São Paulo, Brazil)
Giuliano Olguin (University of Campinas, Brazil)

Undergraduate and Graduate Teaching Assistants' Perceptions of Their Responsibilities - Factors That Help or Hinder
Alena Moon (Purdue University, USA)
Hyunyi Jung (Purdue University, USA)
Farshid Marbouti (Purdue University, USA)
Kelsey J Rodgers (Purdue University, USA)
Heidi Diefes-Dux (Purdue University, USA)

Engineering Virtual Studio: Online context and community for underclassmen engineers
Kurt Thoroughman (Washington University in St. Louis, USA)
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